Fast, cheap and popular – can you have all three?
Comparing reverse auctions for renewable energy in Finland and Australia

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Certificate of Original Authorship

I, Riikka Heikkinen, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Communications, Faculty of Arts and Social Sciences at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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Statement indicating the Format of Thesis

This thesis follows a conventional format and is structured into seven chapters. It includes:

- An introduction to the research study and a justification of how it adds to knowledge in the field;
- Methodology;
- A review of the literature;
- A historical background of the sites;
- Site one with empirical data;
- Site two with empirical data; and
- A chapter with discussion on comparative aspects and conclusions

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Glossary

AEMO	Australian Energy Market Operator (operates the east coast electricity and gas network)
AEMC	Australian Energy Market Commission
Bid bond	A deposit to participate in a reverse auction, increasingly common in auctions to prevent 'non-serious' or too speculative bids. The bid bond is released back to the bidder when they fulfil the bid, or are not chosen.
Corporate PPA	A privately agreed power purchase agreement, where a large electricity consumer agrees to buy electricity from a generator.
CfD	Contract for Difference. Parties agree on a fixed price for generation, regardless of price on the spot market.
EU	European Union
Fingrid	The Finnish state-owned transmission company. The organisation is in charge of significant, grid changing transmission projects
FiT	Feed-in Tariff
LCOE	Levelised Cost of Energy. A figure that usually refers to estimated costs of developing, building and operating a generation unit for a certain technology or area, or can also refer to cost of generation for a project.
Merchant basis	Refers to situation where a generator relies on revenue from spot prices without a contract or support mechanism in place to give certainty on price of generation
NEM	National Energy Market. A term used for the Australian East Coast electricity and gas markets
Pay-as-bid	The bidders in a reverse auction are paid the price which they bid
PPA	Power purchase agreement. Can be used as an umbrella term used for all contracts or support agreements, both with a government or with a corporate buyer
RET	Renewable Energy Target. It was the previous national renewable energy support policy in Australia, and was set up as a green certificate system
Spot market	A type of electricity market in which trades cover a short period in the very near future and price is defined for each interval.
Swap contract	A swap involves two entities "*entering into a hedging contract*" where they agree upon the price *"for electricity in advance".* (Australian Energy Council 2024*).* According to the *"arrangement, the generator makes a payment to the retailer if the price is high, and the retailer makes a payment to the generator if the price is low"* (Australian Energy Council 2024).
TEM	The Finnish Ministry for Employment, Economic development and Energy

Thesis abstract

This thesis compares two recent cases of the organisation of renewable energy through reverse auctions, one in Finland and one in the State of Victoria, Australia. Globally, reverse auctions have been an increasingly popular tool for governments to incentivise more private investment in renewable energy installations and to meet the obligations of international climate agreements. This thesis examines the deployment of this tool in these two different socio-political contexts: Australia is an example of an Anglosphere market, and Finland represents a socio-democratic market. Despite their differences, both involve neoliberal governance and largely privatised energy systems, which emphasise market-based instruments in their efforts to decarbonise. Both places turned to reverse auctions at a similar time, but with a very different goals and design. The Finnish auction only aimed at the lowest possible state financial liability and support level, whereas the Victorian auction had many overlapping goals around economic development, community benefits, grid position and cost and risk to the state.

This study applies the qualitative research method of critical policy ethnography. The empirical data collected includes interviews with key stakeholders such as policymakers, project developers, residents near renewable energy installation sites, state permitting officers and local town planners. It also makes use of relevant policy papers, submissions, and participant observations from energy industry events, resident rallies, construction sites, and field trips. A shared belief in competition and markets as superior mechanisms is evident in both Australia and Finland, leading to tendering being the preferred policy option. The analysis of each site, together with a comparative approach, helps to reveal how the different contexts shape the goals, design choices and agendas underpinning the policy creation.

Reverse auctions can also lead to unintended consequences. The rapid commodification of land and ecology intensifies local opposition and volatile energy markets based on spot prices offer little revenue certainty for private capital. The competitive nature of reverse auctions encourages speculative pricing, and puts pressure on the relationship between profitability, cheapness, and bidding strategies. This thesis argues that relying on tendering to drive the price as low as possible, while meeting community expectations of sustainable renewable energy development, minimising local impacts and depending on private capital for rapid decarbonisation, is problematic. While reverse auctions are likely to continue to be the preferred tool globally particularly in neoliberal contexts, careful consideration of their design aspects and objectives are necessary to address issues of legitimacy and functionality in the renewable energy transition.

Chapter 1. Introduction

Moving to renewable energy sources offers possibilities for rearranging and rethinking our relationship to energy. The whole of the 20th century we have been disengaged from our electricity usage, its consequences and where our electricity is produced by taking the power plants outside of cities to communities that have no power to have their objections counted for (e.g. Alanne & Saari 2006). Calls for just transition and energy democracy (e.g. Feldpausch-Parker et al. 2019) have been voiced by social movements, labour unions and social science scholars, all the while the low prices of wind and solar technologies enable the price competition with fossil fuels.

However, the majority of the energy transition is happening under capitalist context and logic. Most of the utility-scale renewable energy projects are owned by private corporations which expect the installation to generate a profit alongside clean(er) electrons. While the uptake of rooftop solar is very high in Australia and municipality or state-owned utilities are still somewhat common in Finland, the dominating logic of how the energy future is envisaged in both contexts is based on large-scale installations led by and organised for private capital. Globally, 81.5% of total renewable energy investment was done by utility-scale asset finance, compared to 18.5 % small-scale solar investment in 2019 (UNEP/BNEF 2020, p. 22). This means that certain market conditions need to be put in place and enforced by the state to secure an acceptable (for the investors) rate of return. Mulvaney (2019, see also Howe 2019), amongst many others, argues that this extractive petrocultural logic that is now dressed up as wind and solar energy, seems to be reproducing existing practices and power structures in energy governance. This in turn has implications for the legitimacy, timeframe and possibilities of the urgently needed energy transition. Mulvaney (2019, p. 1) notes that according to the international installation statistics, *"99,9 % of all photovoltaic-modules and concentrated solar power plants ever built were installed after 2008*", which indicates that energy transition is picking up speed during the 15 years. Whether the rate is sufficient to curb global warming, is of course up for debate (e.g. Christophers 2024). The share of *primary energy* consumption from renewable energy sources, while growing, was only 14.5 % in 2023 (Energy Institute / Our world in data 2024). Organisations such as IRENA (2022) have estimated that the amount of yearly new installed capacity of renewable energy needs to be tripled to achieve a reasonable chance for 1.5 C warming, while Climate Action Tracker (2022) warns that current climate policies are likely to lead to 2.7 C warming by 2100.

Decarbonising energy and effectively curbing climate warming are, in other words, long way from being solved. In this research I am exploring large-scale corporate projects – I see them as part of the problem as well as part of the solution – through an ethnographic lens tracing the policy processes, impacts and community responses. As (Sovacool 2014, p. 5) writes, social science research is still underutilised, and perhaps underappreciated, in energy related research with an estimate of only bit less than 1/5 of journal articles from social science disciplines. Still, energy

and electricity are not just a technical system but also deeply social and political matters (e.g. Chilvers & Longhurst 2016). I have chosen a specific policy tool, reverse auctions, as a topic of this thesis, since it is becoming, or arguably has already become, the dominant state support policy. UNEP/BNEF estimated in 2020, that after mid-2010s, alongside with private corporate Power Purchase Agreements, government-run auctions have crept up as the main way to organise project finance. The global "*amount of renewable energy capacity in government-run auctions has soared from just 2.8GW in 2012*" to 78.5GW in 2019, which "*was equivalent to nearly half of the new renewable power capacity added worldwide*" on that year (UNEP/BNEF 2020, p. 36) – noting that auctioned capacity is not the capacity added on the same year.

Given the growing prevalence of reverse auctions mainstream news and research often focus on the pricing outcomes (referred as 'efficiency' in auction research), and completion rates ('effectiveness') to measure the success of an auction, or technical design details to achieve these (e.g. del Rio & Kiefer 2021). There is growing body of critical research on how auctions actually impact prices (Grashof et al. 2020, Berkhout et al. 2024), the difficulty of achieving diversity of developers or other objectives besides the price (e.g. Mathäus 2020, Grashof 2019, Liñeiro & Müsgens 2023), the financing conditions (e.g. Dukan 2022) and the speed of energy transition (e.g. Löhr & Mattes 2020), to which I aim to contribute to. I explore the spread of reverse auctions by comparing two auctions in two different contexts. The main interest is to gain an in-depth understanding of the experiences and impacts of these auctions beyond the typical focus on completion rates and pricing headlines by asking:

RQ: What have been the experiences and impacts of introducing reverse auctions in the energy transition in two contexts: the State of Victoria in Australia and Finland? And, in light of these experiences, does tendering have positive impacts on the social legitimacy of renewable energy?

Research objectives:

1. To investigate the transnational spread of a particular form of energy governance (reverse auctions) and explore the challenges it poses in terms of legitimacy of energy transition as perceived by the affected community, market players and wider stakeholder groups.
2. To apply comparative research method to understand the types of conflicts that are emerging in reverse auctions.

In specific, my thesis aims are:

- to demonstrate some of the challenges associated with reverse auctions in the transition to renewable energy, and
- to explore how the pursuit of cheapness and various non-price objectives, manifests in a profit-seeking environment for renewable energy development

I have chosen two cases for this research, Finland and the State of Victoria in Australia, with very different recent reverse auction designs. Both countries are democratic parliamentary societies with citizens used to public discussion and democratic deliberation, both have significant renewable energy resources (e.g. AEMO 2018b) and the economic means to realise an energy transition. Reverse auctions have been adopted in both cases, and how this tool interacts within these contexts has had little research so far.

Here, it is also important to define what is a renewable energy reverse auction. REN21 (2018, p. 59) defines reverse auction, also called simply an auction or tender, as a capacity that "*is competitively solicited from sellers, who offer bids at the lowest price that they would be willing to accept. Individual tenders may vary by qualifying technology, capacity offered, etc., and may be evaluated on both price and non-price factors*". Unlike a normal auction, reverse auction is looking for a lowest bid, it's a race to the bottom. Reverse auctions or tendering in general are used as a tool for all kinds of services and goods, such as energy generation, charging stations or healthcare providers to name a few. Reverse auctions globally vary greatly in their design, size, goals and implementation. There are however some aspects, which are common to all renewable energy reverse auctions. Firstly, they are organised by the state to try to incentivise new renewable energy investment, most often by private capital, or at least by capital that is subjected to the usual market conditions. By this I mean that in some jurisdictions, electricity generation is completely privatised but in others there are publicly owned retailers or producers which are corporatised or otherwise independent from direct state control. Secondly, they tend to have entry requirements, a deadline or sanctions that anyone hoping to bid must fulfill, to try to reduce the likelihood of unrealistic bids leading to non-delivery. Thirdly, they have something offered by the state. This varies greatly to a fixed price for all generation, a premium paid on top of other generation income, access to land or grid connection or some other benefit deemed desirable for the private capital the state aims to participate.

Over the period of this research project, renewable energy continues to be debated in politics, media, academia, and wider communities both in Finland and in Australia, and globally. Local conflicts over the utility-scale installations have rather intensified than subdued as installations become denser especially near good grid locations (as Polanyi 2001 [1944] could have forecasted) and net zero targets and energy are debated while emissions keep creeping up (EIA 2024). Concurrently, the 2024 summer was the hottest summer in record (NASA 2024). As I aim to show in this thesis, the mindset of competition and markets as superior mechanisms is widely shared and hence reverse will continue to look like a very appealing policy option for governments grabbling to deal with the climate crisis and action fast enough. Auctions tend to favour large projects, large developers (e.g. Grashof 2019, Grashof et al. 2020, Matthäus 2020), and cheapness – while the private investment-based model requires profit. This highlights the importance of being

aware of the intended and unintended impacts of the path-dependent design choices stemming from local context (Brenner et al. 2010) and tendering as a model itself.

In the following chapters, Chapter 2 presents the research methodology and approach. Chapter 3 discusses the theoretical frame for the study and presents the five aspects that are carried through the thesis. Chapter 4 is a history and background chapter to introduce the all-important context of the cases before the case analysis. The context is crucially important to the goals set in energy policy and hence the auction design needs to try to address legitimacy issues and frame the scheme differently in the two different cases. Chapter 5 presents the reverse auction, VRET1, in State of Victoria and Chapter 6 the first (and so far only) renewable energy reverse auction round Finland. The final chapter, Chapter 7, a comparison of the case studies is presented and the implications of reverse auction, which emphasis cheapness in a profit seeking environment, as the chosen policy tool is discussed.

Chapter 2. Methodology

"Especially with climate change related research [ethnography], we are always in the field." – J. Marshall (2020).

This research is a critical policy ethnography, which as a method is discussed in this Chapter. The research uses aspects of 'multi-sited' or 'comparative' ethnography as an analytical approach. In this chapter I describe the methodological framework, why I have chosen this method, and the key methodological work that has impacted the data collection and analysis approach. The comparative aspect is crucial, as some of the key findings of this research rely on the similarities and differences of the two sites studied. Finland and State of Victoria differ on socio-political models (Anglosphere vs socio-democratic) and scales of how energy policy is drafted (national vs subnational state responsibility), available fossil fuel resources, and legacy energy systems, yet use the same model, share the belief in market superiority and rely on the same private capital-led model for decarbonisation. These contradictions and how the context has moulded the precise use of the policy tool illustrate how the different forms of capitalism and neoliberalism can manifest. Importantly, while the scale of the cases is different, one nationwide and one state level, the key reason for the comparison scale is the fact that the legislated responsibility of organising electricity as a state service is in Finland the nation-state and in Australia each State, not the Federal government. In other words, at the time of this research, the most powerful and impactful actors in energy policy (and hence most interesting) were the nation state in Finland and the state government in the State of Victoria. The multi-sited approach is also led by the extended networks which impact how (energy) policy is created and experienced in globalised context, as discussed in further chapters. In that way, the two cases also represent a wider global phenomenon of different tender schemes becoming more common. These two cases were selected as the bids were finalised and winners selected very close together (timewise, in 2018/2019) meaning comparable time from industry (i.e. the global supply chain challenges and opportunities would have been very similar) and policy perspective, but still provided different backgrounds and most importantly, different selection criteria, to make the comparison interesting. Multi-sited critical policy ethnography as a research method enables following the learnings, processes and impacts of energy policy spanning across multiple socio-political scales (see Ryder 2018) instead of trying to understand the findings and dynamics within a single geographical locality.

I have a background in working with renewable energy, prior and during this research project, and I am involved in renewable energy advocacy. I have worked as a project developer for onshore and offshore wind in Finland and in Australia, in environmental impact assessment and for a year in an Australian policy team designing a reverse auction policy. This has given me a lot of experience (autoethnography) of how utility-scale renewable energy is developed, justified (in the industry), how (reverse auction) policy is created and how the expectation of profit impacts

industry, communities and policy. I have also found it difficult at times to balance between detaching myself or submerging myself completely into the "field". Rosewarne et al. (2013) analyse this common dilemma in their book about climate activism, where all the authors were also involved in the movements themselves. They ask how far can a researcher distance his/herself *"from the field when the researcher is already embedded in the field of study"* (Rosewarne et al. 2013, p. 19). Detached study of a social movement can falsely position "*the movement as a discrete object*", and dis-embed from "*the ethical relationship*" of "*those studied*". On the other hand, involvement "*can compromise analytic rigor and undermine effective analysis*". They end up arguing that in "*critically engaged ethnography*" a sharp division "*between these poles*" leads to analytically, ethically and practically unsatisfactory results, but can provide a method, in between these poles, to grasp the research problem and their role as researcher in the movement (Rosewarne et al. 2013, p. 19-20).

While expectation of needing to be an outsider of the culture being studied is certainly obsolete in current ethnographic research (e.g. Harrison 2008), being personally part of the researched community is inherently difficult because it can be difficult for a direct participant to see the fundamental 'every day' social structures and 'truths' (Gobo and Molle 2016). I found that from a practical methodological point of view, this was one of the benefits of comparison for me as a researcher: it was much easier to pick up on the taken-for-granted assumptions, when they were different in the other context. Elizabeth St. Pierre (2018, p. 10) quotes Foucault in her work about ontology in post qualitive inquiry: "*each of my works is a part of my own biography*" (Foucault 1982/1988, p. 11). She points out that no one enters the field as a blank canvas, so starting where you are is a good place to begin. If I think about that notion, this research truly feels like a part of my story, one step on the way, and starts with the understanding gained as working in the industry but aiming to expand that view. As a researcher sharing the field, it might not be possible to rid myself of my biases, but I have strived to be at least more aware of them. To reduce the impact of my situational biases having worked in the renewable energy industry myself, I have paid a lot of attention to being critical and reflective on each step of the data collection: before interviews, making sure that the wider themes discussed were similar regardless of the position of the interviewee, writing the thematic summaries with the same style and selecting quotes for all participants for the final text. I also strived to search for additional evidence where possible to understand all sides of the possible conflict or issue. Of course, published government guidelines or community consulting meeting minutes are also likely to carry biases, which I tried to address to my best ability by emphasising the experience of local residents or other participants. For example, the wind farms later discussed around Mortlake might have all necessary permits in force, but that does not mean that there could be no grounds for worries expressed in the interviews around local ecology.

Critical policy ethnography and comparative ethnography

Energy research is still mainly technical, quantitative and engineering dominated (Sovacool 2014), but our relationships to energy and the act of using energy are deeply human. Contributing towards understanding the culture and community of (renewable) energy policy makers and the people who live with the policies, the language used and imagined energy futures are a key interests of this study. I have chosen ethnography as a method because I want to capture deep immersive insights by questioning the 'normal', and to utilise the approach of embracing the context through many data sources (interviews, document analysis, observations) (Gobo 2008).

I was not in the room when the Finnish or Victorian policy of reverse auction, was planned and discussed, like e.g. Feldman (2011) was in his policy ethnography on global migration politics. Instead, I am using as data what this process has produced and am talking to people who were in the rooms where policies and practises were formed. I have also included the voices of those who were not included but are affected by the policymaking process, such as local residents. I am also using my insights and experience of working for a year in a policy team designing a reverse auction in another state in Australia. Two different contexts and policy designs on two different continents with 13 projects and project localities provide a rich set of data, and many analytical possibilities. Mosse (2011, p. 60-61) separates five different ways of doing policy ethnography ranging from "*expert knowledge in relation to institutional power*" and professionalisation to the policy ideas themselves and their legitimacy. My interest is to investigate how, why and with what consequences reverse auctions are implemented as a part of wider global trends shifting renewable energy, more and more, into a competitive model. The standpoint was especially impacted by Stacia Ryder's (2018) critical policy ethnography on power in energy and climate change decision-making, which highlights the role and responsibilities of different actors in (re)producing the energy system status quo and discussing climate change and energy research, the history and background as well as current and possible future emphasises. Another influential ethnography tracing both the policy space and local experiences was done by Goodman et al. (forthcoming) looking at subnational states of high renewable energy uptake. Combining the insights arising from the on the ground locations of energy policy, where new renewable energy is built, and state energy policy frameworks and aims, it aimed to reveal dynamics and contestation of legitimacy of energy transition (Goodman et al. forthcoming).

As Katz (2004, p. 280) writes, "*to characterize a piece of ethnographic research as apolitical is a political statement*". Dubois (2014, p. 4) claims that the strength and usefulness of critical policy ethnography is that it can bring a "critical" contribution to policy studies by challenging the taken-for-grantedness prevalent in, and (re)produced by, public policies. This, I believe, is very true in our energy systems.

Energy is based on a network of actors in addition to physical network of electrons. Despite the actual real-life local project locations, any single location does not explain the policies and practices created. As Feldman (2011, p. 33) notes, the challenge of this kind ethnography is "*not simply the logistical one of connecting ethnographic dots separated in space-time that compose a regime of population regulation; rather, it is to uncover how discourses give an emerging regime its shape and direction*". Policy ethnography allows to follow this policymaking process across multiple socio-political scales and locations. Importantly, the renewable energy installations are physically in a specific place, which cannot and should not be ignored. Why they are in a specific place, is a complex equation including physical attributes of the energy system, land with sun or wind, but also social, political and cultural factors. Yet, how do you study a set of social relations not only contextualised or compared in a single locality – or a locality in a spatially definable meaning – at all? Instead of more "traditional" forms of ethnography and focusing on the local communities and their struggles and debates, critical policy ethnography allows research to follow the process of policymaking and its impacts on the ground, the connection between local and the global (see Falzon 2016, p. 1–2), and through networks and learnings. The extended networks feature, in many ways, in how the energy governance is administered and experienced by people – whether in policy or by local residents trying to understand the technologies proposed in their areas.

This study has a prominent *comparative* element. Two sites, Finland and State of Victoria, were selected to understand the phenomenon and the impacts of the uptake of renewable energy reverse auctions better. Simmons and Smith (2019, p. 355) argue that *comparative ethnographies* can reveal new research questions and agendas by comparing not just the outcomes but the method, allowing contradictions to inform the understanding of political phenomena, and embracing the context instead of attempting to control it away. "*Comparative ethnography adds to both the contributions that ethnographers can make to social science and the insights that comparison can bring to scholarly*" understandings "*of the political world*" (Simmons & Smith 2019, p. 335). "*Ethnography informed by comparative methods can unsettle the categories through which politics are seen in the first place and help to generate new understandings of the political*" itself (Simmons & Smith p. 355). In particular, Simmons and Smith (2019, p. 342, 344–349) list seven potential benefits of comparative ethnography. It can:

1) "*allow ethnographers to show how findings translate*" from one research context to another, and thus open up opportunities for the theoretical aspects to have global relevance;
2) help the researcher to question existing conceptual categories and dynamics which might have been "*missed by focusing solely on*" the one field site or practice within a field site;
3) increase the understanding of "*the representativeness*" of the case;
4) "*allow ethnographers to better identify the phenomena*" being studied;
5) "*highlight contrasts in practices"* within and between field sites;

6) provide possibilities "*for collaboration among scholars that could lead to theoretical innovations*", and;
7) "*make ethnographic studies more accessible to scholars who do not practice the method".*

Simmons and Smith (2019) by no means argue that using more than one site is suitable for every situation or that it always has value. In this study, the comparative lens brings analytical value especially because it helped me as a researcher to answer the question "*What type of political phenomena am I observing anyway?"* (see Simmons and Smith 2019, p. 346). The two different contexts very much helped to make visible how the existing conceptual assumptions and 'taken for granted' truths about energy markets, transmission and role of the state are context specific. The different contexts and designs helped to increase the understanding of the representativeness of each case and reveal the aspects that have global relevance – and which do not. For example, belief in the markets and competition was shared and repeated both in Finnish and Victorian interviews, in the policy papers quoting consultant advice, other perceived peers and (in the Finnish case), European Union regulation and principles, and even in how the energy futures could be imagined. The comparison hence gives strength to the evidence that the neoliberal mindset of privatisation and corporate superiority is indeed embedded within the energy transition and continues to be strengthened by the uptake of the auction model globally. On the other hand, the transmission issues – the access to the physical lines through which to sell electrons to consumers in the existing utility-scale system – had clear indications of 'carbon lock-in' (Unruh 2000), but how these issues manifest are very different. In the Finnish case no projects are built in weak areas of the grid (where electrons can't be transferred to consumers) as only connections that can be guaranteed by the grid operator are connected, whereas in the Victorian (and in Australia in general) case access to the grid can change radically during operation offering initial access but higher risk for revenue certainty. The transmission related risks for revenue were in other words context specific, and the impacts need to be understood within that context.

Data collection

This research project started with an investigation of insights and concepts in the literature around the social legitimacy of renewable energy and energy policy, but evolved to include also notions of commodification, neoliberalism and policy transfer. The method, critical policy ethnography, was the starting point of this research project and it impacted the literature review and how I engaged with the aspects discussed in the next chapter focusing on conceptual framework. I have aimed to look beyond the well documented (especially in wind power) local legitimacy battles and investigate how this is impacted by the wider trends, by how policymakers, residents and developers see the world around them. Energy research and energy systems are 'messy' places, full of contradicting views and stories, and ethnography as an overarching methodology of

thinking and doing instead of just a technique to be implemented (Gobo 2018) can embrace that. Accepting the 'messiness' helped me, paradoxically, to see some order in the chaos and form the five aspects discussed in this thesis.

The data from the field, the interviews and participant observations, have been mainly collected while spending short periods in the renewable energy installation localities, industry conferences and relevant state capitals (where the policymakers and developers have offices and some statewide rallies and renewable energy conferences have taken place). Field research carried on over about 30 months, from March 2019 to September 2021. Besides this I have collected policy texts, legislation texts, submissions, asked for more documents which were not online via phone or email; visited on-going trials, public hearings, industry events and networking opportunities (excellent places for participant observation) and collected news articles and social media (mainly Facebook) posts relating to the projects which won in the Finnish and Victorian reverse auctions. The purpose of the field visits was to observe and discuss events with the people living, working and engaging with energy policies. Many of the interviewees brought up social media posts or news articles as sources of their information when they talked about the 'community sentiments' or brought up an example what had happened with other renewable energy developments. I then followed some of these groups and websites and took notes whenever there was a relevant or interesting post or article. The aim has been to capture as holistic view as possible of the processes and dynamics related to tendering renewable energy and the legitimacy impacts actual project sites, talking to policy makers and people working for and in the companies that are a part in building renewable energy projects over the past year.

While people do not always act the same way as they say, interviews can be a valuable source of data since how people talk about their views and experiences can still be revealing (McCoy 2006, Tummons 2017). Interviews have been semi-structured because I have wanted to discuss specific themes, but the aim was to allow the participants raise what is important to them as much as possible. In total I conducted 31 interviews, of which 11 were in Finland and 20 in Australia. The roles of participants and interview locations are below in Table 1. 30 of the interviews were recorded, and one asked to be not recorded. Two thirds of the interviewees were men compared to one third of women. This correlates roughly with the observed demographic imbalance of women proportion in renewable energy workforce (IRENA 2019b) and how energy is still perceived as predominantly technological and male-dominated space despite technofeminist calls to disrupt this potential trajectory of repeating the "male-coded" fossil fuel gendered roles (e.g. West 2022, p. 50–52). I did not ask the interviewees to tell me their age, but I estimated the ages varied between mid-twenties to early seventies. None of the interviewees identified as Indigenous in the interviews. People interviewed are residents living near current or potential solar of wind farms, policy makers, renewable energy company employees and council employees. The interviews had one to six participants: for example, the policymakers were all interviewed separately, as they were either the leader of the team, sitting in different locations or otherwise wished to speak to me in an

individual setting. Some of the residents and project developers I reached out to chose to invite other people to the interview situation, as they felt that they would have meaningful things to say or more knowledge on a certain aspect. For example, in one project, the project manager had invited other team members who were in charge of tender application documents, technical solutions or liaising with the community. Another example was an interview with a local opponent who had invited a group of fellow opponents for me to meet. I have labeled here the discussion with a group of opponents as an 'interview' instead of 'focus group' for clarity and because the term 'interview' was used with the participants. When I entered the interviewing space, to which I had been invited to by the person I approached originally, I did not know that so many other people had been invited and hence I had not prepared a bespoke 'focus group' design. Undoubtedly, the group discussion had aspects of focus group, such as in essence, it ended up being a researcher facilitated discussion on topics the group shared experiences on and the participants were influenced by each other (e.g. Casey & Krueger 1995). However, the focus of the analysis of this discussion was not so much on group dynamics but content of the situation, the same discussion guide as for other interviews was used, and no specific focus group tools such as role play (Thomas et al. 2018) or deliberately initiated debate (see Krueger 2014) (although some debate did occur) were used.

Table 1. Interviews, the roles and backgrounds of interviewees (note: not in a chronological order).

Interview location	**Interviewee(s) role**
Interview 1 (Gannawarra, Victoria)	Town planner
Interview 2 (Mortlake, Victoria)	Landowner in a renewable energy proposal Local resident in Mortlake surroundings
Interview 3 (Ballarat, Victoria)	Vocational training education provider
Interview 4 (Mortlake,Victoria)	Town planner
Interview 5 (Bannockburn, Victoria)	Council economic development coordinator Town planner Town planner (infrastructure & roads representative)
Interview 6 (Melbourne, Victoria)	Project developer (project manager) Project developer (engineering) Project developer (financing)
Interview 7 (Melbourne, Victoria)	Policymaker (State)
Interview 8 (Canberra)	Policymaker (State and Federal)
Interview 9 (Mortlake, Victoria)	Local resident
Interview 10 (Mortlake, Victoria)	Local resident x 6 (opponents of the wind farms proposed in the area, some were members of the Consulting Committees of the individual projects)
Interview 11 (Mortlake, Victoria)	Project developer (local liaison)
Interview 12 (Ballarat, Victoria)	Policymaker (State)
Interview 13 (Canberra)	Policymaker (Federal)
Interview 14 (Canberra)	Renewable energy advocate
Interview 15 (Canberra)	Policymaker (State)

Interview 16 (Canberra)	Project developer (community engagement) Project developer (local liaison)
Interview 17 (Melbourne, Victoria)	Project developer (project manager) Project developer (environmental permitting)
Interview 18 (Sydney)	Policymaker (Federal)
Interview 19 (Cohuna, Victoria)	Local resident (business owner)
Interview 20 (Golden Plains, Victoria)	Project developer (not recorded)
Interview 21 (Helsinki, Finland)	Policymaker (National[1])
Interview 22 (Isojoki, Finland)	Town planner
Interview 23 (Espoo, Finland)	Project developer
Interview 24 (Pyhäjoki, Finland)	Local resident (land owner of an operational wind farm and a farmer)
Interview 25 (Oulu, Finland)	Project developer (project manager)
Interview 26 (Oulu, Finland)	State environmental authority x 2
Interview 27 (Pyhäjoki, Finland)	Town planner (environmental permitting)
Interview 28 (Helsinki, Finland)	Project developer (country director) Project developer (project manager)
Interview 29 (Jyväskylä, Finland)	Renewable energy advocate
Interview 30 (Espoo, Finland)	Project developer (country director)
Interview 31 (Helsinki, Finland)	Policymaker (National)

Some of the questions were modified depending to whom I talked with, but I have aimed to include questions on the actual project(s) the participant is involved with, policy issue definitions, the role of the state, views and hopes for the future and the auction process itself in every interview (interview guide can be found in Appendix 1). Some of the phrasing of interview questions and prompting have been inspired by other energy related multi-sited critical policy ethnographies, such as by Stacia Ryder (2018). Sometimes the interviewee was short of time, in which case we only had time to discuss part of the themes, sometimes the conversation would have gone, and went on, longer than the recordings, which vary between 35 minutes to 1 hour and 45 minutes. Especially in Finland, where I have rapport with most of the policymakers, developers and local government employees, there were long informal discussion over lunch or other social setting besides the recorded interview. Of these I either asked the interviewees to repeat some of the key points for the recording or made notes after the interview.

Besides the obvious data used in this research – interviews, field notes written every evening while travelling to the field sites and policy texts – part of my data collection logbook consists of unplanned moments and encounters described best as '*accidental ethnography'*. The logbook ended up having notes from 193 separate events or days including notes from fieldwork, background notes, renewable energy conferences, meetings, trainings or networking events

[1] Note: Energy policy is negotiated and legislated on National level in Finland. State energy policy is limited to guiding large-scale project locations via an instrument called 'Regional Land Use Plan' ("Maakuntakaava")

attended or just people I have randomly met and talked with. Only about 70 of these were planned interactions: agreed interviews, meetings at energy conferences or other organised events (such as public hearings, local events or rallies) where I did participant observation. Lee Ann (Fujii 2015) talks about using unplanned moments to better understand the wider social and political context in which the research - and the researcher - is embedded, and gain vital local knowledge. She tells five different stories of "accidental ethnography" and how in paying more systematic attention to those moments the researcher might become aware of their not-conscious expectations, notice different ways people see the researcher and detect similarities across different sites. These unplanned moments can uncover "*patterns, logics and practices*" which "*other, more procedure-driven methods*", like interviews where the researcher has often decided beforehand "*what questions she will ask and what prompts*" to use, cannot (Fujii 2015, p. 526–527). Using 'informal conversations' in data collections has been encouraged, especially in ethnographic research, as producing more 'naturalistic data' (see e.g. Swain & King 2022). Hence, I embraced the method of writing down notes and impressions of situations and conversations during the whole research project, which have been invaluable in the data analysis phase.

Swain and King (2022) warn about dangers of relying on memory of non-recorded notes while using informal conversations. Hence, all longer quotes used in this thesis are from recorded interviews, publicly recorded events or from written documents. There are, however, some expressions or single words from informal conversation notes which are in "*quotes*" inside the text, because they were repeated often enough or by several people that I felt confident in the amount of repetition. For example, in chapter 5, when talking about local content, none of the developers indicated (in recorded interviews or in any official documents) any difficulties in meeting the state employment and equipment acquisition goals. However, in informal discussions the difficulties were described by several people, in many contexts, and over several years. Hence, there was enough evidence to suggest that local content requirements were indeed hard to achieve, and that creative calculation tactics were used to meet the participation goals and non-trivial additional costs were incurred.

Data analysis

Instead of coding the interview transcripts, I used thematic summary texts. Problems of coding have been recognised (e.g. St. Pierre & Jackson 2014), and after reading and re-reading the interviews – and a few non-analytically-helpful trials of coding of some of the key interviews – I ended up writing short summaries for each interview. The short summaries were constructed around the themes I had predetermined to include in each interview, such as experiences of the relevant project or technology for the interviewee, views on key local context, climate change, current issues in energy policy and imagined future. I found these summaries more helpful to start forming the analysis and detecting similarities and differences – and what they might mean. Coding my data tended to lead to discovery of themes and mentions found in social acceptability

literature, such as place or procedural justice and fairness (e.g. Gross 2007, Wolsink 2007, Coleby, Miller et al. 2009) of the *projects themselves* but hide other analytical elements, such as taking the superiority of competition for granted.

In this research, I wanted to be informed of those concepts already recognised in the social acceptability literature, but to focus on the legitimacy of the reverse auction and the emergence of market-led state and corporate PPAs. For this purpose I have adopted an approach that allows me to focus more on the silences, juxtapositions and the cues of theoretical concepts I am interested in (such as policy transfer), than on trying to code short bits of data with what, how many times something has been mentioned, and by whom (e.g. Jackson & Mazzei 2009, St. Pierre & Jackson 2014). The critique presented by Jackson and Mazzei (2009) of the problems in treating interview data as solely the voice of the participants, when in fact the researcher shapes the voice with the questions asked and settings used, has also informed me further to remember to pay attention to the unplanned and uninvited responses. I have written down notes of dozens of informal conversations and responses as a part of my "data logbook" to systematically try to include more "accidental ethnography" (see Fujii 2015) as described above. Thinking back to the research questions, both the 'accidental ethnography' and more 'formal' recorded interviews and policy texts have helped to piece together the context and outcomes of auctions as a neoliberal tool.

Besides interviews, field trips, observations and experience gained working in the field, both auctions had a trail of policy documents which I used to investigate the publicly used justifications for the policy. These key documents were either directly published for the potential bidders, policymakers or wider society. Rest of the documents were either directly sent to me by an interviewee as possible interest, I found them by referral from other documents or they were directly related to the projects which won in the reverse auctions. Key documents analysed included:

Finland (documents in Finnish):

- Proposal for Parliament for FiT in 2010 (2010/105).
- EU legislation and guidelines around 'state aid' from 2014
- Working group report for the Ministry of Employment, Economic development and Energy of different support system options after FiT
- Bill (175/2017) proposing the auction, included a background memo explaining the legal framework
- The materials published when winners were announced (including number of bids, price of winning bids, estimates of state financial liability)

State of Victoria (documents in English):

- Legislated Renewable Energy Targets, and related documents (e.g. the local content related legislation and guidelines)

- The call for submissions documentation and submissions report before auction policy announcement
- EY economic modelling on impacts of an auction scheme
- The request for bids documentation (not available publicly) and subsequent announcement for winners including project descriptions

For both cases (Finnish, English or Swedish depending on the document)

- The environmental impact assessment documentation for the winning projects
- Any publicly available news articles, opinion pieces, corporate materials and social media posts relating to the winning projects

Language in the Finnish case was predominantly Finnish and, in some cases (mainly some individual submissions made to policy documents and to environmental impact assessments), Swedish. Finnish and Swedish are the official languages in Finland, and besides EU legislation and some strategic or general information which can be found in English, it is uncommon for any official documents to be translated in English. State of Victoria and Australian federal energy policy documents are of course in English. I as a researcher can read and understand all these three languages, and hence I have only translated the final quotes and policy references in English for the purposes of this publication. For analytical purposes I also produced the 'synoptic units' described in the next section in English to make the similarities and differences more obvious for myself. Especially by transcribing the Finnish interviews in Finnish I could keep the nuances of meanings and contexts as authentic as possible as long as possible. I have tried to keep the meaning of the quotes translated for this thesis as close to the original as possible, and tried to find a close match for the figures of speech used by the interviewees, but unavoidably some nuance might be lost in the translation process.

Synoptic units

As already stated, the interviews have certain themes, but I found that coding did not capture the nuances of the discourses. Limitations of coding are well established by scholars such as St. Pierre and Jackson (2014, p. 716), who criticise coding as it "*reduces the data to logical positivism where language is brute and value-free*". So instead of coding, I started analysing the interview data by constructing 'synoptic units', as proposed by Hopwood (2018). Synoptic units are extractive summaries constructed from interesting bits of data – not selected bits of data, but written accounts of themes of interest (Hopwood 2018). Hopwood (2018, p. 2) describes this approach to analysis not as a technique, as it cannot be mechanically applied the same way from one study to another, but rather a logic implying the progressive flow of the data analysis. I have systematically gone through each interview and written down a short summary of each of the theme I was interested in. The themes were informed by the literature but also what I felt was emerging from the interviews, my past experiences, informal encounters and chats in the field and policy documents.

I read each interview with one of the themes in mind, and wrote my summary, or 'synoptic unit'. Then I reread the interview with the next theme in mind, and then the next. The themes modified slightly during analysis but the main analytical synoptic units ended up as:

1. context of the interview (why this person is interesting for the research, e.g position, history and relationship to renewable energy, any mentions of learning from perceived peers);
2. key issues of energy policy (including key issues for a specific development for some of the community members) and what they thought should be done about them;
3. auction and competition as a concept, state vs private vs community ownership considerations;
4. climate change and how it will or is impacting their lives and work;
5. how they see the (energy) future and how they could imagine it.

I aimed the summaries to be about one paragraph long for each theme . While forming the 'synoptic units' I noted any analytical insights, questions, connections between interviews or things to follow up in a separate "data analysis logbook". Especially interesting, descriptive or powerful quotes were marked into a separate sheet for possible future usage. Besides the synoptic units created from each interview for each theme, I wrote short summaries and created graphs and mind maps of the key documents analysed. One example of these are the key attributes of the auction design for each case included in this thesis.

As Hopwood (2018) describes, whether using synoptic units or coding or any other method analysing the raw data, the key is to find a tool that reflects the data and the insights. For me, I found helpful how these synoptic units brought "together relevant information" which would have otherwise "been torn apart in coding" (Hopwood 2018, p. 4). For example, the 'units' have made it easier to spot how the views about the role of governance in energy, described ideal future and experiences about certain projects or procedures all inform each other. After transcribing all the interviews (each interview was about 10 pages long, some more) and collating the field notes and the key documents, I also found that I was 'drowning in data' (see also Hopwood 2018). The synoptic units made it much easier to explore the connections, silences and new meanings within the data in a more condensed format. For example, I found seeing the connections between cases and interviews of what was *not* said, such as any criticism of the energy market design relying on assumed open and 'perfect' competition, was made easier by utilising the short summaries of the massive amount of data.

Ethical considerations

There should be minimal risk to research participants, since this study does not identify the interviewees or anyone else, I have talked with or observed. The projects which are part of the reverse auction can be looked up and the amount of people closely working, living or otherwise

attached to the projects is limited. Hence, it is possible, that people who already know each other might recognise each other. To minimise this, mannerisms have been removed from the direct quotes, and titles have been generalised as ‘policymaker’, ‘project developer’ or such. The sites investigated are subject to at least some degree of local controversy, and so it is possible that some participants might find reported comments potentially embarrassing either to themselves or the organisations they are associated with. Hence, I have strived as much as possible to make sure that views presented are balanced and always include the context in which they are being expressed. Given my own background, the work also includes ‘insider’ views via observations I would have not been able to collect without working in the industry as a developer and as a policymaker. While I have used notes from ‘informal conversations’ to gain and deepen the insights that would have been hard to come by just in the official documents, I have always made sure that any ‘observed conversations’ have not been collected surreptitiously by listening into conversations without people’s knowledge or awareness (more on ethical considerations around this topic in Swain & King 2022), but rather by declaring my interest in the topic and prompting the conversation to continue.

Chapter 3. Conceptual framework

Reverse auctions are happening around the world in renewable energy (see e.g. IRENA 2018). In 2016, State of Victoria announced state renewable energy goals and a few months later – before the targets were legislated – started to prepare the reverse auction, called "VRET1", as a tool to enable these goals (State of Victoria 2016). Simultaneously, on the other side of the world, the Finnish government embarked to change the previous Feed-in-Tariff based renewable energy legislation to tender based. Why is this? In this chapter I describe some of the relevant literature needed to conceptualise this research.

The trend of tendering large-scale renewable energy to meet goals is conceptualised in this chapter using five thematic aspects. The aspects are, as many things in large-scale renewable energy under a capitalist model somewhat in tension with each other, reflecting the contested and dynamic nature of the energy commodification process, along with its many internal contradictions and conflicts. **The aspects are organised from the higher level 'ideological' background to more concrete tools used by the state to enable the commodification process for large-scale and private capital led renewable energy installations, and at the end looking at the impacts of this process**.

The aspects could also be described as sequential, starting from dominant paradigms and ending up with on-the-ground impacts. Renewable energy development can only be recounted as a process, whether described as a technology (e.g. Da Rosa & Ordonez 2021), a decision-making process (Rigo et al. 2020) or as fundamentally a political process (e.g. Burke & Stephens 2018). The five aspects used to shape the analysis are designed to capture the process of developing renewable energy in these two contexts over time. They are dynamic and overlapping, but for the sake of analysis, the aspects are each presented separately, as one step leading to the next. Each aspect includes the related literature, unpacking each of these aspects as its own theme but also to present the process in steps needed to position renewable energy in the current (energy) system. I have found Polanyian concepts the most useful approach to help with conceptualising and later analysing the data. Renewable energy is one of the key tools to decarbonise and reduce emissions, a 'fix' to a climate crisis, but it is also based on appropriating nature's 'free gifts' under a corporate utility model, it impacts local ecology, and its raw materials streams come from extractivist capitalist regime, and the large, top-down installations can disrupt rural social life. I find the Polanyian approach to understanding the process of imposing the market on society, both ideologically and in practice, and the constant double movement resulting from this, conceptually and analytically novel in the renewable energy literature.

Overwhelmingly, in the context of renewable energy as climate change mitigation, the focus is on large-scale solar and wind farms built by specialised developers or existing utilities to sell low carbon electrons within the current network. Of a total of *"$282.2 billion of global renewable energy investment in 2019, 81.5% was for utility-scale onshore and offshore wind, solar photovoltaics (PV), and to a lesser extent, concentrated solar power and small-scale hydro*" (UNEP/BNEF 2020, p. 22). As Baker (2022, p. 1739) notes, *"a significant proportion of this generation has been procured under renewable energy auctions, developed by and paid for by a complex interaction of public and private sources of finance and investment under structures of project financ*e". Hence, the first aspect focuses on dominant ideology, neoliberalism, in framing the 'market failure' of climate change, and why utility-scale renewables are seen as the solution. This also signposts why reverse auctions seem such a logical and appealing tool for policy makers and states – including the examples of Finland and State of Victoria in Australia studied in this research.

If large-scale renewable energy is what is wanted, what happens next? How is renewable energy – which could be done in many scales or technologies (see e.g. Burke & Stephens 2018) – enabled and fitted to the current grid? The second and third aspect discuss the role of the state which is crucial for utility scale renewable energy: the state needs to carefully construct renewable energy to be amenable to capitalisation and commodification. Renewable energy needs to be enabled to appropriate the 'free gifts' of the sun and wind in a commodification process, orchestrated by the state, and patterned across large spatial scales.

How policymakers develop the auctions over time, learning and drawing from other jurisdictions, is an important part of the process. Adding to this policy transfer and transnational learning, was the importance of shared empirical data. When I was analysing the policy documents and especially when I talked to the policymakers in both Finland and Australia (State and Federal), it was obvious early-on that experiences in other contexts were gathered to help in the policy creation. Hence, in the fourth aspect I discuss shortly how reverse auctions are an example of policy transfer, developed through a policy learning process, and how that reinforces the neoliberal model by using the template from government tendering of essential services. In this case the model is applied to renewable energy via reverse auctions – as recommended by international organisations such as IRENA, and a range of management consultants providing analysis to governments. At the moment, this reverse auction 'template' is more and more common, as a framework that keeps evolving over time as it is designed and detailed according to different contexts, superseding the previously popular forms of state support for the sector through fixed Feed-in-Tariffs or green certificate schemes.

Lastly, I conceptualise some of the key impacts of this process: local community responses which often highlight the conflicting views around protecting local ecology and (lack of) transparency in the energy field, against the promise of all-knowing markets. The local legitimacy battles are

perhaps the most visible part of renewable energy policy since, in the end, renewable energy needs a physical installation.

Besides terms such as commodification and (fictious) commodities this chapter aims to conceptualise the role of the state in the energy field. By state I mean not just a legal jurisdiction but a form of social, political and spatial organisation, which has legacy and longevity more than just a government (which changes every election cycle). The state has agency, legislative and implementation power over essential aspects of energy. However, as Goodman et al. (forthcoming) point out, the state itself is not a unity: it is fractured and its participants engage in struggles over objectives, and over those who should be listened to, and should drive policy.

Aspect 1: Neoliberalism and the belief in competition

Power of ideology

"The 'common sense' of a period… is always an aspect of the 'good sense' of the ruling classes: a new 'common sense' must therefore also involve a kind of 'philosophical reformation', which seeks to replace the inherited and traditionally accepted conceptions of the world with new ones that can explain the new realities that are emerging." – Gramsci (2000, p. 325)

Gramsci (2000) suggests that the dominant ideology of a particular era is closely tied to the "common sense" beliefs and values of society. He argues that ideology plays a profound role in shaping not only our individual beliefs and values, but also the broader cultural and societal norms that shape our lives. The power of the dominant ideology lies not only in its ability to repress dissenting voices, but also in its ability to shape the way people think about the world and their place within it. Gramsci argues that this power is achieved through hegemony, which is the ability of the ruling class to impose its worldview on the rest of society in a way that makes it seem natural and inevitable.

David Harvey (2007), amongst others, has argued that neoliberalism has become the dominant political-economic ideology. McCarthy and Prudham (2004) write that neoliberalism is not just a set of economic policies, but a broader ideology that has become a dominant cultural and political force around the world. They suggest that neoliberalism has played a key role in restructuring political-economic relations and social, cultural, and ecological practices, all in service of capital accumulation. This implies that neoliberalism is a powerful force that shapes our lives in profound ways. In later chapters of this thesis I argue that some of these beliefs and values that seem natural and inevitable, or “common sense”, influence significantly also how energy policy is created and justified. In the coming chapters I will show that reverse auctions as a policy tool manifest the shared belief among policymakers, developers and often the local residents as well, that competition and market knowledge, and them alone, can ensure the best (which, problematically,

is often used as a synonym for cheapest) outcomes. In this thesis I turn often to Karl Polanyi's work in understanding how this economy and market-ruled hegemony is entwined with and fuels the climate crisis and defines social responses in terms of renewable energy development. As Karl Polanyi (2001 [1944]) may argue, the goal of self-regulating markets needing minimum intervention and delivering the best outcomes for everyone can never be achieved, but that does not mean that people would not *believe* so. Which is the power of ideology.

Neoliberalism – definition and origin

One widely quoted definition of neoliberalism comes from Harvey (2007). He defines neoliberalism as a "*theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade"* (Harvey 2007, p. 2). Huber (2012, p. 299) builds on Harvey's definition and describes neoliberalism "*as a coherent set of practices, policies and ideas including free market ideology, deregulation*", and the cutback of state provided social services. In the neoliberal ideology, the role of the state is to create and protect the institutional framework for markets (e.g. Brenner et al. 2010), and if needed, create a market, but beyond this the state should not intervene or directly provide services, as it *"cannot possibly have enough information to second-guess market signals (prices)"* (Harvey 2007, p. 2) . This position[2] is of course completely theoretical, since providing evidence of this 'truth' has not and could never be proven. However, it is a position widely accepted and unquestioned by economists, policymakers and politicians alike, and often repeated as a matter of a fact or 'common sense'. The idea originates from Hayek's argument from the 1940s that markets deliver 'spontaneous order', as they 'collect information' that only thousands of individuals can have, and hence the market calculates and distributes value better than any 'organisation' (i.e. central planning), since an organisation could never have all the relevant information fast enough (e.g Khalil 1997). In other words, central planning would always get things wrong compared to the market. Whether that is still relevant in the current world with what would have seemed to Hayek as unlimited computing power, is untested. However, Austrian and Chicago schools embraced the liberal idea, and it has endured to the current day neoliberalism ideology.

The rise of popularity of neoliberal thinking itself is generally traced back to 1970s. More specifically, some scholars pinpoint the popularity, at least in America, to the 1973 oil crisis which ended the extraordinary after War prosperity rich democracies of the West have that taken for granted, and brought high inflation, unemployment and recession into the everyday life (Prasad 2006). For example, Huber (2013, p. 100) explains that during this time the "common sense"

[2] Also called 'steering, not rowing', that is, to make policy but utilise other actors actually to deliver public services (e.g. Peters 2011), and is especially common for organisations such as World Bank or International Monetary Fund.

around the concept of *"an apolitical economy"* whereas any state regulation in the markets around labour strikes, price controls, the redistribution of wealth, was construed as an *"unfair' political' attempt to capture wealth*" or distribute wealth upwards to political elites. The average American started to think that the combined wisdom of entire market was the answer to freedom of citizens and "the shackles of the big government" were constructed as threats instead of constructing the suburban American way of life (Huber 2013, p. 119-120). Indeed, as (Harvey 2007, p. 2-3) points out, since the 1970s the neoliberal political-economic thinking has expanded and "*deregulation, privatisation and withdrawal of the state*" from many previously public social provisions have been all too common. Electricity sector has not been an exception to this (see e.g. Weller 2018).

Brenner et al. (2013, p. 229–300) call attention to the path-dependency of neoliberalisation processes. Neoliberalisation prioritises market-based or market-orientated responses to regulatory problems, strives "*to intensify commodification in all aspects of life and open new arenas for capitalist profit-making*" (Brenner et al. 2013, p. 229–230). Brenner et al. emphasise that the market-based logic for regulatory restructuring is released on diverse regulatory environments – such as national developmentalism, state socialism or social democratic – and hence produces different and heterogenic forms and institutionalisations. Brenner et al. (2010) highlight that the neoliberalisation process is profoundly path-dependent, instead of producing some pure, prototypical form on neoliberal market-based solution.

Markets and embeddedness

Besides the belief of market's superior knowledge, a crucial part of the current neoliberal ideology, is of course the importance of the market in the society. This is perhaps best described by Karl Polanyi (Block 2001, p. xxiii) in The Great Transformation, which argues that the entire "*tradition of modern economic thought*", rests on the concept of the economy which assumes markets "*automatically adjusting supply and demand*" through the mechanism of price. As Chester and Paton (2012, p. 15-16) say, there has been a renewed interested in Polanyi's work with the resurgence of laissez-faire, enforced by the state, to which Polanyi's points fit well to critically engage with the ideas and practices of neoliberalism. As Block (2001, p. 7) points out: "*even when economists acknowledge that the market system sometimes need help from government to overcome market failure, they still rely on this concept of the economy as an equilibrating system of integrated markets*". The key point in Polanyi's 'Great Transformation' "*is to show how*" different this era is "*from the reality of human societies throughout*" the previous "*recorded human history*" (Block 2001, p. xxiii). "*Before the nineteenth century*", Polanyi argues, "*the human economy was always embedded in society*" (Block 2001, p. xxiii). According to Polanyi (2001 [1944]) in the modern society, social life is 'embedded' in the economy, whereas earlier, the economy was always 'embedded' in the society and operated under the social relations instead of trying to dominated them. "*The historically normal pattern of subordinating the economy to*

society" changed in the modern society and instead, "*the self-regulating markets required subordinating society to the logic of the market*" (Block 2001, p. xxiv):

"it means no less than the running of society as an adjunct to the market. Instead of economy being embedded in social relations, social relations are embedded in the economic system" (Polanyi 2001 [1944], p. 60)

However, while capitalism seeks to disembed economy from society, Polanyi also insisted that this goal was not and could not be achieved. Rather, according to Polanyi (2001 [1944]), *"the goal of a disembedded, fully self-regulating market economy is a Utopian project; it is something that cannot exist"* (Block 2001, p. xxiv). Polanyi profoundly believed that disembedding the economy could not end up working as a system, and he argues that the attempts will only lead to "double movement." Polanyi insists that "*market societies are constituted by two opposing movements—the laissez-faire movement to expand the scope of the market, and the protective countermovement that emerges to resist the disembedding of the economy"* (Block 2001, p. xxviii). While mainstream neoclassical economics often still fails to treat environmental or other issues as anything more than externalities due to market failures (Chester and Paton 2012, p. 20), some economists are inspired by Karl Polanyi's work. For example, Joseph Stiglitz (2019) notes that "*elites promise that neoliberal policies would lead to faster economic growth, and that the benefits would trickle down*" through the society, even to the poorest, is false. To get to these 'trickled down' benefits, however, "*workers would have to accept lower wages*", and everyone "*would have to accept cutbacks in important government*" programs in the name of letting the markets do their job (Stiglitz 2019). After 40 years and 2008 financial crisis the evidence suggest that neoliberal policies led to income and wealth flowing up instead of trickling down, self-regulating markets fuelling crisis instead of preventing them and citizens faith in democracy faltering (Stiglitz 2019). Despite the name, the neoliberal era is far from liberal. Instead, the neoliberal state favours corporate power and plutocracy. It is not meant to support workers, but big business and profit, and losing competitiveness is framed as losing jobs and hence leads to suffering (see Stiglitz 2019).

As discussed above, the belief in the competition and market's 'best' knowledge are fundamental parts of ideology dubbed as neoliberalism. While neoliberalism has many definitions and wide literature and scholars across multiple fields, for this thesis, the most relevant part is this idea of applying market rules to achieve the 'best' outcome and the prevalence of this as unquestioned 'common sense'. Empiric observations of policy documents relating to reverse auctions, interviews of policymakers, developers, town planners and residents, and even which futures can be imagined reveal the hegemony (and internal contradictions) of this worldview and are discussed further in the case chapters 5 and 6.

Aspect 2: Constructing renewable energy under capitalist model: crisis and fixes

Fossil fuels, climate change and capitalism crisis

There is a powerful contradiction between the needs of a parasitic capitalism and its natural and human host. Both cannot survive. One will have to vanquish the other". – (Prashad 2017)

Many have argued that the current form of capitalist society as we know it depends on fossil fuels (e.g. Malm 2016). Fossil fuels have indeed enabled the growth of cities, surplus and wider societies as the dominant fuel over the past century. Wrigley (2013) describes the birth of modern industrial capitalism as a transition from an 'organic' economy largely reliant on the annual flow of solar energy, to an economy based on fossil fuels which are consumable and where each tonne of coal burnt slightly reduces the stock left for the future. He points out that fossil fuels freed-up considerable amounts of land for other uses and also tapped into far greater energy supplies than ever previously possible (see also McCarthy 2015). Others (e.g. Mitchell 2011) suggest that the history of modern democracy and its transformation during the 20th century, as well the formation of capitalism from the 19th century, are inseparable from the use of first coal, and later oil. "*Fossil fuels helped create both the possibility of modern democracy and its limits"* Mitchell (2011 p. 1) says. Mitchell does not claim that fossil fuels explain everything about the organisation of political power, but that especially oil cannot be left out of the equation. Similarly, Huber (2013) sees the reliance on oil and the rise of neoliberalism in the United States interwoven to such an extent that it is hard to even imagine one without the other. Many others have emphasised the difficulties and extent of required energy transitions (Smil 2010, McCarthy 2015, p. 2490). After decades of international climate negotiations and agreements, renewable energy makes up 12% of total energy supply (EIA 2023), which testifies to how complicated and slow it is to change the energy sources of societies. However, recently there is a growing number of energy (technical) scholars (e.g. Brown et al. 2018) advocating for how quickly transformation *could technically* be achieved. This is of course no guarantee of how or when, or indeed if it will happen.

When talking about systemic problems such as reliance of finite fossil fuel reserves and climate change, it is important to understand that capitalism is a socioeconomic and political system characterised by internal and inherent tendencies towards crisis (e.g. McCarthy 2015). This internal "*crisis is understood as substantial potential failure of systemic relations*" and resulting in incoherence (McCarthy 2015, p. 2486). Mirowski (2010, p. 416) calls this an 'inherent vice', which means a trait that causes an object, for example a property, to destroy or damage itself, hence making it uninsurable. Inherent vice is a term used in insurance industry, and Mirowski thinks it is fitting term to describe the capitalism's inbuilt contradictory tendencies which it tries to solve by extending the complexity of market system, to the point of collapse. McCarthy (2015, p. 2486) argues that "*capitalism can be defined as a system organised around the perpetual*

expansion and accumulation of capital" and hence any "*systemic interruptions and threats to such accumulation can be reasonably cast as crises"*.

Harvey has articulated a broad "*definition of crisis*," pointing out that capital accumulation requires *"a process*" of value addition "*in constant and expanding circulation*", and "*anything that blocks that circulation – internal, external, structural, contingent, social, natural – is a crisis for it, while anything that removes the blockage*" can be "*considered a fix*" (McCarthy 2015, p. 2487, Harvey 2011, p. 6, see also Brenner 2014,). There have been many 'crises' in the history of capitalism, from forest logging until exhaustion (Moore 2000, 2009, 2010a), to banking crisis such as the 2008 collapse, to the current existential crisis of climate change and overconsumption of Earth's resources. Moreover, the current presented policy 'fixes' to climate change tend to evolve around numerical emission targets or temperatures which arguably focus more on the effects than the cause. For example, Prudham (2009) and Liverman (2009) have argued that while rising carbon emissions are a real problem that needs to be addressed, they are also a symptom of accumulation for accumulation's sake, and if left unattended, will cause more environmental tragedies even when, or if, climate change is curbed. "*Efforts to incorporate environmental factors and dynamics into a Marxist framework have been central to economic geography and political ecology*" in the 2000s (McCarthy 2015, p. 2487, see also McCarthy 2012).

Karl Polanyi's work has been an useful here (McCarthy 2015). Polanyi's (2001 [1944]) argument that market economies are inherently "*destructive of the social and environmental conditions upon which they depend underpins his term of 'fictious commodities'"* (McCarthy 2015, p. 2487). Market economies treat labour, capital, and land as commodities but as Polanyi argues, they were not and cannot be produced as commodities since "*a commodity is a good or service that is actively produced for sale in a labour process*", and a capitalist commodity has an additional competition aspect to reduce the labour-time needed to realise its embodied surplus value (Jessop 2007). Polanyi argues that labour, capital and land are different because they are not produced to be sold. Nowadays Polanyi's concept of 'land' has been widely interpreted to mean what we would now describe as "nature" or environment. Polanyi calls these "fictious commodities" because they are treated and traded as commodities, but they are different to products that have been manufactured according to demand. More land cannot be created, but it can be appropriated, traded and sold. Similarly, labour is not created for the needs of capitalism, because new human beings are not being born or valued by their families solely because of their labour value. Importantly, while Polanyi calls these three crucial aspects of all social and economic life 'fictious', it does not mean that there would not be a constant process to further commodify these, nor that they would not be 'commodities'. It just means that to postulate these as produced for sale is inherently untrue, but this fiction is needed in the real-life markets organising labour, money and land (Jessop 2007). Capitalism relies upon, yet degrades, these non-capitalist inputs (e.g. McCarthy 2005), which can be depleted and/or have agency – unlike the wind or the sun, as sources of renewable energy. If the commodification of land, labour and capital goes too far, it undermines the market economy by provoking a wide range adverse impacts to the natural and social world it operates in provoking

a demand from citizens that state place regulations and limits on the capitalist activities. Thus "*the extension of the market organisation in relation to genuine commodities was accompanied by its restriction in relation to fictitious ones*" (Polanyi 2001 [1944], p. 79). The pursuit of self-regulating market of economic liberalism is always accompanied by "*social protection intended to preserve man and nature*" (Jessop 2007, Polanyi 2001 [1944]). This wave movement of advancing marketisation and the inevitable pushback from the society is Polanyi's famous 'double movement' (Jessop 2007).

Renewable 'fixes'

Climate change is an example of a capitalist crisis, and it has been argued that it is a true crisis of capitalism leading to its end (e.g. McCarthy 2015). This is either because it is "*impossible to sustain capital accumulation powered by… fossil fuels"* which will eventually run out, the ruinous climate change will disrupt the system too severely or because climate change will "*spark true political change*" towards some other societal order (McCarthy 2015, p. 2485). For example Moore (2015, p. 86 - 87) speculates that the era of Cheap Nature is coming to an end, since there are no more easily accessible frontiers, the last ones being the "*cheap oil in the Middle East*", "*cheap labour in China*" and cheap food from industrial agriculture. Moore (2015, p. 105-107) writes that even though economic development has depended heavily on fossil fuels, or Cheap Energy, the logics of "*pour money in, cheap oil comes out*" and dumping waste into the atmosphere won't work anymore. *"The great secret and the great accomplishment of capitalist civilization has been not to pay its bills. Frontiers made that possible. Their closure is the end of Cheap Nature – and with it, the end of capitalist free ride."* (Moore 2015: 87).

McCarthy (2015), however, argues that it is entirely possible to conceive an energy transition to renewable energy sources providing a 'fix', if temporary, and allowing capitalism to live on – just powered by a different energy mix. Is the time of "Cheap Nature" truly over? Or, is renewable energy becoming a new capitalist commodity frontier? Patel and Moore (2017, p. 178-179) write that, despite the historical connection, the strategy of cheap fuel doesn't need coal or fossil fuels, since retailers or manufacturers don't really care where their electricity comes from. The authors point out some of the capitalist extraction methods relating to the dispossession of Indigenous lands under hydro constructions and the sources of metals used in solar panels, but, similarly to McCarthy, they doubt that the world's businesses would "pitch in" the capital needed for energy transition. At the moment, it seems indeed that we are not on track for the investment needed despite of the 'cheapness' of renewables (see e.g. Christophers 2024, comparing energy investment to EIA 2021 'road map' to net zero by 2050).

Moore (2011) argues that capitalism requires "free gifts" of nature to add value in the form of capital accumulated and to maintain a viable rate of profit (see also Foster 2011, McCarthy 2015). The unpaid work done by living creatures, "ecological surplus" and appropriated by capital,

is crucial to the capitalist value addition process to counteract, temporary, the tendency of falling profits by increasing the productivity of labour while, paradoxically, also reducing the need for more capital for production (Moore 2011, p. 22, see also McCarthy 2015, p. 2488). Over time, capitalism attempts to overcome the tendency of falling rate of profit by increasing the productivity of labour and reducing the capital intensity of production and most importantly, by finding new "*surplus frontiers*" rather than just "*commodity frontiers*" (Moore 2000, p. 416). Moore conceptualises places where uneven expansion of commodity production and *"the forward movement of the capitalist system"* (Moore 2000, p. 412) across history are possible as "commodity frontiers", and states that further expansion is always possible if there is "*uncommodified land, and to a lesser extent, labour, beyond the frontier*" available (Moore 2010a, p. 34). Moore (2000) uses examples of past capitalist expansions, like sugar and silver, and writes that commodity frontiers were profoundly transformative of land and labour because they were often highly industrial. Historically, commodity frontiers have been crucial for capitalism (Moore 2000, 2009, 2010a, 2015), and on these frontiers, capital, backed by the state, could appropriate "*a very large basket of nature's gifts*", where "*precocious forms of technological and institutional innovation*" established themselves "*in distant and seemingly backward regions*" (Moore 2009, p. 4). In other words, capitalist corporations entering into new commodity frontiers have better likelihood of accumulation because the new zones has had minimal previous commodification (Moore 2010b, Campling 2012). However, over time, the socio-ecological conditions of reproduction stagnate or decline, and the general response by capital is to "*intensify production strategies"* through enhanced "socio-technical innovation" generating another new frontier, or finding new geographical places to expand (Campling 2012, p. 253). This cycle repeats, necessitating a search always for new frontiers of appropriation and commodification. "*Thus, ecological crises and their resolution are central*", rather than *"incidental"*, to capitalism's development (McCarthy 2015, p. 2488).

A common way to phrase these cycles of crisis and fixes in economics – besides appropriating and commodifying new frontiers – is addressing them as 'market failures' instead of systemic problems. The fixes tend to be (increasingly complicated) financial or economic tools to try to 'incorporate' the externalities into the markets so markets can address the crisis *within* the market. In the case of climate change, instead of addressing the deep structural problems leading to environmental destruction, the CO2 emissions are treated as 'externalities' that just need to be internalised into the market for climate change to be 'solved'. For example the Stern Review (Stern 2006, p. vi) describes the problem of climate change involving a fundamental failure of markets: "*those who damage others by emitting greenhouse gasses generally do not pay*". Therefore, the costs of emissions are 'external' to the producer and user of fossil fuels and to the consumer of the resulting products. This can then offer capitalism another 'frontier' of investment via green bonds and carbon trading besides the emerging frontier of mainstream renewable energy investment.

Constructing renewables

Renewable energy is touted as a simple 'fix' to current crisis of capitalism manifested as climate change but total energy transition is of course in practice extremely difficult. Firstly, similarly to fossil fuels, renewable energy needs the 'free gifts' of nature, wind, solar, but also more crucially land, seabed or water surface (Goodman et al. forthcoming), which as mentioned before, relies on 'fictious' commodities (Polanyi 2001 [1944]). As McCarthy (2015) points out, even if such energy transition would be technically possible, it is not inevitable nor necessarily politically possible: besides the fact that renewable energy would require vast amounts of new land, inevitably leading to resistance ('double movement'), and the existing fossil fuel reserves are in balance sheets and likely to be fiercely defended by those currently with power.

In the capitalist society, where climate change is treated as needing a solution addressing the 'externalities' of emissions, instead of addressing the more systematic root causes, renewable energy needs to fit within the capitalist logic. This means having an enabling and legitimising regulatory framework to appropriate the 'free gifts' of nature. While renewable energy may be able to escape the extractivist ecologies of fossil fuels, it might end up following the same *model of production*. In order to secure a rate of return, to accumulate, capital needs a fixed physical installation, whether that is a road, a building, a coal power plant or a wind farm (Brenner 2014). Both in State of Victoria and in Finland, large-scale privately-owned renewable energy has been largely prioritised, despite the generating capacity which could be available at the more local level (Goodman et al. forthcoming), though in Australia rooftop solar is ever-growing and collectively forms approximately 10 % of the electricity generation (Clean Energy Council 2024). The organisation of renewable energy into utility-scale production, on the model of centralised fossil fuel generation, reflects the continuing legacy power of the extractivist sector and existing institutionalised knowledge and existing regulations (Goodman et al. forthcoming). This is most often done by the state. The state publishes goals, such as renewable energy targets, approves the land use, regulates how, where and under which conditions renewable energy can be produced; and it maintains or regulates – if the network itself has been privatised – the grid where the energy is sold. This also highlights the importance of state environmental protection. For Polanyi, "*the regulation of land and natural environment through the 'self-regulating' market system would jeopardise the ecological conditions*" needed for "*the reproduction of the society"* (Chester & Paton 2012, p. 16). Upham et al. (2009) note that communities tend to be sensitive to the impacts of renewable energy development on rural landscape, perceiving the changes as threats to their sense of place and associated cultural and identity connections. Where quantities of individual projects are proposed at the same time due to favourable policy, then negative reactions to the rush to development may be evoked. The speed, scale and uncoordinated nature of development "*raises the spectre of a rapid industrialization of large swathes of wild land*" (Warren et al. 2005). Similarly, Devine-Wright and Howes (2010, p. 273-275) describe wind farms as representing nature/industry contradictions: the place for the residents and visitors represents "*scenic beauty*"

that "*provides a restorative environment*", whereas the proposed wind farms represent an "*industrialised area*" (see also e.g. Kempton et al. 2005).

Introducing large-scale renewable energy has substantial spatial impacts and implications, and this is mainly in rural areas. While policy strategy papers produced by states or various thinktanks often envision positive effects of renewable energy based rural development, "*it is less clear as to how these are realised*", or "*how they relate to the current political-economic conditions of the energy transition"* (Clausen and Rudolph 2020, p.1). An EU audit from 2018 concluded that "*synergies"* between renewable energy policy and sustainable rural development "*remain mostly unrealized"* (ECA 2018, p.10).

As already mentioned, energy transition and the remaking of the energy geography usually cannot proceed without the exercise of state agency, encouragement and approval (Goodman et al. forthcoming). Goodman et al. (forthcoming) continue that subnational regions are increasingly important in energy transition and often the enabling policies to 'harvest' energy and targets are set by the regional authority. This is true especially in the State of Victoria where the sub-federal state has put in place climate change targets (Renewable Energy [Jobs and Investment] Act 56/2017). This subnational legislation is used to support transition, while at the time of the reverse auction, the Federal state had basically no meaningful or practical tools to encourage new large-scale renewable energy projects. Importantly, the planning and development approvals regime is also a state-based authority in State of Victoria.

In Finland on the other hand, the local municipality has a fairly extensive monopoly to grant – or deny – development applications. The climate targets and agreements are handled on a nation state level, and a separate regional authority may enable and reserve areas for large-scale energy developments, but the local municipality has the autonomic power to grant most development approvals. Inherently, this leads in both case study areas to a certain amount of conflict within the state itself. In general, the state at the national or federal level generally sets the broad framework for energy and emissions policies, and sets the range of measures to facilitate private, or public, sector investment in renewables, such as environmental legislation, assessment processes and land access requirements. In Finland the local government, which might have different priorities, decides how to interpret those general policies and whether to grant permits to renewable energy developments. In Australia the states are fairly autonomous in deciding environmental permitting and state energy policy but are still part of the Federal Commonwealth with possibly contradicting policies – and susceptible to the national electricity spot price market dynamics. In both cases a wind or a solar project would go through the same regulated environmental impact and planning process as any other large proposal, whether a mine, energy facility or a highway. Also, in both cases the initial land access and tenure is mainly negotiated with private landholders.

Fossil fuel industry has often being accused of not caring about nature, local communities and democracy (e.g. Salleh 2010) because they are not part of the value-chain of commodity frontiers.

Naomi (Klein 2017) discusses the "fossil fuel sacrifice zones" resulting from extractive industries, suggesting fossil fuels are mostly invisible, except in the places where they take the land. Yet hydro, solar and wind projects also have issues with local dispossession, spatial injustice and top-down practices, especially with indigenous groups (Coombes et al. 2012, Yenneti et al. 2016) produced by the planning framework put in place by the state to give security for energy project developers. The classical Marxist explanation would be to point to a struggle between owners and non-owners as forming a typical set of relations in all social formations in which the capitalist mode is dominant (Hall 1996), but if we look at renewable energy through a Polanyian commodity lens, local conflicts make much more sense: utility-scale wind and solar power are business-as-usual and rely on the same state sanctioned model of commodification of local ecology, not a tool for creating energy democracy. Profit seeking in an environment that rewards cheapness does not guide towards prioritising 'nature, local communities or democracy' – that is left up to the regulation state needs to put in place after Polanyian 'double movement' forces it to (Chester & Paton 2012)

There is also another inherent problem of the promise of infinite, low cost and plentiful renewable energy. If energy would indeed be zero marginal cost (see Rifkin 2011), "cheap" or even "free", it is likely to increase growth, and lead to expanded throughput, negating the efficiency gains. This phenomenon is also called Jevons Paradox. The problem of very low-cost energy having the effect of increasing demand for existing energy supplies, rather than leading to a cleaner energy system, is mainly not addressed in the renewables discussion. Though IRENA (2023) at least has noted that energy efficiency should be part of the solution, it is hardly a focus for IRENA. Abundant renewables approaching zero marginal cost creating low-cost energy also has the problem of profitability: private investment still requires costs and profit to be covered, so hence the energy cannot be free (see Christophers 2024). While renewable energy might be cleaner, less problematic and much lower CO2 compared to fossil fuels, it still requires large swatches of land and materials. The only MWh without any negative impacts is the one never produced or used.

Imagined futures

How one imagines the energy system of the future, could and should have a huge impact on policies put in place today. For a long time, liberal ideology has tried to make people believe that "capitalism is the bottom line of history", but contemporary movements show that thinking about alternatives to existing regimes of domination and exploitation is possible and necessary (Fuchs 2012, p. 775). There is a substantial number of scholars (Goodman & Salleh 2013, Klein 2015, Moore 2015, Collard & Dempsey 2017, just to name a few) who doubt capitalism's ability to solve environmental problems, especially something so complex as climate change, especially since the intimate relationship between capitalism and fossil fuels (Malm 2016, p. 241).

Some scholars have suggested various post-capitalist models, such as democratic eco-socialism (e.g. Baer 2016a), Paul Mason's (2016) and see also e.g. Monticelli (2018). These futures emphasise the impossibility of maintaining capitalism's internal contradictions and controversies: the need for constant new 'frontiers' in order to keep growing for the sake of accumulating will become harder and harder as the capitalist model erodes its own non-capitalist inputs that it relies on to survive. Other scholars describe and speculate the likelihood of possible future paths in the light of current ineffective climate action. One interesting example of this comes from Wainwright and Mann (2012, 2018). They describe four different pathways for how climate change as a global existential crisis might force different global governance models into play. Only one of the likely pathways, "climate leviathan" relies on capitalist, planetary sovereignty approach which introduces planetary regulation, perhaps by the UN and is enforced by military after an emergency of enough severity. Other models Wainwright and Mann speculate assume that the liberal model of democracy is at best too slow, and either a state-led, populist anti-state or grassroot-led anti-capitalist revolutionary transformation takes place.

Perhaps a more dominant chain of thought, especially in mainstream economics, are various forms of ecological modernisation. The idea can be described as letting modernisation find technological fixes to the problems it created (Spaargaren & Mol 1992, Mol 1995), rather than trying for a systemic change. The ecological modernisation approach and other approaches, that aim only for clean technology solutions instead of addressing the problem of ever-increasing consumption, have been widely critiqued for ignoring the properties and limitations of nature. They also ignore the Jevons Paradox that increasing efficiency leads to growing instead of declining demand for resources (e.g. Alcott 2005, Hovardas 2016) and foster the idea of economic growth which is arguably the mechanism leading to climate change (Kallis 2011; Xue et al. 2016). Despite the criticisms, the popularity of "technofixes" doesn't seem to diminish. Projects such as "Drawdown" (Hawken 2017), the Third Industrial Revolution (Rifkin 2011) and various suggestions around the globe for 'Green New Deals' tend to rely on a variety of technological solutions, and sometimes also some progressive social policies, as the way forward whilst failing to address the overall capitalist framework and its systemic problems. Some of these suggested social policies are somewhat dubious, since for example family planning and educating girls tend to make the list (Hawken 2017), not from a social justice point of view, but to curtail population growth. Blaming growing emissions on (global South) population growth has been deeply criticized by ecofeminist scholars as the global South creates so much less emissions per capita compared to the richer Western countries (e.g. Gaard 2015).

If we think of renewable energy's role in building the (possibly post-capitalist) future, some scholars see community energy as the perfect answer with promoting energy democracy, empowerment of communities, decentralization, planning and operating (though not necessarily acquiring) energy solutions outside inherently capitalist principles. As Walker et al. (2007) point out, community scale energy production is not a new feature in the renewable energy literature or national policies, but has been in fact advocated as a "soft energy path" since the 1970s. In some

countries community ownership makes up a reasonable amount of renewable energy ownership, for example in Germany (Morris 2018), but usually there are significant barriers confronting community ownership (Burke & Stephens 2018) and new renewable energy investment tends to depend on big investors or utility companies with expertise and capital to realise large-scale renewable electricity production. Burke and Stephens (2018) list barriers to community ownership such as unfavourable system of tax incentives (Giancatarino 2012), rules and institutional systems favouring centralised generation (Goldthau 2014), undemocratic financing system focusing on highest returns (Lohmann & Hildyard 2014) and resistance from incumbent utilities (Hess & Mai 2014). The state's role in favouring corporate large-scale is crucial.

Inherently, the state prioritises and represents the interest of particular social and political forces, while marginalising others (Goodman et al. forthcoming). Imagining climate change mitigation via economic growth, employment or improving energy security futures, skews the scales further towards preferencing large-scale renewables which works more easily with the current large-scale corporate energy sector and market rules. As mentioned in the previous section, large-scale privately-owned renewables have been facilitated at the expense of household and community renewables, and there are few voices within the state advocating for a community-led transition. Although often suggested as a way of improving local support for renewable energy, "*many people do not want an active role"* in the currently very technocratic energy space (Upham et al. 2009, p. 101), especially when it is not facilitated by the state. Renewable energy project planning requires a lot of time and expertise, which might be lacking in the community, and involving the community in planning doesn't guarantee the success in participation (see Howard 2015). Community energy is seen more often a rural than a urban solution (see Kalkbrenner and Roosen 2016) further decreasing the interest of the state. Solely relying on community-led energy solutions also comes with a significant timing risk. Aiming towards energy democracy might, as Marshall (2018, p. 131) "*set up a further paradox; transformation may only work and gain legitimacy with community involvement, but community involvement may dangerously slow things down*".

The aim of this thesis is to investigate the motivations and impacts of choosing a reverse auction as a tool to support energy transition. By choosing a specific tool the state and policymakers steer the energy future into a certain direction, whether on purpose or unintendedly. As Ryder (2018, p. 266) points out, when "*the embeddedness of a system is taken for granted*", and remains unscrutinised and unchallenged, it can act "*as a path-dependent barrier to the envisioning and building of an alternative energy future*". Hence the interest was to understand how the players in the field – policymakers, residents, developers or local governments in the areas of developer interest – see and hope the future unfolding. Whether technological fantasies, prioritisation of market-based instruments in renewable energy development, or rethinking energy geographies, all the participants were asked to share their imagined vision of the preferred energy future. These are discussed further in Chapters 5 and 6.

Indigenous considerations

Australia, as other Western systems involved in colonisation and settlement, has "*a violent history of imposition of Western systems of property rights based on a productivist use-value for land*" (Chandrashekeran 2021, p. 380). In the energy field, as in many other fields, the Indigenous interests and opinions tend to be silent, simply because the land has been colonised and Indigenous people have been pushed to the site. "*Since the 1960s there has been a phase of repossession*" (Chandrashekeran 2021, p. 380), and currently little less than half of Australia is under some form of Indigenous title (see National Native Title Tribunal 2024). Traditionally mines have dealt with Indigenous land interest, and now renewable energy large installations are starting to emerge (Chandrashekeran 2021). In Australia Chandrashekeran (2021, p. 379) suggests that "*overall the legal procedural protections for Indigenous landholders"* are somewhat "*weaker for large-scale renewable energy*", than in extractive mining industry. This might be partly due to the longer and more established process of making agreements around mining projects – they have been around for decades whereas large-scale renewable energy projects, especially the type of mega-projects Chandrashekeran is looking at, are a relatively new. Renewable energy projects might also be seen less destructive than mining projects.

Chandrashekeran (2021) looks at two on-going large-scale renewable energy projects, Asian Renewable Energy Hub in WA and Suncable project in NT, both of which are located in remote locations, far away from existing population centres and assumed marginal, unproductive and un(der)populated (p. 380). In Victoria, none of the winning projects in the reverse auction locate on a Native Title land, which doesn't mean that there wouldn't be on-going Indigenous land right interests. This is discussed in more detail in chapter 5.

Due to the work of advocates and academics, there has been some attention that First Nations interest in addition to Native Title, land council (which is a NSW land rights system) or other directly held land by the First Nation's peoples. There is growing understanding that all projects might have benefit sharing aspects and involvement of First Nation's interest beyond the mere cultural impact assessment. For example, besides the national network and strategies emerging, especially the Victorian current offshore wind development has higher than before attention to Indigenous perspectives – albeit perhaps mainly focusing on possible cultural heritage values, but also on benefit sharing and less tangible *sea country* values. The formation of First Nations Clean Energy Network (NGO), First Nations Clean Energy Strategy (DCCEEW 2023) and some ambitious partnership announcements (e.g. Pollination Group 2023), all indicate that the quite limited position and role might be changing into more meaningful participation.

There is one First Nations owned solar farm in Victoria, but mainly the large-scale interest in the State of Victoria has been on so called 'freehold land' that fits the most easily to the private

property right based model: the developer can make a binding, long-term agreement with possibly just one landowner at a time. This agreement is usually done under commercial confidentiality so there is little publicly available evidence on terms and conditions – which Chandrashekeran (2021) says is the same for agreements done with Native Title.

In Finland, the Indigenous population, the Sami people, can have issues with wind power, transmission lines or hydro power projects impacting the local ecology and traditional livelihoods in Northern Finland. None of the winning projects in Finland were in Sami area, and hence there is no Indigenous perspectives discussed in the Finnish case description. The Indigenous perspectives, or the lack of them, is discussed in the Victorian case.

Aspect 3: Commodification process of renewable energy

As discussed in the previous aspect, utility-scale private renewable energy led by private capital is organised in an extractivistist model largely set-up by the previous rounds of capitalist frontiers. However, energy as a commodity and energy transition have certain pressures and needs different from mining, fossil fuels or factories. How the state facilitates renewable energy is a complex process including policies and frameworks both supporting and hindering renewable energy build up. In this aspect I describe the practical necessary energy governance that guides the path to reverse auctions in a neoliberal state's (competitive and usually at least partly privatised) energy system. As Brenner and Theodore (2002) point out, the neoliberalisation process happens in an existing framework which impacts profoundly on the outcome. Tracing the process both conceptually and empirically helps to analyse the commodification process of renewable energy and state's role in it.

First, you need markets

An essential part of any commodification process is of course a market in which the commodity can be bought, sold, traded and speculated upon. Energy markets can be more or less regulated, state controlled, privatised and opaque. Energy markets as a commodity market are unique because of the nature of electricity, which needs to be created and consumed at the same time, (Sovacool 2009) creating a very volatile price signal (which can change every few minutes). Both in the Australian and Finnish context the electricity markets are 'spot price' markets which rely on electricity generators producing bids for amount of energy and offering a price for that energy at any given moment, overseen by a centralised market operator estimating the consumption and balancing the required generation accordingly to meet the demand. The priority for organising electricity markets is to establish the market as "the most efficient way" of producing the right amount of electricity at any given time at the lowest cost (AEMC 2024b). Of course, the 'most efficient way' depends what is the goal (e.g. short term pricing, guiding consumption,

decarbonisation, long-term price) – and arguably such a thing could not even exist in a dynamic world with competing interests – but in general electricity markets tend to share some common denominators. The focus of this thesis is the two reverse auctions in Australia and Finland *within* those markets, and while neither of those present all the possible aspects used globally to organise electricity generation and consumption, there are some interesting distinctive aspects to explore.

Firstly, both markets are 'open' to any new generation entries. In theory, any new generator could apply for a generator permit and start selling electricity to any buyer in the grid. In a neoliberal economy, this is one of the key roles of the state: freely functioning markets are always mediated through state institutions (Brenner et al. 2010). As Mackenzie (2006, p. 9) points out, strictly speaking many of the assumptions in finance theories relating to open market are not empirically true, such as free trade and no penalties or fees. In practice, the administrative requirements and costs related to acquiring a generation licence are often prohibitive for small generators (and especially for community energy, see e.g. Marshall 2023), or have restrictions in the name of energy security (generator standards etc). Secondly, in Victoria and Finland buying and retailing are equally open for competition. A consumer or a retailer can buy electricity from anyone with a generation licence or purchase a financial hedging product, aggregated, or otherwise already traded, from a third party. This is an equally important feature to comply with the neoliberal ideology – if there were only one buyer, or electricity was provided as a service by the state, the possibility to dictate how, where and what energy is produced to the grid would be much easier to impose. Finally, the decisions over who and how is producing and consuming energy, is regulated but not prescribed. The key decisions of market composition, fuel used and actors in the market are mainly left to the market itself, within the regulations. The regulations mainly tend to revolve around specific technical requirements, in terms of which technology could in theory fulfill needs, and various other market behaviour details and rules. The outcome of this kind of energy governance model is that the regulation does not tend to include values relating to the well-being of society or biosphere, but instead tends to focus primarily on ensuring 'open' competition and technically securing the flow of electrons.

When everything needs to be put in terms of markets, profits and money, climate change tends to be dumped as an 'externality' to the market, which currently is not priced or not priced enough. Hence, we cannot talk about renewable energy or energy markets without at least mentioning carbon pricing and carbon markets. Carbon markets as an idea originates from the environmental economics discipline and is said to be inspired by early trading schemes to curb sulphur dioxide pollution (Bryant 2019, p. 4). The idea has since been incorporated in many energy markets with varying amounts of success. The concept is simple enough in the economic theory: one can fix the market failure and the missing cost of carbon pollution by simply introducing a pricing mechanism for carbon and letting the market determine what is the cheapest way to reduce carbon emissions. But as for most economic theories this doesn't neatly translate into real life. Carbon markets and pricing have failed to meaningfully address the problem of rising greenhouse gas concentrations in the atmosphere and instead have allowed polluters to continue emitting. Bryant (2019) argues,

that this is not simply due to the flaws of individual schemes or the imperfections of markets more generally. Rather, it is because markets are designed to prioritize the accumulation of capital over environmental protection and hence fundamentally carbon markets can only offer a one-dimensional partial solution to the socio-ecologically unequal problem needing pluralistic and targeted climate action. Similarly, Mirowski et al. (2013) argue that once permit trading is put in place, lobbying and financial innovation will end up flooding the market with instruments such as excess permits and offsets, which means that the cap set on carbon emissions will never actually cap the growth of emissions – just collapses the price as has happened several times for example in the European Union carbon trading market. Despite no evidence of any meaningful success, they continue to be touted as the best solution by some policy makers, and what can be imagined in the future as discussed later in Chapters 5 and 6.

The spot price electricity markets both in Finland and Australia are not particularly well geared towards addressing global problems such as climate change, nor any geopolitical crisis such as the Ukrainian war in 2022 or even a long-term steady commitment needed for energy transition and decarbonisation. The spot price markets were not designed to solve such issues, and it is therefore unrealistic – nor is there much evidence of 'organic' market-based rapid decarbonisation without state support or intervention – to expect so. The spot price market is really designed only around the principle of determining price based on consumption and generation at any given moment, which should guide generation (or more unpopularly consumption), albeit in a very volatile way.

Secondly, you need to enable renewable energy in a grid designed for carbon

Large-scale renewable energy has substantial spatial impacts and implications, and one of these is the changing location of energy landscape. Supplying a new grid to connect new sources of energy generation, is often necessary but can be hindered if the grid is privatised and does not connect the new energy geography adequately (Goodman et al. forthcoming). The institutionalised nature of the fossil fuel sector gives it a 'legacy,' or 'lock-in', advantage, with the sunk costs of investment in fossil fuel infrastructure together with the presence of machinery which depends on fossil fuels (Goodman et al. forthcoming). Unruh (2000, p. 817) calls this "*carbon lock-in*" and unpacks the combination of systematic "*technological, institutional and social forces*" that keep increasing and defending the fossil fuel infrastructure despite the well-understood need to decarbonise.

An example of a systemwide technological obstacle that keeps fossil fuel infrastructure physically in the grid is something called 'system strength'. This is a technical term referring to synchronous generation, which is the main type of generation in fossil fuel, nuclear energy or hydro power based grids such as in Australia and in Finland. Generation is made synchronous when generators are physically correlated to the power system via an electro-mechanical link between the spinning mass of the generator turbine and the power system. Each generator is synchnronised to the power system and to each other: if one generator is disturbed for any reason, another generator instantaneously can respond to that anywhere in the connected power system making the whole

power system spin as one together. This mechanical spinning mass creates something called inertia. Inertia means energy stored in large and heavy rotating generators, which gives them the tendency to keep rotating, which in turn is valuable if "*a large power plant fails, as it can make up for the power lost from the failed generator*" for a short time period (Denholm et al. 2020, p. v). Solar and wind generators operate on a completely differently basis. A wind or a solar generator is nonsynchronous or asynchronous, as, instead of being electromechanically coupled by a physical link they are connected to the power system by electronic. That fundamental difference gives rise to whole number of different characteristics and policy issues across the different technologies. These issues are usually discussed under the term 'system strength issues'. Due to this difference, both in Finland and Australia, the variable and more geographically distributed energy created from the sun and the wind, are often treated as 'problems' in a grid formed on basically boiling water.

Perhaps even more significant aspect of grid considerations is the limitations of the physical poles and wires to transfer electrons from wind and solar installations to the consumers. Every transmission line has a maximum capacity of how much electricity can flow through it at any given moment. If a transmission line has for example a 100 MW capacity, no more wind or solar can be sold via that into the grid, even when sun is shining and wind is blowing and there is demand in the grid. This is usually called 'congestion' (e.g. AEMC 2008). This leads to two noteworthy outcomes.

Firstly, the pricing in a spot market is only part of the equation which generators are dispatched on any given moment. Even if a solar or wind farm would be the cheapest bid in the market, they can only be dispatched to the extent the weakest part of the grid is capable to transfer that to the consumption (see e.g. AEMC 2008, p. 51–53). For example, if a solar farm would bid a price of 15 €/MWh and a coal power plant 90 €/MWh, both having the capacity to meet the demand of for example 200 MW, the grid limitations would determine which one would be dispatched (and hence paid for the generation). If the transmission line towards the solar farm, likely to be located further away than the coal power plant, were to have a limitation of 100 MW, the solar farm could only generate 100 MW leaving the other 100 MW for the coal power plant and wasting the rest of the solar generation. The spot price in general is decided by the most expensive dispatched generation, which means that in this example, the spot price would be 90 €/MWh, even when there would have been cheaper capacity available. In other words, even if renewable energy is *cheaper*, it does not guarantee that it is *dispatched* in a spot price market.

Secondly, the availability of grid capacity has a huge impact on whether a wind or solar resource can be utilised. The grid locations are dictated by previous legacy generation spots and major consumption nodes, which often means very centralised coal or nuclear power plants with strong grid lines to cities, whereas solar and wind resources especially are more dispersed and geographically different locations. Effectively, building new power lines is expensive and slow,

which means that just because wind and solar are *cheaper*, they are not necessarily *built* when there is no transmission available.

Empirical experiences of how these aspects of 'carbon lock-in' manifests in grid considerations in both sites, and state responses, are discussed in Chapters 5 and 6. The gird availability especially, as well as 'marginal loss factors', system strength demands and not being able to dispatch at all, are present differently across both sites, but grid built for conventional generation appears to form a large portion of practical 'carbon lock-in'.

Thirdly, you need revenue security

If we think the neoliberal principles of believing in market-led solutions, competition and the ideal situation being minimum government interventions and control of any commodities, the price and revenue are crucial for a *capitalist commodity* (in a sense that lowest cost to the business and highest possible return from sales). In energy the widely used term is LCOE, Levelized Cost of Energy, in comparing costs of different production types or for example calculating costs of different energy transition scenarios (Blakers et al. 2017). These are of course only estimates because actual costing comparison is so complicated and opaque, and by the time comparison has been made, the price would have changed already. However, LCOE is useful for comparisons and overall trends, even if exact € or $ for MWh should be treated with caution. One of the most closely followed estimate of LCOE, at least in the energy industry, is the yearly report from the asset management and financial advisor Lazard. The report from 2019 (Lazard 2019)[3] shows (Figures 1 and 2) how falling costs can encourage new net generating capacity in renewable energy. In 2019 BNEF reported that renewable energy (excluding large hydro) was 68 % of new generation investment globally (BNEF 2019, p. 26). The falling cost of renewable energy is often cited as enabling ac the win-win scenario of ecological modernisation (e.g.Spaargaren and Mol 1992, Mol 1995, Curran 2009, Mol, Spaargaren et al. 2009): the narrative claims that technical solutions can solve environmental problems such as climate change without the need for substantial or systematic change.

[3] Note that year 2019 should best represent the reverse auctions in Finland and Australia, as the data would be approximately when projects would have signed their procurement contracts. The Covid-19 pandemic and inflation spike has raised technology costs significantly for the first time since the cost curves started to come down after early 2000s.

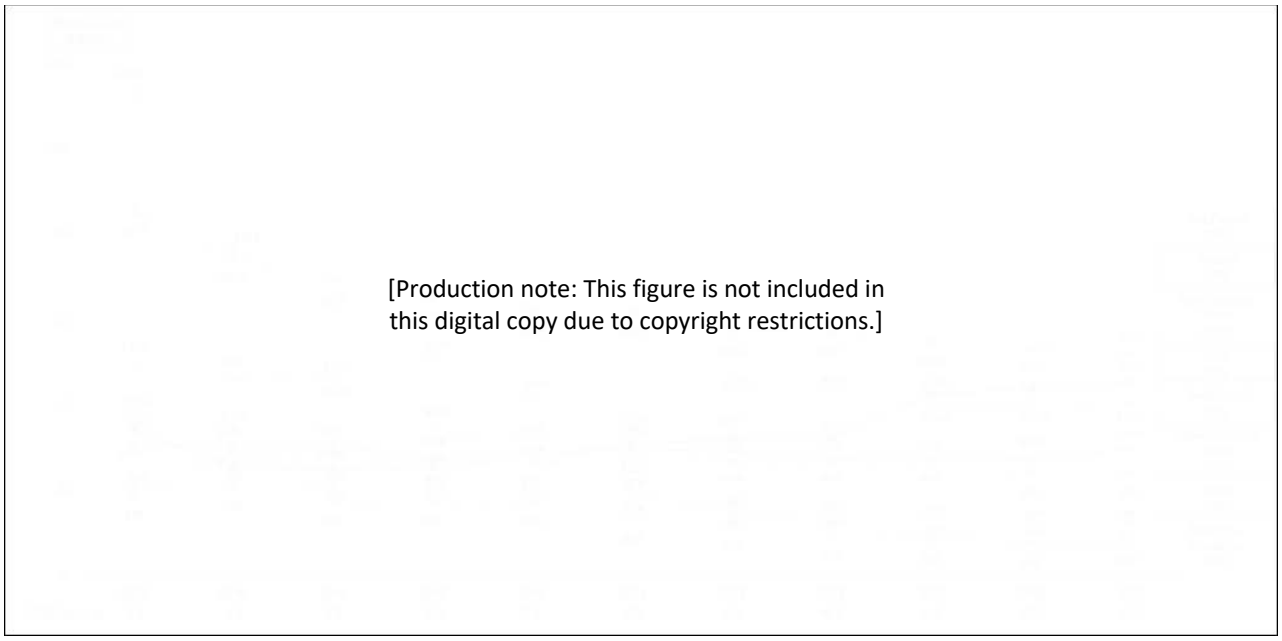

Figure 1. Selected historical mean unsubsidised LCOE values of utility-scale production types in 2019 (Lazard 2019, p. 7).

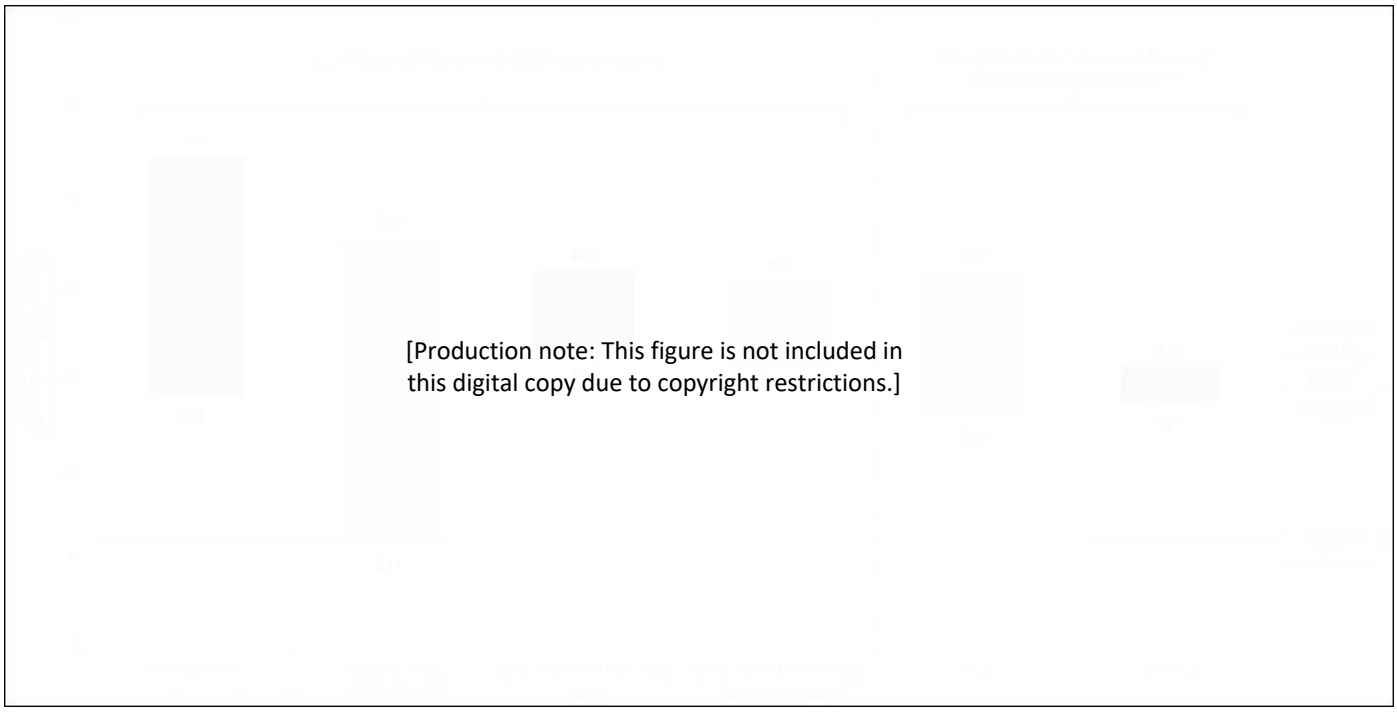

Figure 2. LCOE comparison of renewable energy and the marginal cost of selected existing conventional generation (Lazard 2019, p. 6).

Earlier projects at least in Europe and Australia were almost exclusively realised by government subsidies such as feed-in-tariffs, tax incentives and green certificates (UNEP/BNEF 2020, p. 37), but the lowering of prices has led to dwindling support payments of governments. In some cases,

other financing arrangements such as corporate Power Purchase Agreements (PPAs) have become an alternative for government contract or support. A corporate PPA means here an agreement which is between a single generator or a retailer and a large corporate energy consumer, the buyer, and is done commercially (and confidentially) between these two parties without state support or contract. In many cases a project developer can match or undercut the prevailing wholesale price due to falling technology costs. A corporate PPA can then offer an investor a secure buyer upon an agreed price for the electricity generated. The buyer gets a firm price of electricity instead of being exposed to any future price spikes in the energy markets. Buyers tend to be large industrial users of electricity – often they sell into price-sensitive markets, where consumers can easily go elsewhere: the household goods retail company Ikea, Google and Amazon are well-known examples (e.g. UNEP/BNEF 2020, p. 37, Ikea 2022, STY 2022). The number of corporate PPAs has risen globally exponentially from mid 2010s, coinciding when the price of new wind and solar dropped under the incumbent gas, coal and nuclear prices.

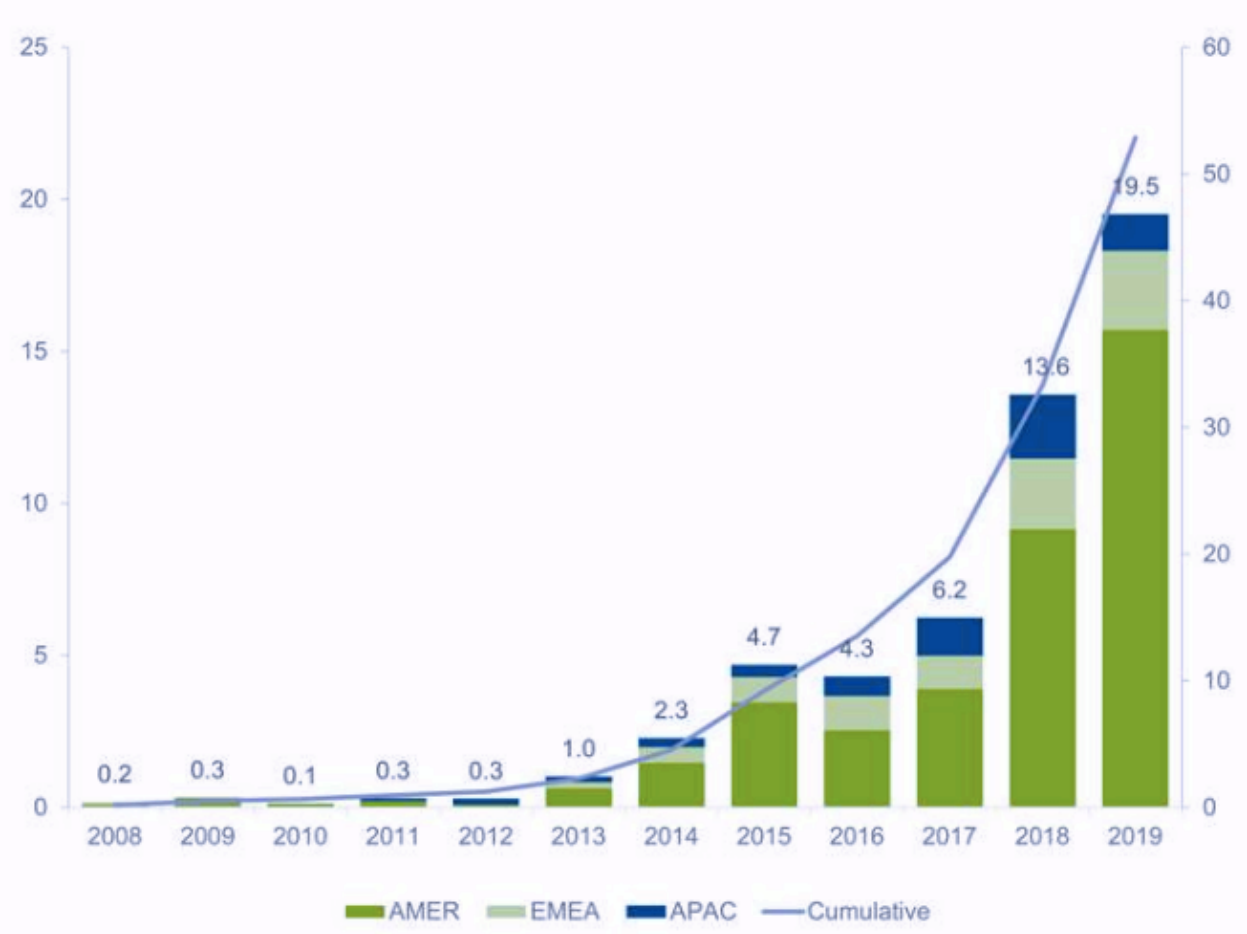

Figure 3. Global volume of corporate power purchase agreements signed by region in 2008 – 2019 in GW. Cumulative shown on the right-hand axis. (UNEP/BNEF 2020, p. 37)

However, falling costs has been accompanied by falling prices, including in PPA's, and as a result, there has been no unproblematic and steady build-up of renewable energy projects. As

Christophers (2024) notes, the falling cost of technology is not enough. Investors also need revenue certainty to realise returns, and this is not delivered by a volatile spot market. Revenue security, and adequate profit, are utmost important for capital (e.g. Bryant & Webber 2024). Power purchase projects for private capital need to receive a price for electricity that is above the LCOE in order to generate profit. As Christophers (2024) points out, falling LCOE does not automatically mean increased profits, especially in a competitive reverse auction environment. In fact, opposite has been true: in many contexts the price 'discovered' at auction has fallen well below the cost of producing the electricity. While decarbonisation has many other technical and regulatory obstacles, Christophers claims that the squeezed profits present a clear and present threat to ongoing investment to renewable energy installations. The electricity market is highly volatile, including in Finland and in State of Victoria, and cannot create the price certainty needed by generators, and for their investors. This is accentuated as energy generation, and especially renewable energy, is especially capital intensive: most of the investment needs to be made before a single watt is generated. Revenue uncertainty is particularly unacceptable when relying on financial institutions, which are notoriously risk averse (e.g. Salm 2018).

PPAs can help insulate renewable investors from uncertainty. While corporate PPAs – which provide price security outside any direct state facilitation or subsidy – are more and more common, it is unrealistic to assume that this mechanism alone would decarbonise an electricity grid: there is a limited amount of corporate end users willing to commit to renewable energy, that have the capacity and appetite to lock in prices for 10-15 years and with a consumption profile that can be matched 100 % with a single renewable energy installation. Hence other forms of government-provided revenue stabilisation have been pivotally important, such as via FiTs, CfDs, premiums and other mechanisms (see also Christophers 2024).

Finally, you need to create a price discovery mechanism

Auctions are very popular with governments due to their flexible structure which can be adapted to country-specific needs and conditions (Lineiro & Musgens 2023, p. 1). In 2020, UNEP reported in record "*amount of green power capacity auctioned by governments around the world*" the previous year, 78.5 gigawatts; accompanied by "*capacity covered by corporate power purchase agreements*", which was additional 19.5GW (UNEP 2020). The inherent nature of the competitiveness of reverse auctioning as a tool, regardless of the details of the design, makes it well-suited to neoliberal ideology and hence an attractive option for governments looking to encourage uptake of new production. While renewable energy has been perceived to need support through financial incentives and measures (e.g. Wene 2000), developed countries are following the lead of emerging economies like Brazil and South Africa, and moving away from feed-in tariffs to adopt more competitive systems, including reverse auctions (REN21 2018, p. 59). From less than 10 before 2005, at least 64 countries by the end of 2015 had held renewable energy tenders (REN21 2016, p. 20, IRENA 2017). At the time of the Finnish and Victorian auctions, in

2017/2018, about 30 countries had released some sort of tendering process for renewable energy (REN21 2018, p. 201). The trend has been institutionalise: in 2014 the European Union defined renewable energy price fixing as anti-competitive and required member states to move to a more 'competitive' approach (e.g. Jerrentrup et al. 2019).

Reverse auctions, like conventional feed-in tariffs, can (depending on the design) provide revenue certainty to renewable energy developers. At the same time they create a cap on purchase costs by setting both the price and quantity of electricity to be bought, minimising public by limiting supported capacity in the auction (Buckman et al. 2019, p. 177). It is widely believed that reverse auctions will capture falling technology prices faster than any other scheme (IRENA 2017, p. 8) and therefore mitigate the risk of over-subsidising.

At the time when the Finnish and Victorian reverse auctions were implemented, the published "*global average onshore wind auction price (projects assigned in 2018 and to be commissioned by 2020)",* was 46 USD/MWh (IRENA 2019, p. 23). This figure should be considered with caution, since some auction prices have been too speculative into the future and the projects have not been realised. For example, Matthäus (2020 and 2021) has showed that the realisation rate of auctions has dropped over time and while longer delivery periods and lower entry requirements reduce the bid prices, they also increase the non-delivery rate. Also, sometimes the design of the auction allows the developer to offer the project in an auction with a very competitive price and simultaneously do a Power Purchase Agreement with a private party using the government contract only as a backup or partial income. In other words, the published auction prices do not necessarily indicate the actual revenue needed to build the project or technology in question. Since the global pandemic and inflation spike, the prices for equipment and labour have risen substantially for renewable energy generation equipment leading to an estimated LCOE increase instead of the longstanding downwards trend (BloombergNEF 2022). For example, Vestas, one of the world's largest wind turbine manufacturers, has announced several times that increasing prices to maintain profitability is a necessity for the industry (e.g. Vestas 2023)

Experiences in different countries have shown, that not all the awarded bidders realise their projects and consequently, the auction target may be missed (Kreiss et al. 2017). One of the first example of tendering systems for renewable energy was the Non-Fossil Fuel Obligation program in the 1990s in UK, as a hybrid of the Thatcher government's drive for privatisation in the electricity sector, while supporting nuclear energy, and also to address environmental concerns. The NFFO failed to achieve its deployment goals as the completion rates fell to less than half as the FiT-prices dropped in the later rounds of competitive auctions (e.g. Cozzi 2012, p. 10). Delayed or decreased rates of completion have been a problem also for example in India. Indian auctions include mainly rooftop and utility scale projects, with optimistic bidding due to rapidly decreasing prices of solar technology and fairly aggressive competition in auctions (IRENA 2017). Although delivering low prices, there have been problems of non-deliveries, withdrawals and delays due to overly optimistic bidding (CEEW 2012, p. 9) and the government has ended up fining developers

for missing the "deadline compliance" (Stromsta 2012). Some early implementations of state-level auctions had a controversial pricing rule, of accepting only the lowest-bid contracting price, where the lowest-bid price of the auction is offered to every "winning" project. This led to some bidders simply refusing agreement on a price arguably lower than what they had bid (IRENA 2017, p. 65).

Aggressive bidding doesn't necessarily lead to low realisation rates, as the example of China shows, where the early rounds of on-shore wind were realised despite the low bidding prices (AURES 2016, p. 21-22); however some were severely delayed (Liu and Kokko 2010, p. 5524). In the Chinese case it has been suspected though that both in the wind and solar auctions, since most of the bidding companies were large national or local energy with a monopoly position and financial backing by legacy coal, hydro and nuclear power plants, the companies could afford to have small to no profitability but rather sought to secure a future market-share (e.g. Wang 2010) and hence structure the markets to benefit themselves later. In a later example, from Germany's 2023 offshore wind auction, the 'round' of the auction was solely won by fossil fuel companies, BP and TotalEnergies. In the auction results, instead of 'zero subsidies', all the sites in fact created an revenue inflow to the government as the companies bid for the contracts, paying the government a total of USD 12.3 billion over 20 years. In Germany, the grid connection is offered by the state which makes the case less comparable to most other jurisdictions, and also the necessary other infrastructure is available for the projects (e.g. port infrastructure), but result is still noteworthy, because it reinforces the narrative of the effectiveness of auctions in price discover.

Whispers in the industry suggest that the very low PPA offers do not, in fact, reflect falling technology costs at all. Rather, they reflect the growing demand for offset projects, to enable continued fossil fuel revenue and the expansion of ostensibly 'net zero' fossil fuel projects. There are also anti-competitive aspects, as dominant fossil fuel players seek to capture and reserve renewable energy allocations or sites, in order to stave-off competition from renewables companies. There are further concerns that, in any case, any commitment to renewable energy by fossil fuel energy companies can simply be passed on to consumers as the cost of doing business as voiced by the Orsted CEO after negative price bids in the recent German offshore auction (Reuters 2023).

An inherent weakness in reverse auctions is the effective exclusion of small and medium-sized bids, including community projects (e.g. Grashof 2019). This occurs either directly, by imposing a minimum threshold for bids, or indirectly by creating delivery conditions that in practice entail substantial upfront time and money commitment, and technical expertise, thereby requiring extensive capacity to bear sunk development costs (see e.g. Buckman et al. 2019, Grashof 2019). This in turn means that reverse auctions can easily exclude all but the biggest corporate players, or in other words act as a further means of privatising and concentrating renewable energy ownership (see Finnish energy authority 2018, AEMO 2018). In Germany, the *Energiewende*, and feed-in tariff policies enabled a fairly large share of the new renewable electricity production to be

at least partly community-owned, which arguably had very positive impact on community support (e.g. Lineiro & Musgens 2023). The recent implementation of reverse auction followed by a change in European Union state aid policy in 2014, has led in turn to the capacity being monopolised by large developers with only a few self-developed community wind energy projects being successful (Grashof 2019). In this context community opposition to renewable energy and the obstacles to gaining permits for installations has increased (Lineiro & Musgens 2023, p. 2). Bidding in auctions was generally seen as illegitimate and framed as "*gambling*" or "*speculation*" when "*contrasted with the normatively desired behaviour*" of "*reputable planning and calculation*" (Grashof 2019, p. 29). Subsequent German auctions which tried to solve this 'diversity problem' (exclusion of community projects leading to growth in opposition) by offering financial benefits for projects that include 'local involvement' have been widely criticised as large developers have been accused of abusing this regulation and, in fact, as not having any positive impact on small-scale development or ownership (e.g. Grashof et al. 2020, Lineiro & Musgens 2023, Lundberg 2019).

One of the benefits that is often emphasised with reverse auction is the price (e.g. IRENA 2017, Buckman et al. 2019, p. 177) – of delivering cheap electricity to the public. Especially in the Finnish context the negative narratives of the use of public funds to subsidise renewables companies was important justification to use 'cheaper' model, an auction. Korjonen-Kuusipuro and Janhunen (2015) interviewed a group of residents, local small businesses and a few councillors about their attitudes and emotions towards windfarms. All of the interviewees were chosen based on proximity to an existing windfarm proposal, either already built or in development phase. They (2015, p. 23) found that in the Finnish context feed-in tariffs were not accepted as a concept, and they were considered "*too high in relation to support for other forms of energy production*": they were even described as "vandalising taxpayers money" by some interviewees. In other words, public sentiment at the local level was clearly critical of the perceived cost to the government of the scheme.

Overall, as a policy, the uptake in reverse auctions for renewable energy more reflects the continued adherence to neoliberal 'market' principles than the much more qualitive social determinants of social legitimacy, such as place attachment, distributional or procedural justice, fairness or emotions, discussed in the literature. There seems to be a disjunction between macro policies, ostensibly orientated to 'the market', and the issues raised from the (local) acceptability discussion. This of course can be said to be inherent in neoliberalism, as an economic ideology that reduces citizens and citizenship rights to pricing, assumed economic behaviour and the willingness to pay.

Aspect 4: Policy transfer and learning process

There is amble evidence of policy transfer in both of my areas of interest, in Finland and State of Victoria, as discussed in the empirical chapters 5 and 6. The implications of policy transfer as a phenomenon in this research project is twofold. Firstly, the 'transfer' of the auctions-based policy template has the effect of limiting the *imagination* of what should or could be done to advance energy decarbonisation. This does not mean that every auction could not produce incremental improvements, and deliver what the state sees important, but rather that it has become more and more cemented in energy governance, to the exclusion of other approaches that may be more effective. Secondly, the international spread of reverse auctions, specifically, has increased the emphasis on cheapness. This arguably has led both to a reduction in the "diversity of developers" (e.g. Grashof 2019, Matthäus 2020) and a drop in returns and profitability for renewable energy investment (see Christophers 2024). This in turn could have possible long-term (unintended) consequences, such as posing legitimacy issues and slowing-down energy transition. The fixation on cheapness is discussed further in both empirical chapters and in the discussion chapter at the end of this thesis. Some relevant processes and aspects of the transnational learning process itself as concepts are discussed shortly in the following.

"*While there is nothing new about the concept of policy transfer*" or lesson-drawing from negative or positive experiences, "*given the complexity of public policy-making and the emphasis on evidence-based, risk averse decision making, policy transfer*" has become increasingly centred on "*rational choice*" models rather than on broader governance issues (Evans 2009, p. 237-238). Often transnational learning is emphasised in the context of more or less official transnational networks, like municipal networks or for example in collaboration programs (Betsill & Bulkeley 2004, Kern & Bulkeley 2009). As Kern and Bulkeley (2009, p. 471-472) suggest, "*the existence and potential significance of such networks has been documented*", and "*they are a significant phenomenon*" in governance and can foster policy learning. Internationalisation of domestic policies is another example of transnational learning at the policy level (e.g. Holzinger et al. 2008, Howlett & Joshi-Koop 2011). In this case, while there might not be official collaboration networks or programs, the access to information about other context is made easy by global inter-state agencies such as IRENA, IEA, various UN entities, OECD and World Bank.

This system of "*inter-jurisdictional policy transfer*" of "*neoliberal policy prototypes circulated*" and repeated via networks of knowledge sharing across places, territories and scales is typical for neoliberalisation process in general (Brenner et al. 2010, p. 335, see also Carroll 2007). By establishing 'prototype' regulatory strategies as all-purpose fixes to regulatory problems and crises, such networks tend to enhance the ideological legitimacy of the policy template (Brenner et al. 2010, p. 335). For policy transfer, the definition of reliable 'evidence' is hence highly important. Paul Cairney (2019), amongst others has claimed that in public policy it is practically impossible to pay attention to all relevant evidence, there are many opinions to what is relevant

knowledge to a given policy and, in fact, policymakers need to ignore most evidence and information available in order to make timely choices. Cairney (2019) argues that actors engage in politics to turn their beliefs into policy (see Jenkins-Smith & Sabatier 1994, Sabatier 1998) and by using their resources to persuade policymakers to prioritise certain pieces of evidence over others (e.g. economic modelling over social energy research). While there is certain 'homogenisation of regulatory space' promoted in this process, Peck (2010) and Brenner et al. (2010) note that the policy outcomes, content, reception and evolution remain and are shaped by the existing political and institutional context, which in turn can lead to unpredictable, variable and unintended consequences. The other point Brenner et al. (2010) makes, is that besides adopting policy ideas via knowledge networks, neoliberal states have institutionalised constrains to the national state via transnational rule-regimes in key regulatory spheres such as international trade agreements, facilitating capital investment, labour and property rights regimes (see also Gill 2003)

Besides the energy related international agencies, especially various private management consultancies contribute to the 'networks of knowledge' and produce analysis for governments to support the uptake of reverse auctions by modelling impacts of gathering evidence from other contexts. Both in State of Victoria and in Finland, a consultancy was used to produce justification for the auction scheme and detailed design. As Brenner et al. (2010) note, the process is more structural as the transnational learning occurs through governing elites adopting and learning from policies and tools used in other areas earlier. As Caroll (2007, p. 54) points out, the "*neoliberal project*" aims "*primarily to rework, to repackage*" and to validate, "*global capitalism's continuing viability, to deflect calls for social justice*" or different models "*by insisting on the plain justice of the market"*. He calls the dissemination and replicating the prevailing hegemony by group of international and national experts and agencies, in partnership with state, a vehicle of 'passive revolution' as its main goal is to manage the current crisis, in this case climate change and energy transition, for and inside the capitalist model (p. 53–54). For this research project, the process of managing the crisis of energy transition by using evidence from other context, delivered to state by external experts, was significant justification for the policy itself. Unsurprisingly, despite the narrative of all-purpose solution (Brenner et al. 2010), reverse auction policy does not lead to perfect outcomes, but the inherent instability and internal contradictions remain (e.g. desire to increase legitimacy of renewable energy support via cheapness or community benefits, but ignoring that many of the conflicts arise from the utility-scale model itself, systemic barriers by grid built for different technology or instability of the spot market design).

Often studies of policy transfer or transnational learning emphasis tend to conclude that the policy transfer and learning process cannot explain policy creation but rather offer a useful tool to understand the impact of influence of lesson-drawing from other contexts, whether across policy fields, public and private or between different countries (e.g. Patel 2009). This is the approach taken in this research as well. I have investigated the background documents and materials used in both cases, and there are some clear indications (discussed in Chapters 5 & 6) that policy transfer

and transnational learning have played a part in the auction design and the selection of reverse auction as a preferred tool. The roll out of reverse auctions has become a clearly-defined policy tool in recent years (REN21 2016, p. 20, IRENA 2017) and this has arguably emerged through transnationally-conceived benefits and learning produced to ensure that the climate crisis is managed by and for capital.

(Opposition) networks

If the international increasing popularity of reverse auction amongst policy maker is an example of transnational learning on a policy level, the networks and social groups dedicated to opposition (or support) of renewable energy technologies also engage in transnational learning. Carroll (2007) argues that as the neoliberal block has a well-established, networked and resourced transnational business elite producing and disseminating knowledge, the 'counter-hegemonic' groups have become "more institutionalised, complex and networked" (p. 52). These counter-hegemonic groups centred around prefiguration have very limited resources and are "*positioned on the margins of political and cultural life*", but the "*information revolution has opened opportunities for low-cost communication*s" and "*production of alternative media*" across distant places (Carroll 2007, p. 53. Hackett & Carroll 2006).

News and experiences are disseminated internationally among opposition groups through social media networks, often without context or disclaimer of the interest behind the stories. Equally pro-renewable websites, news outlets and organisations disseminate information from different contexts and examples of practices they wish to promote. During the years working as a project manager for wind power projects I followed several opposition social media pages and noticed how news stories from other Nordic country or rest of Europe, and perhaps originally from North America or Australia, would appear in different project specific pages and circulate from group to group. Focusing on wind power websites, Munk (2014) shows that opposition, as well as proponent, groups and arguments are global. (Munk 2014) collected data from 758 wind energy websites in six countries and 14 social media pages from Denmark to analyse how the wind power opponents and proponents organise online. Hyperlinks harvested revealed two overall communities, the pro and the con clusters, that are highly interconnected inside the cluster, both within a country and internationally with other countries' pro or con clusters, and were typically set up to pursue a specific agenda or raise public awareness of a specific issue (Munk 2014). The con websites tended to link out more often to pro websites, their opponents, than other way around, perhaps to make their case heard and acquire a public voice, while proponents didn't react to an established policy or proposed project nor seem to pay much official attention to opponents, while the social media pages tended to use the pro/con website links as sources depending on their agenda (Munk 2014).

Munk (2014, p. 3) also mentions the controversy of "trustworthy knowledge claims". Using an Australian energy field example, Askland et al. (2016, p. 85) write about the conflict over the awarding of contracts for Coal Seam Gas, witnessing how "*circulating stories hold a validating force, and transform "gut feelings" to "truths"*". Besides the neoliberal renewables advocacy networks, there are also powerful anti-renewables fossil fuel interest sections. Recently, Walker (2023, p. 1) showed that in Australia, a 'community' campaign against an offshore wind area proposal relied on highly sophisticated "*disinformation tactics generated by fossil fuel funded science denial 'thinktanks', using identical 'astroturfing' tactics they have developed to block offshore wind in the USA*". Basically, in the era of social media and unfiltered content creation, the transnational business elite (Carroll 2007) cannot dominate the narrative anymore in the public arena. In the policymaker space, the corporate expert knowledge networks are dominant, but especially in local legitimacy battles and mainstream media neoliberal advocacy networks, fossil fuel interest fuelled content and national and sub-national politics all fight for dominant position.

Aspect 5: Impacts, local community concerns and (lack of) transparency

"*Neoclassical theory suggested that the factors of production (land, labour and money) could*" – and should – "*be commodified"* for the market forces (Chester & Paton 2012, p. 17). But, as Polanyi (2001 [1944]) points out, while these 'fictious commodities' might be essential to the markets, the impacts of such commodification could not be tolerated in any society unless its "*human and natural substance*" was protected (Polanyi 2001 [1944]), p. 3). While a capitalist future powered by renewable energy sources is possible, "*the creation of global scale geographies of renewable energy*" generation, transmission and consumption would necessarily involve "*powerful new rounds of investment in, and claims on, rural areas*", on a scale exceeding previous commodification rounds of land grabs (McCarthy 2015, p. 2486). As McCarthy (2015, p. 2486) says, these "*impacts would likely fall disproportionately on rural areas, where land values are lowest and existing users often have less power and fewer formal land rights*". Thus, McCarthy (2015, p. 2486 says, "*the temporary "fix" to crisis"* in the form of the renewal of capital accumulation would turn on the appropriation of new elements of nature. Similarly, Moore (2015) argues that new ecological surpluses are necessary to capital accumulation. These kind of new sites of primitive accumulation are often contested as people push back against the commodification of their local ecology (McCarthy 2015, Polanyi 1944). Polanyi calls these efforts at social protection as creating a 'double movement' and sees them as the inevitable consequence of *"the instability of the economy-environment relation stemming from the commodity fiction*", and which "*invokes the need for specific policies and forms of regulation*" (Chester & Paton 2012, p. 17). Brenner et al. (2010, p. 335) see this as a typical, inherently contradictory, feature of neoliberal policy experiments "*designed to impose, intensify, or reproduce market-disciplinary modalities of governance*". Such projects "*generally entail both destructive moments; efforts to roll back non-market, anti-market, or market-restraining regulatory arrangements"*; and creative

moments; "*strategies to roll forward a new institutional infrastructure*" for marketised regulatory forms (Brenner et al. 2010, p. 335, see also Brenner & Theodore 2002; Peck & Tickell 2002).

Renewable energy local opposition captures this paradox, where there are contradictories and conflicting narratives about what is right, what needs to be done and how. As Howe (2019, p. 435) writes in her book about living in and with the complexities of wind power development in Mexico's Isthmus of Tehuantepec, one can stand on firm ethical ground and justify sound supportive arguments and also fiercely oppose "*corporate megaprojects and industrialization of their environment*" (Howe 2019, p. 21). There is a vast amount of literature about citizen activity, collaborative planning, indigenous rights and social movements fighting fossil fuel projects, and their leaders are celebrated both in academia and in the communities as heroes. But in the case of utility-scale renewable energy, in the "social drama' of climate change, the heroes and villains are not as clear (Smith & Howe 2015). Deciding whether or not local negative effects are acceptable for the "greater good" of combating carbon emissions from fossil intensive energy production is a site of constant battle, between contrary and co-existing views and competing narratives (Smith & Howe 2015). These are portrayed illustratively in the Polanyian concept of 'double movement', and in my fieldwork, there was ample evidence of constant contestation and competing narratives of the level of 'acceptable' local impacts for renewable energy installations still to be perceived 'legitimate'.

While this research is a policy ethnography that tracks the policy development networks, which are different to the actual installation localities, it is helpful to understand the local concerns and the real-life impacts of planning regimes. The lived experience on the ground where the installations are constructed should not be forgotten, even when the focus is on energy policy, since they are so intertwined: the decisions and process adopted by policymakers ultimately impact and lead to different outcomes in the localities, starting from grid decisions and 'renewable energy zone' locations, to how the projects are governed (distributional, procedural), to who ends up owning the new infrastructure. The intertwining also goes other way around, from community to energy governance, though is more muddled: the needs of local communities, or at least the perception of what they might want, need or be interested in, impacts the considerations and inclusions in the policy. In other words, the local push back against commodification leads to specific policies and forms of regulation in order to protect ecology and people (Polanyi 2001 [1944], Chester & Paton 2012) – at least to a level that aims to protect the legitimacy of the state that has mandated the process or (re-)commodifying land for renewables. Inter-region and spatial factors can also be critical. Users of renewable energy can be dispersed across territory, while the impacts of rural utility-scale provision are concentrated in particular rural localities.

Social acceptability as a concept

A positive overall attitude towards renewable energy can easily (mis)lead policy makers to assume that social acceptability is not an issue (Wüstenhagen et al. 2007), but in local siting decisions of

installations, local acceptability is far from guaranteed just because general attitude towards renewables might be positive (Bell et al. 2005). The re-occurring (land-use) conflicts relating to specific technologies or projects have prompted a variety of explanations ranging from social 'gap' (Bell et al. 2005, Bell et al. 2013, Devine-Wright et al. 2017), place attachment (e.g. Devine-Wright & Howes 2010, Devine-Wright 2011b), behaviour and attitudes (e.g. Huijts et al. 2012, Korjonen-Kuusipuro & Janhunen 2015, Janhunen 2018) distributional justice (e.g. Lind and Van den Bos 2002, Wolsink 2007) or procedural justice and fairness (e.g. Gross 2007, Wolsink 2007, Coleby et al. 2009). This body of literature is referred as social acceptability and is especially useful for local level energy ethnography.

Social legitimacy, social acceptability or acceptance as concepts often lack clear definition (Janhunen 2018). One of the often-cited definitions proposed by Wüstenhagen et al. (2007) uses three dimensions (see Figure 4): socio-political acceptance, community acceptance and market acceptance. Socio-political acceptance is defined as a broad general level of acceptance including general support, acceptance by key stakeholders and policy actors, the institutionalised framework enabling investments and community support and the spatial planning systems which stimulate collaborative decision making. Community acceptance refers to the acceptance by local stakeholders, such as the residents and local authorities. This is the arena where the debate around NIMBYism unfolds. Lastly, market acceptance covers the small-scale adoption of "green energy" by consumers and the investors. The authors claim that there is a link between market and socio-political acceptance since large companies that own and manage significant parts of national grids, and production, and therefore have an influence in forming of energy policies, financial procurement systems and access to the grid.

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Figure 4. The triangle of social acceptance of renewable energy (Wüstenhagen et al. 2007).

Drawing from this and other literature Sovacool and Ratan (2012) have proposed nine factors explaining the implementation of renewable energy. They use the three dimension defined by (Wüstenhagen et al. 2007) but separate political acceptance from societal and community acceptance. The nine factors listed are: *"(1) strong institutional capacity; (2) political commitment; (3); favourable legal and regulatory frameworks; (4) competitive installation and/or production costs; (5) mechanisms for information and feedback; (6) access to financing; (7) prolific community and/or individual ownership and use; (8) participatory project siting; and (9) recognition of externalities or positive public imag*e" (Sovacool & Ratan 2012, p. 5269). The first three relate to socio-political acceptance, 4–6 to market acceptance and 7–9 to community acceptance. In addition, as Wolsink (2007b) shows, local acceptance has an important temporal dimension: acceptability follows a U-curve, starting with high acceptance and decreasing to a low-point in the siting phase (with the majority often still positive) and back up after the project is built and operational.

The definition from Wüstenhagen et al. (2007) is a widely cited and useful framework distinguishing contrasting dimensions of acceptance, but can be criticised for lacking emphasis, first, on how each dimension inter-relates across different spatial scales (Devine-Wright et al. 2017), second on how dimensions influence each other and third on lacking an ecological aspect.

This latter ecological concern plays an important role especially in local perceptions of both benefits and negative effects, as well as relating to how useful a chosen site may be, based on its physical potential as an energy resource. Furthermore, there has not been much research considering the combination of more than one of these dimensions (Sovacool & Ratan 2012, Devine-Wright et al. 2017), nor on how these dimensions interact with each other and enable or prevent acceptance.

The pejorative notion of 'Not In My Backyard' NIMBYism has been mainly abandoned nowadays. Most academics agree that this is too simplistic an explanation for a rather complex phenomenon, especially as the term has been used to discredit opposition (e.g. Burningham 2000, Van der Horst 2007, Zografos & Martínez-Alier 2009, Janhunen 2018). As building renewables at bigger and bigger scales, and the push for new areas for renewable energy production increases to fulfil renewable energy targets, questioning the industrialisation of the rural landscapes, and what might appear as sacrificing parts of local ecosystems to new energy production areas for the greater good of battling climate change, is being increasingly questioned by local residents and scholars. These developments highlight the analytical possibilities of Polanyi's (2001 1944) 'double movement' concept. For example Mulvaney (2019, p. 8, 114) calls this the "Green Civil War", and argues that opening large desert areas in California for solar development puts ecological considerations into direct conflict with climate change mitigation and creates deep rifts among environmental groups over land use across the US Southwest. The term he (2019, p. 3) uses is "energy sprawl", which questions the need for new "wild" areas to be used for energy transition when there is enough already modified and degraded land to meet every country's 2050 renewable energy goals (e.g. Kiesecker 2017).

The "social gap"

There is often a gap between society-wide views on climate change and energy transition on the one hand and views in localities affected by renewable energy installations. Moving from general-level acceptance of a certain technology or idea, such as renewable energy, to the local level, the acceptability of this technology or project can be lower than surveys of general renewable energy support might suggest. Several polls and surveys in a wide range of countries show high general support levels for renewable energy. For example in Australia the Lowy Institute's 2018 poll showed that 84% of Australians agreed that "The government should focus on renewables, even if this means we may need to invest more in infrastructure to make the system more reliable" (Oliver 2018, p. 14). 59 % thought that "global warming is a serious and pressing problem" and "we should begin taking steps now even if this involves significant costs" (Oliver 2018, p. 13). Despite this general popularity, there can be fierce opposition to local projects on the ground. This is described as "a social gap", between general and local acceptability (Bell et al. 2005).

Literature attempting to explain this gap focuses on community or societal acceptance, and seeks to explain opposition at the local level. Studies considering the political and market dimensions,

or more than one dimension of social acceptability, are scarce (Devine-Wright et al. 2017). One of the early works by Carlman (1982) discusses public opinion towards wind power and the problem of planning conflicts in areas of interest such as over minimum distance recommendations, as the important "non-technical factors". Bell et al. (2005, 2013) distinguish two separate gaps, the social gap between the high general support and the local opposition of actual developments, and the 'individual gap', which exists when an individual person has a general positive attitude but actively opposes a particular development. The authors offer three explanations. The first explanation offered is the *democratic deficit*, which means that while most locals may accept the project, a minority in opposition can lead to the delay or cancellation of the project. The second explanation is the principle of *qualified support*, where people accept a certain technology on a general level, but not unconditionally. They might support renewable energy but believe that some qualifications, limits and controls should be applied and may therefore feel that a certain project is faulty even if they generally think that renewable energy is desirable (Wolsink 2000). The third explanation is *self-interested opposition* which is the closest to the NIMBY claim. In their later work Bell et al. (2013) explain the social gap through overlapping and different types of attitudes, rather than just a single attitude type. The authors explain opposition as comprising a mixture of a majority of qualified supporters, some "place-protectors", some unqualified opponents and even a minority of self-interested NIMBYs. Often a bit of an overlooked notion, as Wolsink (2000, p. 57) reminds us, is that part of the local opposition rejects of the technology in question altogether. At a local level there can be common claims, for instance that the project involves overly expensive subsidies or is unreliable, that might indicate an "emerging opposition" towards the technology as a whole, and not just a single project. Wolsink suggests this sentiment may be more common than credited, especially in the case of wind power.

The notion of a "social gap" has also been questioned and criticised. Batel and Devine-Wright (2015, p. 1086) compared national and local perceptions of high voltage power lines and concluded that "*there was no clear pattern distinguishing attitudes towards power lines at the local level from attitudes at the national level*", and that "*the similarities between participants at national and local levels may be greater than the differences*". The authors argued that if research continues to repeat (mistakenly) that the national-local gap is incoherent and contradictory, "*it contributes, even if unintentionally, to reinforce the idea that something is wrong, irrational and illogical with local communities' opposition to energy projects*" (Batel & Devine-Wright 2015, p. 1089, see also Aitken 2010).

Place attachment

Place attachments (e.g. Devine-Wright 2009, Devine-Wright & Howes 2010, Janhunen 2018), or "place-protectors" (Bell et al. 2013), are used as explanatory factors especially for wind power opposition. These concepts seek to convey the significant emotional bonds that can exist between people and places (Janhunen 2018, p. 19). Place attachment refers to "*behavioral, affective and cognitive ties between individuals or groups and their socio-physical environments*", developed

over time, which are taken as given yet are "*integral to self-definitions, including individual and communal aspects of identity*"; disruptions, such as the development of large-scale renewable energy, can threaten these self-definitions (Brown & Perkins 1992, p. 280, 284). Devine-Wright and Howes (2010, p. 271) note that the impact of wind power development can be "*experienced as a threat to one's identity*" for "*people with strong place attachment*", which in turn leads to negative attitudes and opposition against a specific development to "protect" their own place (see also Upham et al. 2009, p. 101). It is often suggested that no similar links between supportive behaviour have been found (e.g. Devine-Wright & Howes 2010, Janhunen 2018), but a study of tidal energy project in UK (Devine-Wright 2011) indicates that is not necessarily always the case. In this study there were strongly contradicting views between the residents of nearby villages but overall there was quite a strong support for the project that was seen to fit the character of the area in place-related continuity and to "*enhance the distinctiveness of the area, putting each village 'on the map worldwide'"* (Devine-Wright 2011, p. 90). Though in this case it is important to bear in mind that the visual effects of tidal power are quite different when compared to wind turbine or biomass installations, and that the project was the first of its kind on-grid large scale tidal energy turbine and therefore it may be seen as a unique case (see Upham et al. 2009, Devine-Wright 2011).

Understanding of the perceived visual aspects, such as a place's scenic beauty and environmental features, and the meanings assigned to them, is essential when talking about place attachment. Devine-Wright and Howes (2010) found links between strong place attachment, feelings of anger and threat and seeing a planned wind farm as "an eyesore", "fencing the bay" and "industrialising the area". "*It seems that it is not the landscape type that arouses the emotion but rather the way a person interprets a landscape with wind turbine*s" (Janhunen 2018, p. 59). Janhunen (2018) notes that there was a significant difference in the views expressed regarding landscape between permanent residents and second-home owners in the Finnish context: the vast majority of people with holiday homes in the locality had more negative feelings towards a project planned for the area and expected the landscape to be "ruined", whereas only minority of permanent residents shared this belief, because they seemed to attach different meanings to the place. Counter to popular assumptions, Stedman (2006) found that second-home owners exhibit high levels of place attachment, which is more connected to landscape and day-to-day escape experiences, whereas permanent residents' place attachment is more rooted in social networks and feelings of community. In context of place attachment contributing to attitudes of change introduced to the area, this emphasises critiques, for example by Aitken (2010), of classifying opponents or supporters as homogenous groups and neglecting the diversity of motives, attitudes and relationships to a place among both opponents and supporters.

In their more recent work (Devine-Wright and Batel 2017) have noted that research should also be extended to different scales of place attachment. According to their results, people have different levels of attachment in local contexts, which has been the focus of most place-oriented research, and national or global levels. How strong the attachment is at the global/local level also anticipates

their support or opposition to energy infrastructures designed to address issues at the national/global level. Support for a shift towards smaller scale (compared to coal or nuclear several GWs size installations) energy systems that utilise renewable energy sources such as wind and solar, and also therefore requires new grid lines, is partially influenced by both climate change concern and relative place attachment at global/national levels (Devine-Wright & Batel 2017, p. 117).

Emotions, trust, fairness and distributional and procedural justice

In her dissertation Janhunen (2018) asserts that previous research has neglected the role of *emotions* in wind power discussion, and adds to the concepts of qualified support (see Bell et al. 2005, 2013) and place attachment, by focusing on the role of emotions in forming attitudes towards wind power on a local level, including behavioural perspectives. In this context *acceptability* means an attitude that is formed by an individual in a fairly complicated evaluative process based on cognition, affect (emotions), and behaviour, which in turn are impacted by experiences and associations with other attitudes (Fabrigar et al. 2005, p. 82). *Acceptance*, meanwhile, refers to supportive behaviour (Huijts et al. 2012). Huijts et al. (2012) synthesise a framework based on psychological theories where acceptability is influenced by an individuals' perception of costs, risks, benefits, and their perceptions of fairness, reflecting experiences, knowledge and social or perceived behavioural norms, which lead to an intention to accept and finally generate acceptance. It is noteworthy that (Western) research mostly refers to *acceptance* rather than *active support*, perhaps portraying the ideological, largely unquestioned state preference to facilitate large-scale projects instead of community scale – for which local acceptance is likely the best outcome that could feasibly be expected.

According to Huijts et al. (2012, p. 528), trust affects "*acceptability or intention to accept indirectly via perceived costs, risks and benefits*". *"Higher trust in those responsible for the technology*" tend to lead to "*higher perceived benefits and lower perceived costs and risks, which in turn would lead to a higher acceptability*" or at least "*intention to accept*" (Hujits et al. 2012, p. 528). The concept of fairness, on the other hand, relates to both distributional and procedural justice: how people experience and evaluate a decision-making process of a specific project or technology impacts to perceived fairness of the distribution of costs, risks, and benefits (Huijts et al. 2012).

Khan (2003) stated over 20 years ago that wind power seems to be especially prone to bring forward tensions, since the environmental benefits of wind power are invisible and on a global and national level, while the negative effects are concrete and local (see also Kempton et al. 2005, p. 146). Khan's argument overlooks the potential of local benefits – although unevenly distributed – and the value-laden climate change, energy policy and electricity price discussion, but the scales of benefits and drawbacks as a factor in local opposition shouldn't be overlooked. *Distributional justice* (e.g. Lind & Van den Bos 2002; Wolsink 2007; Huijts et al. 2012) is one of the explanations

offered for opposition towards certain projects: the local benefits are seen as small or insignificant when compared to the perceived negative effects. Similarly, Goodman et al. (forthcoming) note that one factor in localised opposition is whether the locale benefits from the utility or not. Renewables are likely to be more welcomed if they extend co-benefits to these localities. For example, benefits could come in the form of employment, allied industrial development, community funding, cheap local energy, or local co-ownership. If none of these are visible to the local residents, the attention can only focus on the negative impacts to the local ecology. On the other hand, adopting some kind of financial benefit strategy by the policy makers or the project developer can be risky, since compensating can be seen as silencing, as extending bribes, or putting a price on principles (Bell et al. 2005).

Warren et al. (2005) draw out differences between hydropower development a few generations ago in Scotland and wind power development in the early 2000s that were seen quite differently by local communities. Whereas hydro developments were believed to be delivering "power to the glens" and welcomed as bringing significant economic benefits to local communities, nowadays, "*many rural communities consist primarily of people who have no direct economic connection with the land but who value rural living*" for the quality of life it provides (Warren et al. 2005, p. 870). The authors conclude therefore that "*the economic arguments used to 'sell' hydro developments are therefore unlikely, by themselves, to persuade today's rural dwellers*" to embrace renewable energy (p. 870). The survey data from Scotland, however, still shows the support of wind power by the majority of people. This suggests that resistance to the new developments may be more to do with *how* they are being done rather than *why* they are being done, and suggests the need for a more coherent strategic planning policy for the location of new wind power (Warren et al. 2005).

This emphasis on *procedural justice* or *fairness* has often been stresses as a plausible explanation for public responses. Almost all publications about wind power planning processes emphasise public participation (e.g. Gross 2007, Wolsink 2007, Coleby et al. 2009). It is well known that better public engagement can result in greater legitimacy and trust – and better decisions (Wüstenhagen et al. 2007, Aitken 2010, Janhunen 2018). In an Australian study of community consultation of a wind farm project, perceptions of how *fair* the process was (e.g. being heard and treated with respect, receiving information and perceiving unbiased decision-making), as well as distributional justice, were seen as shaping a project's acceptability (Gross 2007). Based on the literature it can be argued that community members do expect and want public participation (Coleby et al. 2009), as well as policy responsiveness and accountability (Hindmarsh & Matthews 2008, p. 229).

Neglecting local interests can certainly turn *qualified supporters* into objectors (Wolsink 2007), but interestingly there are also cases in which a perception of relatively low procedural justice co-exists with strong project support. For example, in the tidal energy project in UK, Devine-Wright (2011, p. 91) writes that poor procedural aspects did not cause local opposition, since in this case,

expectations of public involvement were so low that the decision-making process "*did not disturb expectations of how planning and consultation procedures 'normally' took place*". In this case, "*the project was interpreted by residents to have sufficiently positive outcomes to counter their concerns about procedural aspects*" (Devine-Wright 2011, p. 91). Procedural aspects clearly play a role in in determining public responses, including which of these public concerns are sufficient to trigger objections (Devine-Wright 2011, p. 91).

Maehr et al. (2015) compared the emotional response to the visual impact of wind turbines with the impact of more familiar industrial infrastructure, and found there was no difference in psycho-physiological response measurements. In fact, wind turbines were rated as more calming and less intrusive than some other industrial constructions. It needs to be noted, though, that participants in that study were individuals not living in a rural area or otherwise personally affected by wind farm projects. In a study about replacing nuclear power in Switzerland (Visschers & Keller et al. 2011), the perceived benefits of energy security, benefits for the climate, as well as trust in various actors and emotions in relation to risk perception seemed to explain the local acceptance. Ruiz et al. (2018,p. 371) found similarly that in an oil drilling project in the Canary Islands, with fairly low local acceptance and prior negative attitudes, "*the greater the risks, the fewer the benefits, and the less procedural justice perceived, the more intense*" were the (negative) "*emotions aroused by oil drilling*".

Huijts et al. (2012, p. 526) define acceptance as behaviour "*that enables or promotes the use of a technology*", by somehow declaring support for the technology, or by directly "*purchasing and using the technology*". Resistance on the other hand, according to the authors (p. 526), "*can be expressed in protesting against the technology*", or in "*not purchasing and using the technology*". When people are in favour "*but do not take action against it, it can be said that people tolerate a technology*", although it is also possible that people oppose the technology but still do not take action (Huijts et al. 2012, p. 526). Batel et al. (2013) raise the issue that previous research has overlooked the portion of population that may accept a technology but don't support it: in their research on power lines this amounted to 16.5% of participants. They argue that assuming that "*acceptance and support are equivalent*" (p. 4) may present "*some constraints for the theoretical advancement of this area of research*" (p. 1). By "*only searching for acceptance, and disregarding other types of responses to energy infrastructures*", the long-term "*sustainability of these technologies might be diminished*" (Batel et al. 2013, p. 4).

In this thesis I suggest moving towards a more comprehensive concept, of social legitimacy, that encompasses the three dimensions of social acceptability discussed above (see Wüstenhagen et al. 2007), but in a more robust and active way than just "accepting" or "tolerating" renewable energy. It also offers a means of extending the frame beyond the locality to encompass responses to wider policy arrangements and assumptions, such as privatisation and marketisation, that then constrain local possibilities. There is rarely a connection made between how "just" national or regional

policies are perceived, such as feed-in tariffs, carbon schemes or power purchasing policies, when the acceptability or legitimacy questions of renewable energy are debated.

(Lack of) Transparency

The neoliberal promise of the best knowing market relies on information available for the market players and transparency on market function to be as efficient as possible. In practice, there are two inherent features, typical for many markets and apparent in the privatised electricity systems in Australia and Finland, leading to imperfect information and functioning of the market.

Firstly, increasing complexity is a tendency of neoliberalism. According to Philip Mirowski (2010), neoliberal policymakers try to fix market failures through state-created markets. These emulate the price mechanism, and achieve 'price discovery', but operate at the behest of the state. As such, they are open to political capture and have a tendency to implode, expressing and exacerbating the underlying failure. In other words, if the –'market principle' has not worked in real-life, the solution tends to be to impose it more thoroughly instead of questioning whether the principle itself is likely to work. Mirowski (2010, p. 435) writes that

"financial entrepreneurs think they uncover opportunities for arbitrage and the injection of greater degrees of leverage by inventing hybrid market forms and novel financial instruments: this is a process starting long ago with bills of exchange, bonds, shares of joint stock companies and futures markets, but then graduating to derivatives, derivatives of derivatives, trading of indices, derivatives of indices, and so forth."

With electricity markets the complexity market design is especially convoluted, and very hard to understand, even for the most experienced. The neoliberalism ethos of 'free competition' was, as Polanyi (2001 [1944], p. 146) noted, "*opened and kept open by an enormous increase in continuous, centrally organised and controlled interventionism*" by the state. Moreover, since the network system was developed, and privatised, for type of generation completely different to solar and wind, just adding rules on top of rules, it is not hard to see why the system is so poorly suited to deal with energy transition. The continuous adding and changing of rules increases complexity and hence is likely to decrease people's engagement with energy as well as undermine transparency in how the market operates. For example, in the Australian case, AEMC – which has been in charge of rule changes since 2005, at any given time there are several rule change requests being considered, taking submissions or recently determined (AEMC 2024c). The time requirement of just keeping up with changes – and constantly evolving technology – can hence make the space inaccessible and unappealing to try to engage with.

Second feature in decreasing transparency, is the inherent tendency to favour commercial confidentiality in any aspect that is not regulated to be publicly available. In privatised spot market

design, bids are price-based, not cost-based, and hence no one in the market, besides the generator itself, has clear visibility of costs of generation (Mcardle 2018). Most generators, especially in Australia (and State of Victoria as a part of the east coast grid), are not publicly listed companies or utilities that large, that it is almost impossible to work out costs and profits made in the spot market – and hence gain transparency why energy transition is slow or how (un)profitable certain project features are (see Christophers 2024). The spot price design itself makes it impossible to have much transparency to the future price of the commodity, electricity, and hence the likely outcomes of project revenue. This feature pushes the projects to search for more predictable form of income, a contract from a corporate buyer, retailer or government, which is, of course, under commercial confidentiality, and not transparent to the market or policymakers. All the land lease contracts, neighbour contracts and contracts made with suppliers are under commercial confidentiality, which does not foster trust or openness in the community. The reverse auction bids themselves, and in the Victorian case, even the results, are kept secret by the state to respect the corporate preference of commercial confidentiality to the extent that even the winners didn't really know why they had won. In Finland, the state is required and used to publishing more data, which is mandated by European Union rules mainly motivated to foster competition by enforcing transparency. The auction results, while published, don't however reveal much of the revenue planned or required for the projects, since every project had another (non-transparent) plan for revenue.

Summary of the five aspects

Capitalism has internal tendency towards crises, which erodes away its own conditions to function. Climate change is (one of) the current crisis and renewable energy presents a possible (only partial) fix, especially now when it is competitive on price with fossil fuels. If we accept electricity as a commodity (Sovacool 2009), and the fact that solar and wind are now cheaper sources of electricity than fossil fuels (Kåberger 2018), wind and solar technologies might prove to be one the best 'frontiers' ever. Their value, or cost, is defined only through relatively low maintenance and high initial investment, there is no real concern of over-using or depleting the almost limitless and constantly refuelling resources when compared to oil, coal or gas (unlike many other commodities before).

The neoclassical ethos aims to subject everything to markets and commodification (Polanyi 2001 [1944]). Neoliberal states rely on markets and competition leading to the 'best' outcomes. The state role is to enable this (Polanyi 2001 [1994]), but equally 'stay out of the way' of the market (Harvey 2005). In the neoliberal ideology, the role of the state is to create and protect the institutional framework for markets, and if needed, create a market, but beyond this the state should not intervene to directly provide services, as it cannot possibly have enough information to second-guess market signals (price).

Private investment needs a commodity market, revenue certainty and security to invest – the role of the state to facilitate and institutionalise the commodification of wind, solar, hydro and land is crucial. Any state contract is also valuable as it can offer revenue certainty. Reverse auctions attract competing investors due to the desirability of the state contract, reinforcing the state's conception of getting renewable energy cheaply. The policy environment paradoxically creates a model where cheapness is expected but profit-seeking is needed. Any other priority is inherently not very high on the list.

Christophers (2024) makes a crucial point here. Private capital investment model relies on the future of building renewable projects with expectation of profit. Even if the renewables are cheaper than fossil fuel, and are readily available and non-depletable, the expectation of profit is a market-dependent factor outside any of the physical opportunities of renewable energy. The state has in the past offered high subsidies to ensure profitability (Christophers 2024), but willingness to continue fixed tariffs has dwindled under the growing prevalence of reverse auctions as the preferred policy tool. Yet, as Christophers (2024) points out, we are not on track of energy transition.

Imposing market rules especially on commodities, that were not themselves produced as commodities, such as land, labour and capital (Polanyi calls these fictious commodities), leads to push-back from society. Polanyi calls this dynamic the 'double movement'. The constant regulation and deregulation pattern is typical for neoliberalism (Brenner et al. 2010, Chester & Paton 2012), since the promise of a 'self-regulating' market is impossible to achieve in real life (Polanyi 2001 [1944]). Wind and solar energy require vast amounts of land (e.g. Goodman et al. forthcoming) which needs to be commodified, and the state has a crucial role in enabling this. The state also has a role in both upholding and dismantling other barriers to entry (and both upholding and overcoming the 'carbon lock-in'). The fixation with competition and cheapness, and the 'frontier' mentality of opening new opportunities for investors, leads to a double movement that erodes legitimacy of transition. There is no neat story here, rather it is complex and clashing, and combining cheapness, profit-seeking behaviour and state's objective of urgently decarbonising energy is difficult to consolidate with other needs of the communities.

Chapter 4. Contexts and comparison, cases Victoria and Finland

Logic of comparison and a few comparative statistics

Reverse auctions are an increasingly common policy tool in renewable energy all over the world (e.g. IRENA 2019, p. 4). The comparative lens was chosen to help to better recognise the patterns and trends relating to the impacts of this uptake by mapping the experiences of two different contexts. Comparison can aid to reveal the underlying processes, views and concepts by highlighting the similarities and differences in the uptake of this tool (see Simmons & Smith 2019). As Simmons and Smith (2019, p. 344) say, comparative ethnography can be especially useful in advancing understandings of political worlds and producing novel explanations which have relevance beyond the sites studied.

There are three main reasons for choosing the two cases, Finland and the State of Victoria. Firstly, while reverse auctions are an increasingly common tool, there are vast number of different design elements which can be used. The design in these two cases differed on the key aspects of revenue certainty, risk allocation and legitimacy responses. All of these aspects have impacts in using tenders in energy transition, and choosing two cases where they are different, offers a broader understanding of the phenomenon itself. The cases are both done in a spot price-based market environment with main emphasis on privately funded generation assets while state sets overall goals. This makes it possible to compare the impacts of the context of each country (context determines goal setting and design choices to 'fix' the issues present in that context). This allows analysis of what is similar despite the different contexts, what are the shared beliefs and what are the differences. Some key statistics to give basic context for both cases are presented in Table 2 below.

Table 2. Some statistics (Victorian statistics from ABS and Parliament of Victoria, Finnish from Tilastokeskus)

	State of Victoria	**Finland**
Population	6.5 million	5.6 million
Capital (and population in greater capital region)	Melbourne (4.9 million)	Helsinki (1.58 million)
Land area	227,444 km2	338,462 km2
State structure	Constitutional monarchy, two-party parliamentary system within Federal Commonwealth and strong State regulation	Social democratic, multiparty parliamentary system.
Energy governance	Energy supply is state responsibility, but East Coast has one market for all states	National state energy policy with strong local government, joint market with other Nordic

		countries and several interconnectors to neighbouring countries
RE goals	25% by 2020 (achieved) 40% by 2025 65% by 2030 (previously 50%) 95% by 2035 (new).	51 % by 2030 (note that this is including all energy such as heating and traffic)
RE at the time of RE auction decision vs in 2023 (electricity)	2016: 14.2 % 2023: 37.8 %	2016: 45 % 2023: 92 %* (52 % renewable) **Note that the statistic is called 'carbon-free generation' which also includes nuclear, bioenergy, and waste-for-energy. 35 % of the increase due to commissioning of new nuclear power unit.*
Electricity spot price market min. and max. prices (AUD $)	-$1000 /MWh +$ 17500 /MWh	-$830 /MWh +$6650 /MWh
Key employment fields	Health care, education, professional, technical and scientific services, construction and manufacturing	Health care, industry and manufacturing, retail, professional, technical and scientific services, education
Unemployment rate	4.0 % (2024)	8.1 % (2024)
Primary production in employment figures, share of forestry, agricultural, fishing	2.2 %	4 % (also includes mining)

Secondly, these two contexts provide an interesting comparison, as they represent socio-economically different societal models, and the historic energy resources are substantially different. The two contexts two reflect different varieties of capitalism and different institutional governance systems. The thesis theoretical framework does not rely on different varieties of capitalism, but the cases are different in this regard, allowing comparative insights via of comparative ethnography as described in the methodology chapter (such as helping the researcher to question the existing conceptual categories, better identify the phenomena studied and recognise the contrasts in practices within the field sites). Research shows that different governing systems and the different varieties of capitalism can lead to vastly different responses to climate change and energy transition efforts (Griffith et al. 2007, Lin 2021). For example, Rentier et al. (2009) have argued that countries with extensive mining and use of coal as fuel for power generation are prone to institutional carbon lock-in, and as a result, combined with certain socio-political market conditions, the energy transition can be very slow.

State of Victoria and Australia in general have extensive fossil fuel and energy resources, energy policy is state-based with weak federal energy policy over the last two decades, and energy

governance is "*centred on market governance rather than state-led planning*" (Lin 2021, p. 201), which has made the energy transition comparatively very slow. For example, the Statista website estimated that Australia had the highest per capita greenhouse gas emissions in the world in 2022 (Tiseo 2024). In so-called 'Coordinated market economies', government ownership and employment protection can make it harder to phase out existing coal power plants (Rentier et al. 2019). In Australia this is especially the case in Queensland, which has still significant state ownership in coal power plants and is consequently the most coal reliant state. Victoria, however, has privatised the coal power plants several decades ago, so coal is much more exposed to market pricing and several coal power plants have indeed closed early after privatisation (Hazelbrook 2017) or have announced (e.g. Yallourn 2023, Loy Yang A 2035) early closures (see DEEC 2024).

The existing legacy of coal and especially the (politically) strong and influential coal lobby have arguably undermined institutional energy governance and slowed down the energy transition significantly in Australia (Griffiths et al. 2007). In contrast, Finland has no domestic coal, oil or gas resources. Finland is also centred around market governance but has traditionally been reliant on importing energy and has national energy policy with strong local governance and socio-democratic values. The context of energy security and self-reliance concerns are mainly framed via national interests, with the European Union giving top-down energy policy goals and guidance. In other words, adding new renewable energy is much less controversial in the policy space as it is not seen as replacing an existing industry. However, both Finland and the State of Victoria are grappling with local resistance to renewable energy installations, within different planning regimes, creating an interesting basis for the comparison of local impacts and how they have affected national or subnational energy policy goals.

Thirdly, while both sites were applying reverse auctions in renewable energy the first time, both governments have well-established institutional structures in place for state tendering in general. Both have privatised essential services which are still under the mandate of the state to uphold, such as healthcare, education and infrastructure (e.g. toll roads, affordable housing). These services attract frequent tenders from the state and have existing systems in place such as Industry Capability Network (ICN in Victoria), 'Buying for Victoria' website and the Hilma-website, a Finnish platform for tendering and for statutory information of past tender results. The energy sectors also have had tendering practices in place, especially for carbon credits, even if renewable energy was tendered for the first time. The experience in tendering itself was important as the concept itself was familiar both to policymakers and residents, making it seemingly logical (even normatively 'natural') to use tendering to promote the transition to renewable energy. Hence the tendering mindset an informed choice. Both sites were also applying the first reverse auctions in renewable energy at similar times (see figure 5), and after an earlier non-competitive earlier support scheme had been superseded (the RET in Australia, which is a green certificate system, and FiT in Finland which offered a high fixed top-up payment for all eligible projects). This created a good opportunity to explore the similarities and differences in these two different 'varieties of

capitalism', and how their economies and governance systems addressed the energy transition using the same tool. While the timing of these two cases is very similar and both cases draw upon other reverse auction designs from other jurisdictions, neither case was directly modelled from the other. Rather they are both examples of the international spread of the reverse auction as a popular tool for governments to 'price discover' support levels for renewable energy. Important to note here is also that the reason for choosing two different 'scales' of cases, one a nation and one a state within a federation, is that the legislative responsibility of organising electricity as a service is in Finland the nation-state and in Australia each State, not the Federal government. The case selection was guided by this scale, which inherently also was the scale of governance that organised, funded and contracted the policy tool of interest, the renewable energy reverse auction.

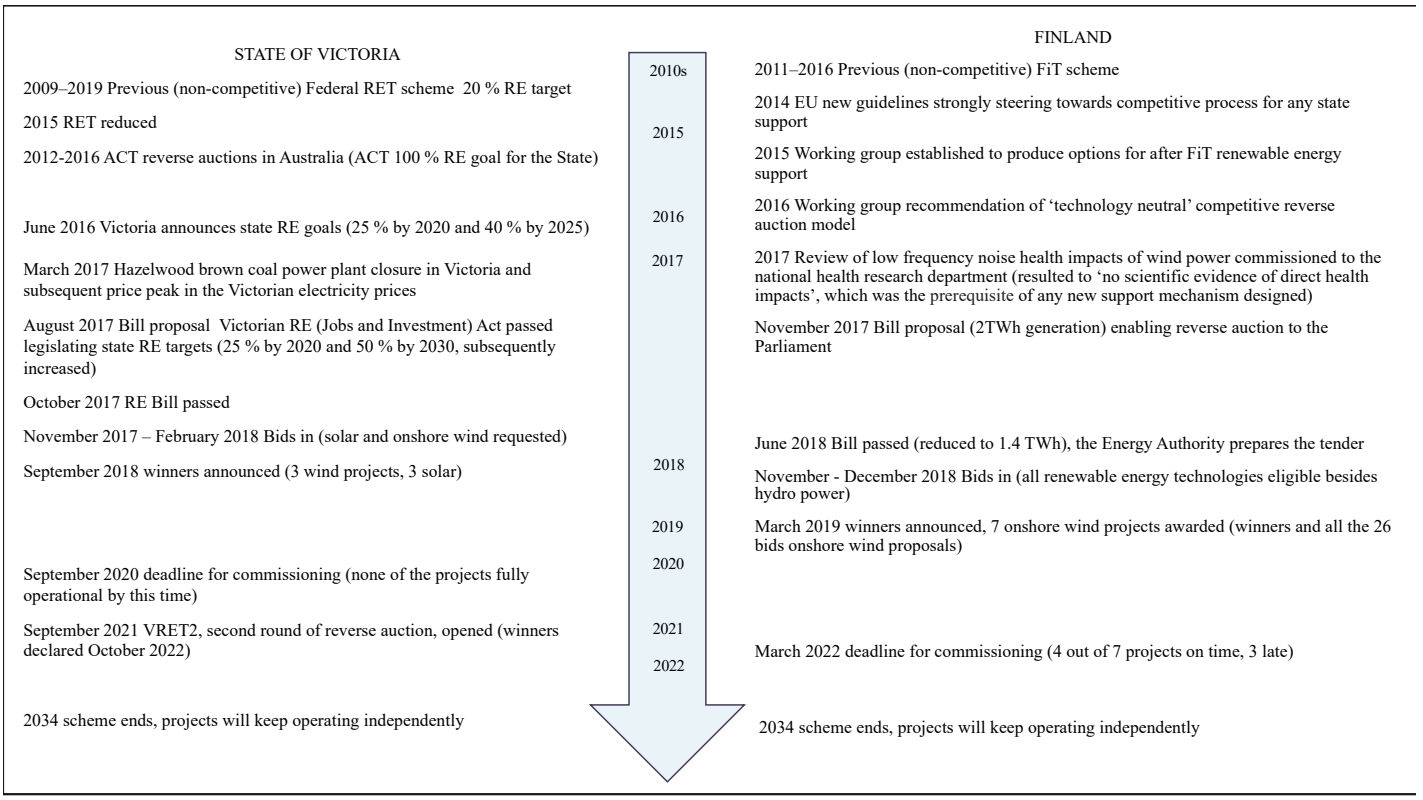


Figure 5. Timeline of some of the key steps in the policymaking process leading to the introduction of reverse auctions in Finland and State of Victoria.

State of Victoria: case context

In the following there will be short summary of the most relevant aspects of the Victorian electricity and energy history for this research. It is by no means a comprehensive history of the energy landscape, but rather a selected summary of the themes that impact the analysis of the reverse auction as a policy tool *within* its context. One of the findings of this thesis is that the context impacts hugely to which goals and design are chosen in the policy. In the State of Victoria,

the lack of national renewable energy and climate change policy, the privatisation background and the resulted complicated energy governance are discussed here as they impacted the design, goals and outcomes of the auction policy.

Besides the privatisation of electricity system and Federal energy policy (or lack of it), water is another important context for rural Victoria. The current rain, water allocation rights and compounding impact of the draught in 2019 (ending in 2020) were imminent in the lives of farmers, town planners and residents in rural Victoria. The wind farm areas southwest of the state were visibly green, while driving to the northwest the paddocks with irrigation were increasingly visibly the only green patches midst the yellow grass and red dirt. Northwest of Victoria, where two of three solar farms in the VRET1 were located, had the lowest rainfall in record in 2019 (Verley 2019). Diversification of farm income in these dry areas was described as needed, and hence the solar proposals which were proposed on non-irrigated land were seen mainly as benign addition to otherwise yellow 'unproductive' paddocks. A resident described the severity of the current draught:

> *"I moved up here 22 years ago, and you wouldn't have found a paddock that wasn't green, all through summer. Every paddock would be green because they had the water, whether they were officially using that water or not, that's another matter, but there was the water that they could afford, and put on the land. That then made all of that land productive, and so it was producing stuff but you drive around now, and it's a very different story."*

North of the state, in Gannawarra, which has traditionally lot of dairy farms describes the (privatised) water right allocations and the price of water going so high that the amount of dairy cows had dropped substantially leaving the landscape into patchwork of alternating green and yellow depending who had irrigation water. One of the locals tells the difficult reality of reliance on water when it does not rain enough and competition of limited water resources is based on price:

> *Resident: "Especially if you're a small town, that's relying on agriculture and at the moment it's really dry, there's no rain about, agriculture is really struggling, farmers are walking out dairy farms. So we need that diversity in our local economy, but we always tend to be losing more than we gain at the moment so that's just the way culture is…*
>
> *Researcher: Benny from the visitor centre said that people ask why don't you irrigate, there's a river? She said they don't understand that water is really expensive at the moment, so it's actually cheaper to buy hay than to try to grow grass.*
>
> *Resident: Yeah, and that's what's happened. 25 years ago, when this was predicted, and I used to work in the water industry then, and they said there'll come a time in the future when watering pasture for livestock comes unviable and sure enough, it has. Because what's happening now is all the corporates are getting in agriculture and they might have*

20,000 acres of almonds planted up in somewhere and they need a massive amount of water for that. They are corporates they've got plenty of capital on their hands, they can afford to pay for it and the farmer can't afford to pay for it, and it's just a multitude of things that are making it hard.

Pictures 1 and 2. Paddocks around Mortlake, and on the way to Mildura. The amount of rain was visible in the flat and cleared plains between towns, which host both agriculture and renewable energy proposals (Riikka Heikkinen 13.10.2019)

Farmers and town people alike would always talk about water: whether that they had had good amount of rain and everything was going well, or sometimes that the lack of rain puts farmers in a vulnerable position, which then leads them to sign lease contracts with wind or solar farms, which on a good year, they might have not done. The income from solar or wind installations is substantial, and it depended on the point of view whether that was seen to add on to the rural economy or replace the existing livelihoods.

National climate wars and the rise of state policy

To understand the significance and history of state instead of the federal government as the driver of renewable energy policy in Australia, the federal (and the lack of) energy policy is discussed shortly. According to (Lin 2021, p. 201) "Australia's liberal economy model is relatively incoherent" and hence has (had) limited capacity to meet ambitious emissions reduction targets as a nation, with "*different state governments pursuing separate goals to develop renewable energy*".

On a federal level, Australia's renewable energy targets and energy transition have been controversial balancing with the interests of fossil fuels, especially the coal, industry (see e.g. Curran 2009, Connor 2016, Baer 2016b). Australia has "*significant fossil fuel resources*", especially coal, "*that historically have been the source of most of its electricity supply"* (Buckman et al. 2019, p. 176). The only long-term national renewable energy policy, Renewable Energy Target (RET), which was 33 GWh additional renewable energy by 2020, included support both for small-scale and large-scale installation, and was regulated in 2001. The large-scale target of 41 GWh was set in 2009, but was changed in 2015 to 33 GWh due to the change of government and the controversial "Warburton review", which was led by a known climate sceptic and former Caltex chairman (Parkison 2014) and stated amongst other things that emission abatement would be cheaper by "pasture management" and "energy efficiency improvements" (Warbuton et al. 2014, p. 42). Neither of these measures were of course implemented in a meaningful way, but the RET was reduced nevertheless. As one long-standing policymaker describes for example the Renewable Energy Target (RET) in the 2010s:

> *"So if you go back in time, you had the original RET, that then got expanded in 2009, and then in got changed again was it 2015… You had the election of the Abbott government, and they appointed Warburton for the Warburton review. So at that point in time, Warburton was a known climate sceptic and the government appointed a climate sceptic to review a renewable energy target* [laughs] *kind of indicated where it might go."*

The 33 GW goal was achieved in September 2019 (CER 2019). However, as a certificate, it did not provide much revenue certainty after it was clear after 2016 that the goal would be met, and subsequently the certificate price dropped considerably (RBA 2020). In practice, this policy vacuum left incentivising any large-scale renewable energy to the States or to purely market-based investment for more than half a decade. In December 2022, after the change of government, the Federal government announced the first national renewable energy target since the RET: 82 % by 2030. Notably, this is not a legislated target. Instead, a 43% by 2030 emissions reduction target under the Paris Agreement was lodged in 2022 by the new federal government (DCCEEW 2024).

The only fairly uncontested part of the national energy policy has been the small-scale household solar support, which is still under the Small-scale Renewable Energy Scheme (SRES) and basically gives out a fixed subsidy at the time of installing with no extra effort to the household. This subsidy, together with the good solar resource, has led to highest per capita uptake of rooftop solar in the world (CEC 2023). There are also organisations advancing community energy, like Sustainability Victoria, which has created resources mainly for guidance (see Sustainability Victoria 2019), "New Energy Jobs Fund" ($20 million, of which $1.139 million is aimed at community energy) (State Government Victoria 2020), but the bulk of distributed generation is happening on rooftops behind the meter. The aggregated amount of rooftop solar has grown steadily from less than 5 GW in 2014 to 20 GW in 2023, which is little over 10 % of the whole

electricity generation in Australia (Clean Energy Council 2024). The rooftop solar is mainly marketed as reducing household energy bills, which can be relatively high due to very energy inefficient housing stock, instead of climate action, and the popularity of the scheme has meant that there has been no political appetite to end the scheme. In addition, State of Victoria implemented household solar rebates in 2018 on top of the national scheme (Solar Victoria 2023). The uptake of solar into the significant amount to date does create 'problems' to the operation of the grid, as the systems are "behind the meter", and hence can't be controlled by the system operator AEMO. The practical implications have been a pattern of very low prices during daytime hours, curtailment and export 'tax' during times of low systemwide demand. The uptake of rooftop solar has also led to dwindling growth in demand of electricity sold via the spot market, which fits poorly to the NEM logic, which was founded on forecast of steady growth.

Rooftop solar is popular to the extent that rooftop uptake is impacting the economics of large-scale solar installations. For example Bloomberg forecasts sharp decline in the income of large solar installations because rooftop solar is affecting demand and therefore prices on the wholesale market (Thornhill 2019). Negative day-time pricing is already reality in Queensland and South Australia when solar is abundant (Parkinson 2019b). Negative day-time pricing is a problem for specifically large-scale solar – rooftop solar is most often protected from wholesale market pricing with a flat rate tariff from the retailer. There have been several moves against the household solar advantage, mainly rule changes related to curtailing and penalising household exports at times of abundance sun.

The uncertainty and lack of ambitions on a national level on large-scale has led to establishing targets and instruments on a state level in most states (e.g. Philipson 2017). In June 2016, the Victorian Government committed to Victorian renewable energy generation targets (VRET) of 25% by 2020 and 40% by 2025 (State Government Victoria 2018), and just two weeks before the state election, the Labor party pledged to boost the renewable energy target to 50 per cent by 2030 if re-elected (Vorrath 2018), which it was, and subsequently the 50 % renewable energy by 2030 was legislated in 2017 (DELWP 2019). In 2015, the previous year when targets were announced, renewable energy provided about 12 percent of Victoria's electricity (Clean Energy Council 2016).

The target includes a package of policy reforms, with one of them being the Victorian Renewable Energy Auction Scheme (VREAS), dupped as "VRET1", which, in September 2018 awarded three solar farms and three wind farms long-term contracts (State Government Victoria 2018). Notably one of the solar farms, Carwarp Solar Farm in the northwest of the State, has since been dropped out of the scheme. The premise behind the targets is described on State Government website as "*meeting the targets will bring forward significant investment in new renewable energy projects in Victoria, create thousands of jobs, put downward pressure on electricity prices and secure Victoria's electricity supply…—…for current and future generations*" (State of Victoria 2018). What is noteworthy, is that both in the renewable energy goals and in 2018 VRET1 progress report

(see DELWP 2019) much more emphasis is given to economic benefits than emission reduction considerations. Notably, this same rhetoric was repeated in the 2022 new federal government 82 % national renewable energy target: "*…plan to create jobs, cut power bills and reduce emissions by boosting renewable energy"* (Labor Party 2022). Here, too, the jobs and affordability were mentioned before – and much more often – than climate action. The problem of this narrative is that it can lead the state to support any energy projects. While setting renewable energy goals, State of Victoria has also been pursuing a hydrogen export port in La Trobe producing hydrogen from brown coal for Japanese hydrogen cars (HECS 2023).

The first target in the State of Victoria, 25 % by 2020, was met partly due to VRET1 and partly due to other installations and rooftop solar. Since the VRET1, Victorian State Government has announced another round of reverse auction, VRET2, revived the government-owned State Electricity Commission of Victoria (SEC), added storage targets and announced the intent to increase the legislative future renewable energy goals from 50 % to 65 % by 2030 and 95 % by 2035 State Government Victoria 2023).

The role of State Government in energy generation and distribution in the State of Victoria relies on incentives and legislating targets as the state did not, at the time of the auction, own or directly control any energy related assets or organisations. As one of the interviewed policymakers describes the situation when the need for reverse auction – or other support mechanism – was discussed to achieve the set renewable energy targets:

> *"There was a variety of views in the market whether the offtakes, where the government offtakes through reverse auction or PPA were still needed to get projects away. But what has happened is that, because of the level of penetration of renewables in the grid particularly solar, is that negative pricing is starting to emerge, day-time negative pricing which is a real critical issue, and so a lot of projects that previously are taken the view that they can finance on merchant basis are no longer taking that view, and the requirement for the offtake.. either through a government offtake or through a PPA, corporate PPA, is very much alive and an issue."*

In other words, state might have the power to authorise appropriation of land or water for energy projects, but without the ownership of – or at that stage willingness to take any ownership of – generation itself, renewable energy projects need to be rendered profitable in capitalist terms. Besides enabling by permitting, the state's role is to provide revenue certainty in the form of "government offtake" as the policymaker describes. Earlier, for a long period, both the generation and distribution were publicly owned by The State Electricity Commission of Victoria (SEC) which was set up in 1918 to manage the vast brown coal dispositions in La Trobe valley in the east of State and distribute the centrally generated energy across the state (SEC 2023). The transmission and generation assets in the State of Victoria were all privatised in the 1990s neoliberal

privatisation boom and basically no state ownership existed until the announcement of late 2022 of reviving the SEC for intending to gain once more publicly owned generation assets. The State Government has also taken a more proactive role since VRET1 in new transmission line planning via 'Renewable Energy Zones' policy which has been currently adopted in every state within the east coast National Energy Market (NEM) area.

Privatisation background

Currently in Victoria privately owned AusNet is the Transmission Operator (TSO) and there are five distribution companies, also privately owned, each responsible for a specific geographical area. In State of Victoria, unlike in other states, the Australian Energy Market Operator (AEMO) has a role in planning of the Victorian transmission network which includes a yearly review of the adequacy of the Victorian transmission network to meet its reliability and security requirements and the regulatory investment tests for transmission (done by Australian Energy Regulator in other states).

"Before the 1990s, electricity supply was fundamentally understood as a state responsibility, and state-owned companies" handled generating and distributing electricity (McConnell 2020). In the State of Victoria this was done via state-owned The State Electricity Commission of Victoria (SEC), which was never abolished but lost all its assets and functions in the 1990s by firstly dissecting the Commission to three parts – into separate transmission, generation and retail asset companies – and then selling them off individually between 1995–1997 (Fearon & Moran 2001). At this stage neoliberalism was increasingly dominating the economic reforms both in Australia and internationally. In their analysis of Australian electricity supply system as an institution Haines et al. (2016) calls this introducing "competition norm" by laws and regulation in addition to previous ethos of accessibility, reliability and affordability. In addition, "*the cost of electricity supply was rising at a rate"* considered "*concerning*" (McConnell 2020).

Several politicians in power at the time were advocating for privatisation and competition as necessary for economic well-being. Prime Minister Paul Keating (1992) stated that *"the engine which drives efficiency is free and open competition".* In State of Victoria, especially Treasurer Alan Stockdale in the mid-90s was one of the key drivers of privatisation (moved since to Macquarie Bank). Minister Keating commissioned (first one as a Treasurer and second as the Prime Minister) two influential enquiries which identified issues in the electricity generation market, such as wasteful overinvestment to keeping "*lights on at all costs and creating jobs in specific locations and electorates"* (McConnell 2020).

First one was a report by the Industry Commission (1991) focusing on 'inefficiencies' of the electricity sector due to issues such as 'overemployment' and recommending a structural change by corporatisation and commercialisation of the sector and removing legislative barriers that shield

public electricity utilities from competitive pressures. In this report, the concept and support for an ‘open access’ regime (more in Chapter 5) to the transmission grid is also discussed and supported as a “vital part” of promoting better performance and competition (p. 110, volume 2). The net effects of passing the ‘saved money’ of better practices and pricing, basically by introducing competition, was estimated to increase the national output by $2.25 billion annually, lower household cost by $300 dollars, lower income tax by 0.6 % and create 8000 extra jobs (p. 50, volume 1). The arguments against this by the industry unions is countered in the report by stating while in the short term 'failure to respond to these [privatisation] opportunities’ might preserve jobs and working conditions, in the longer term the maintenance of “outdated managerial and employment practices” will result to higher electricity prices which will “limit employment opportunities elsewhere in the economy and diminish living standards generally” (p. 157, volume 1).

Several interviewees and ‘accidental ethnography’ discussions talk about SEC providing substantial skills training and traineeships, which were substantially reduced after the privatisation. Maintenance was casualised or outsourced. Reduction in staffing levels has been major increase in labour productivity is mentioned in the Industry Commission report, along with substitution of ‘in-house’ labour by contract labour which does not need to comply with public service employment terms and moving to single award covering all employees. The Industry Commission report quotes that SECV had already reduced employee numbers by 18 per cent between January 1989 and June 1990 before any privatisation ‘efficiencies’ were implemented (volume 2, p. 28), but this was not seen as enough. For example Richardson (2023) has since argued that while workforce in electricity generation has gone down for example in Loy Yang, one of the large brown coal plants in Victoria, the sector efficiency measured by employees per customer (one of the metrics used to justify the privatisation because it was higher compared to e.g. UK) has not necessarily improved since the number of managers has multiplied due to many smaller organisations all needing own managerial teams.

Another influential national inquiry was the Hilmer Review, which recommended a combination of laws, principles and processes to introduce competition especially to the fields such as utilities previously shielded from competition. The premise of the report is stated in the beginning where competition is defined as “positive force that assists economic growth and job creation” (Commonwealth of Australia 1993, p. xv). The Review quotes the 1991 Industry Commission report for example by stating that “inefficiency costs in the electricity sector alone” are $2.2 billion annually (p. 191), and arguing that electricity sector amongst other essential services such as water, rail and certain agricultural fields need to be subjected to competition. Some structural changes are proposed in this Review, such as separating regulatory functions from commercial functions and governmental departments, which eventuated later in creating separate entities for electricity regulation and monitoring. And, as McConnell (2020) points out, the strict separation of private investment, regulation and operation *“was partly to isolate policy and investments from the*

'political whims of the day'", rather than a need rising from the analysis in any of the enquiries or the sector itself.

The National Electricity Code Administrator which duty was to manage the National Electricity Code established in 1997. It was tasked to handle code changes, monitor compliance and prosecute for breaches through the National Electricity Tribunal (AEMC 201, Karmel 2018). The current form of National Energy Market, NEM, was created in 1998a. The idea was that market logic 'rather than central planners and bureaucrats' decide the location, timing and type of new energy generation investment: Consumers would be supplied by private companies guided by price signals and contract markets (McConnell 2020). The design included highly prescribed rules and several separate institutes to control the energy market:

- AER (Australian Energy Regulator) monitors and enforces the market rules
- AEMC (Australian Energy Market Commission) makes the rules, but only by processing rule change proposals submitted by someone else (AEMC cannot do a rule change independently)
- Market operator, which is currently called AEMO (Australian Energy Market Operator), operates the day-to-day energy market, the NEM, according to the rules
- ACCC (Australian Competition and Consumer Commission) is tasked to monitor that market behaviour is competitive and can issue fines
- COAG (Council of Australian Governments) was compromised of the State's energy ministers with the Prime Minister to set the high-level policy objectives (energy is State responsibility in the Australian legislation, but the National Energy Market works as one entity of all States besides WA and NT). It was established in 1992 and was replaced in 2022 by Energy and Climate Change Ministerial Council.

There have been several attempts try to bridge the gaps between the different organisations and create holistic view how to best manage energy transition and changing energy landscape. Most recently, a temporary body, the Energy Security Board (ESB), was tasked in 2017 to come up with a post-2025 system design as a response to the Independent Review into the Future Security of the National Electricity Market (based on the Finkel review recommendation, see Finkel et al. 2017). ESB was basically a forum to enable AER, AEMC and AEMO to collaborate on a time where a strategic whole of system oversight through transition was needed but failed to deliver any coherent plan. After several years and somewhat unpopular suggestions, the ESB was discontinued in 2022. Ben-David (2023) described disbanding the ESB decision as the organisations' "philosophical, structural and cultural differences just ran too deep" (p.9). A policymaker described the ESB a few years before its disbandment as:

> *"The ESB was created because those organisations were demonstrably unable to get along. So the ESB is not really a nice piece of governance, it's actually just a work around*

for the personalities that were involved at the time… With changing of whose sitting in what role, the ESB in longer term doesn't really need to exist."

The remaining bodies are questioned as well. Separate operator, rule maker and enforcer have contributed to a complicated system where any big changes are hard to complete. The difficulty to agree upon Federal policy matters since while all the states are indecently responsible, they are interconnected physically and in the same spot price design. The fact that practical governance is divided to several separate organisations is criticised by all the policymakers I talked to. One federal policy maker suggests that the easiest change would be to have less organisations:

"I think it's an open question about whether you need a separate regulator to a rule maker, I'm not convinced you do."

While the original justification behind privatisation, creation of current regulator bodies and market design was the perceived inefficiency of governmental control, under the several separate entities many of the same challenges than before privatisation remain. The competition reforms were first reviewed in 2002, by the request of the COAG at the time. The key issues identified were summarised as (p.6):

- The energy sector governance arrangements are confused, there is excessive regulation, and perceptions of conflict of interest.
- There is insufficient generator competition to allow Australia's gross system to work as intended.
- Transmission investment and operation is flawed, and the current regions do not reflect the needs of the market.
- The financial contracts market is extremely illiquid, in part reflecting large regulatory uncertainty.
- There are many impediments to the demand side playing its true role in the market.
- Greenhouse responses so far are ad hoc, and poorly targeted.
- The NEM is currently disadvantaging some regions.

Many of these issues still exist in a fundamental level even if details have changed slightly over the decades. Climate change response had not been added to the National Energy Law or Rules (NEL and NER) to guide new investment at the time of the Victorian auction, 15 years after the first review. Transmission investment continues to be slow and difficult to strategically place. Pricing to consumers depends largely on the State and transmission company area they are in. The competition logic of NEM discipling and incentivising the build of especially new generation by highly volatile prices and strict rules was rather watered down than 'solved' over the years to secure a more reliable income for the influential asset owners such as AGL (Haines & McConnell 2016). At that time of creation of the NEM electricity consumption was constantly growing. The original NEM logic was based on price signals incentivising private investment in a fairly linear

line due to growing electricity demand. The demand has, however, since flatlined, mainly due to uptake of rooftop solar. Haines and McConnell (2016) note that instead of more competition, the volatile prices have led to cross-ownership (emergence of 'gentailers', corporations both in charge of retailing to customers and owning large generation assets), which was not part of the original NEM design, and the rise in contracts market which enables the established gentailers and other large entities to hedge against and shield from the impacts of the price signals.

In conclusion, both the privatisation background and lack of meaningful national energy and climate policy led to the State of Victoria to set legislative renewable energy targets, as the market did not seem to support new investment to renewable energy. The renewable energy targets were framed via employment and economical growth, which together with little state direct control over any aspects of generation or transmission, are key considerations in understanding how and why the subsequent reverse auction policy was developed.

Short summary of the Finnish case context

In Finland energy policy and policy tools are mainly defined on a national level. But, as Goodman et al. (forthcoming) point out, establishing new energy geography engages the subnational levels via having responsibilities for land management and energy generation. Unlike in Australia, Finland has weak state level governance, but a very strong local government. While councils and regions have different levels of renewable energy, climate and sustainability strategies, the energy policy funding and legislation are regulated by the national government. Finland has no coal or oil resources of its own, and the portion of oil, gas and coal in electricity production is quite small, about 15% (Figure 4). Imported coal is only burned in a few centralised heat production or heat and combined electricity power plants, as is peat. The law to ban coal in energy production has been legislated in 2019 with an additional bonus for power plants offering support of 90 million euros to facilities that do this by 2025 (Lukkari 2018). In 2016, when the need for renewable energy support and goals was discussed before auction was designed, the dominant energy sources are nuclear with about 35%, hydro power 25% and biomass and peat combined 20% shares of the domestic production (Finnish Energy 2016). Because the coal ban was legislated at the same time than the reverse auction, the auction had smaller capacity than originally designed, as part of the budget funding was allocated for the coal exit bonus.

Bioenergy's big share is based mostly on fuels from forest industry, which is substantial industry with its own impacts to the local ecology, side streams and other wood-based fuels that are often utilised at energy intensive factories while the extra electricity is fed into the grid (see Ministry of Economic Affairs and Employment of Finland 2024). Another significant renewable energy source is historic hydro, while solar, wind and ground heath are only starting to emerge during the 2010s

(Finnish energy 2018, Ministry of Economic Affairs and Employment Finland 2024). Another characteristic of Finnish energy production is that Finland imported about 20–25% of its yearly electricity consumption from Russia, other Nordic countries and Estonia, and both of the share and the absolute amount have been increasing over the last decade (Finnish energy 2018), which fuels discussion of energy security. The import of energy drastically declined in 2022 and 2023 due to Russian invasion to Ukraine and the following energy crisis (see Figure 6). The deficit was mainly covered by the commissioning of a new nuclear power unit, new wind power and to a lesser amount with slightly downward trending demand by industrial users (The Energy Industry Association 2024)

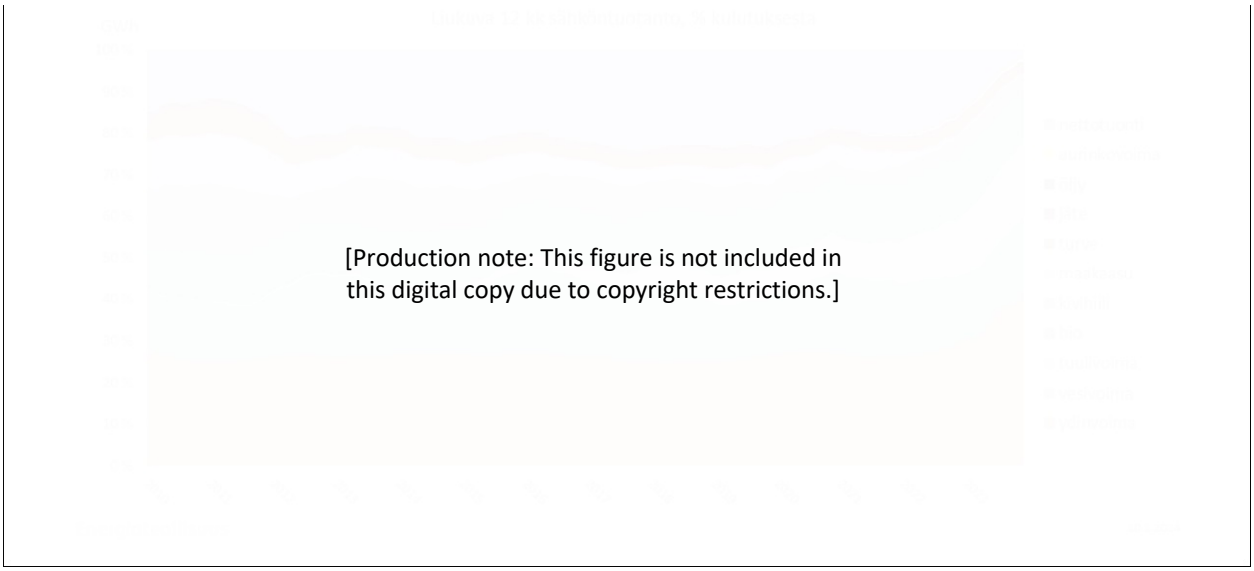


Figure 6. The fossil fuels and net imports (purple, black and lila at the top of the graph) are being replaced by renewable energy (blues and greens) and nuclear power (orange). Especially the opening of the new nuclear power plant, albeit a decade late of schedule, and increasing wind power have improved the energy security after the 2022 energy crisis (The Energy Industry Association 2024).

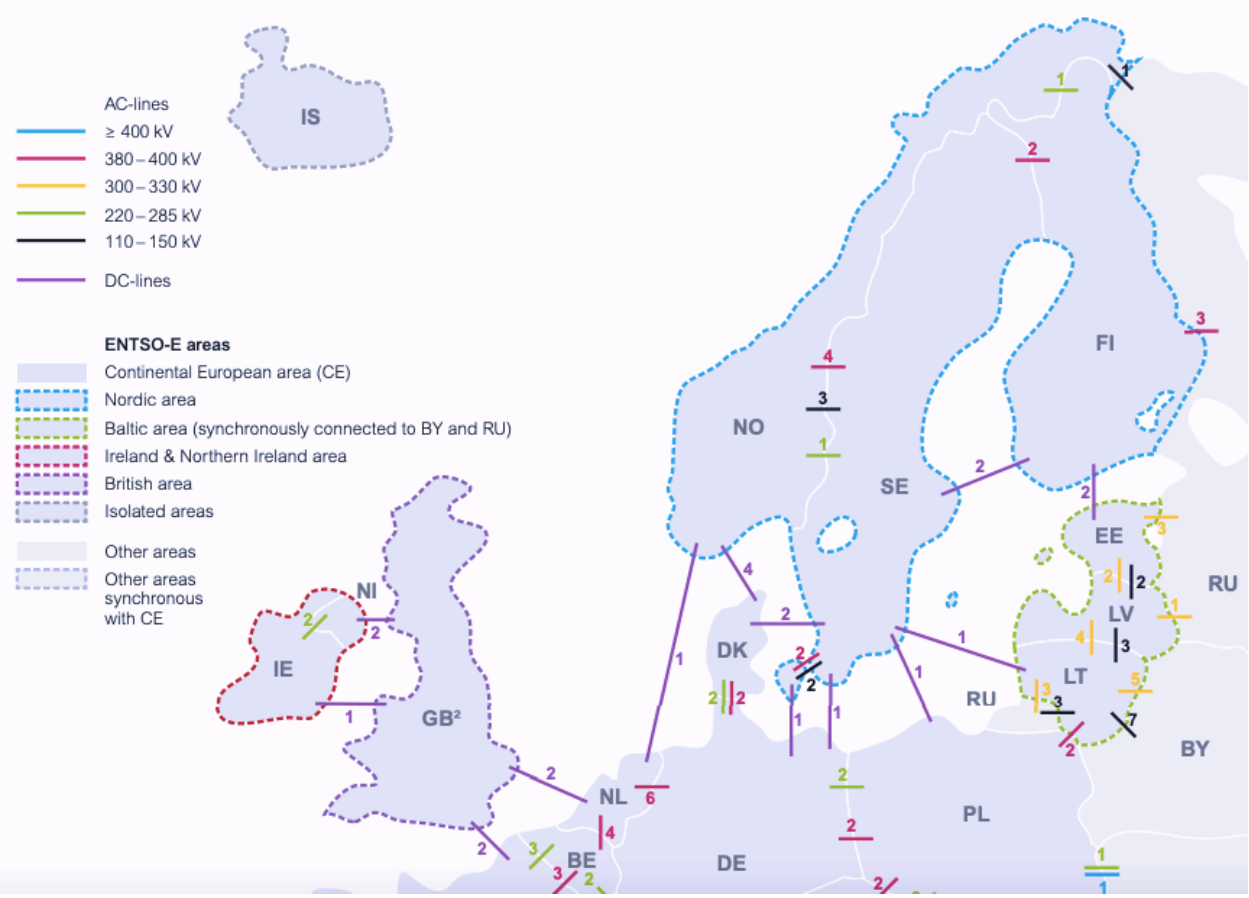
Finland's renewable energy target 38% by 2020 was based on EU targets. Current renewable energy goals have moved into looking at the total energy consumption instead of electricity grid decarbonisation (Ministry of Economic Affairs and Employment of Finland 2018, 2024). The goal of 38% by 2020 was achieved, although most of that was covered with the legacy biomass and hydro power instead ambitious new renewable energy build-up.

Mix of privatised and publicly owned

Transmission and distribution networks are a mixture of privatised and state-owned and municipality owned corporations. Fingrid is a state-owned transmission company that owns the majority of large transmission network. Most of other transmission companies are municipality owned, rather than fully privatised. The distribution companies, however, are a mixture of publicly

owned and privatised. Generation is a mixture or state-owned, municipality-owned and private corporations. Similar to Australia, the generation is sold and bought on a spot market which is free to entry, in theory at least, for any generator meeting the regulatory requirements.

Distribution and transmission are "natural monopolies" and hence there is legislation keeping the level of profit in check (Sähkömarkkinalaki 588/2013 in Finland, regulating the level of 'reasonable profit' for transmissions provider). Because there cannot be a market to ensure that consumer gets the best price, state is needed to set guidelines in place. Generation is an open market, and competition and prices are expected determine the 'right price' and incentivise new investment. Similar to State of Victoria, privatisation of the electricity market was mainly done in the 1990s and with very similar reasoning: competition, market-led, free movement of capital, corporatisation and privatisation were supposed to bring lower prices, better efficiency and open markets for customer benefit. The day-to-day spot market is called Nord Pool, which started from Norwegian-Swedish electricity 'stock market' in 1996, Finland joining in 1998 and Denmark 2000 (Nord Pool 2020). The spot pricing where price of electricity is based on market bidding and varies from hour to hour, started in earnest in early 2000s. Nowadays much of Europe is interconnected, and reliant on each other to balance generation and consumption – and Russian imports (see Picture 3). Similar to Australia, the promises of cheaper prices for consumers have not realised: the average price for electricity for consumers has grown faster than inflation when compared with consumer price index CPI (e.g. Honkanen 2022).



Picture 3. Finland as part of European electricity network. Finland has three interconnectors to Russia, four to Sweden, two to Estonia and one to Norway (Entso-E 2018).

Privatisation and corporatisation of electricity were legislated from 1995. Before the spot market, municipal energy companies tended to charge a flat fee for consumption within the area. In other words, the transmission, distribution and generation only came usually from one local state or municipality owned organisation. After 1995, when new Electricity Act was enacted and Finland became a member of EU – which was also incentivising and regulating its members to 'free the markets' as a part of wider European neoliberal phase – state owned assets were corporatised and privatised one by one. New authorities were set up over the years to monitor and enforce market rules. Currently the key ones are:

- The Energy Authority, which is governed by the Energy Act and regulates and monitors electricity and gas market participants, implements any national or international energy policy and operates the national carbon market emission allowances
- Nord Pool, which operates the Nordic countries spot market. Nord Pool has minority state ownership and majority owned by EuroNext, which is a publicly listed company focusing on providing market exchange platforms (Nord Pool 2020)
- Ministry for Economy and Employment, which prepares any energy related legislative changes for the parliament and oversees The Energy Authority

The backstory: Feed-in-Tariff

Similar to the Australian case, understanding the existing socio-ecological relations in the area, the political background and dominant narratives is essential in understanding why a reverse auction was chosen by the State and how it was designed. There are two main aspects to discuss about the public discourse and European Union changing regulation in relation to the reverse auction policy and its design.

Firstly, in the aftermath of the global financial crisis, European Commission launched a review to state support mechanisms. Practically the idea was to ban all direct support agreements that could anyhow 'distort the competition' in the EU internal markets, because a single market a single market with open competition was seen as "Europe's best asset for generating sustainable growth" (EURLEX 52012DC0209). The ethos of limiting any state intervention to open competition was referenced and internalised by all the national policy makers I talked to, and everyone closely affiliated to the reverse auction policy creation process.

Effectively this meant that the previously widely used in Europe Feed-in Tariffs (FiTs) for renewable energy were seen as 'state aid' which needed to be 'modernised'. The 'too large' profits for private capital might have rendered FiT model illegitimate in the eyes of Finns, but in EU, the issue was rather that it was seen as disturbing the free competition in the energy markets. Direct government contracts, where the generator gets a guaranteed high enough price for every unit generated, lead to the fact that they don't have to consider if the spot price would cover the LCOE plus expected rate of return. This in turn means that if large enough portion of generators get some kind of government assistance, the spot price in theory becomes less and less important disadvantaging the generators who are not receiving a government contract. Hence an EU directive was given banning 'interference' to the free competition in the electricity market. The directive can be described, however, somewhat reductive, since it does not consider the real-life complexity of basically any 'free' spot price market which already means that spot price alone incentivises poorly new investment to clean energy. Nor that generators without retailing arm are fundamentally in a different position compared to large utility companies, and most spot price markets have an opaque derivates market to limit the risk of both buyers and sellers to the spot price.

While a FiT form of a state agreement for renewable energy was banned by EU, a more competitive type of giving state aid, reverse auction, amongst other competitive tools were still allowed to support for example climate and environmental goals (EU N:o 651/2014). The Commission published guiding principles specifically for energy transition (as the private capital still required state contracting for realising investments) stating that the energy markets should include reserve and flexibility market signals, and any support mechanisms should be as competitive and as non-

market distorting as possible. The Finnish national renewable energy and energy security goals were still more ambitious than the current electricity mix, so a working group was designed by the Ministry in 2015 (Ministry of Economic Affairs and Employment of Finland 2016). The working group went through all the options for support mechanisms allowed after the EU decree 651/2014 was put in force. These included reverse auction, investment support, certificate systems and rights to pass through costs to consumers via electricity bills (Ministry of Economic Affairs and Employment of Finland 2016, p. 21-25).

Secondly, besides the changing EU regulation, the other hugely influential matter to the goals and detailed design of the chosen mechanism, was the public discussion around the previous support mechanism. The previous support mechanism was a FiT between 2011 and 2017 guaranteeing a price of 83.50 €/MWh for eligible renewable energy generation for 12 years. There are many kinds of Feed-in Tariffs (see e.g. Cory et al. 2019), and the Finnish FiT is strictly speaking a Feed-in *premium (*money paid on top of generation sold at the spot price market based on quarterly average price rather than a fixed revenue contract). FiT can be designed to be fixed price for generation, guaranteed price for generation over a certain time period, premium or combination of these (Marja-Aho 2011, p. 4–5). FiTs were seen as the cheapest and most efficient way to incentivise new renewable energy investment in early 2000s (Mendonca 2007, Rickerson et al. 2007, European Commission 2008). The benefit of a FiT is often described as reliable and foreseeable income for renewable energy investment which enables both big and small producers to invest with good revenue certainty (e.g. Cory et al. 2009). Technologies which could apply for the Finnish FiT were wind power, biogas and wood-based fuels electricity power plants. The FiT was effectively closed already in 2015 for new projects, since in mid-2015 the number of approved projects and received applications exceeded the maximum amount of allocated 2500 MW for FiT (e.g. The Finnish Parliament 2015).

Arguably the FiT was the most controversial energy policy launched in early 2000s relating to the 2020 EU goals. While the feed-in tariff was open for wind power, biogas and wood-based fuels electricity power plants, the bulk of it was used up by wind power. Not because it was directly preferred in the scheme in any way, but because it was the fastest, cheapest and least complicated fuel of the eligible technologies. The policy was supposed to rapidly increase the share and competitiveness of renewables, diversify production and improve self-sufficiency of electricity production, which it did. However, the tight deadline from EU to implement the 2020 goal legislation by 2010 and the practically non-existing historical wind power or biogas, combined with an unexpected drop in the market prices of electricity and the rapid cost reduction of wind power technology after the policy was already in place, led to a generous and more expensive than anticipated support mechanisms (The National Audit Office of Finland 2017). Around 2013, the FiT started to get more and more criticism of ‘free windfall gains of foreign investors on taxpayer money’ in public discussion, when local land-use conflicts started to develop, the electricity price almost halved and the legitimacy of the perceived “gold rush” of wind power was questioned (e.g.

Korjonen-Kuusipuro and Janhunen 2015, The National Audit Office of Finland 2017, p. 11, Janhunen 2018).

The criticism of 'expensiveness to taxpayer' was palpable in hundreds of opinion pieces in all the major newspapers (e.g. Sillanpää 2015), came up in most public hearings, submissions and permit processes of wind power projects and in discussions with relatives, friends and strangers alike when I would declare myself as wind power developer. Most of the arguments indeed seemed to crystalise to the perceived windfall gains on the expense of taxpayers – the expected profits much higher than deemed appropriate on subsidised business – which violated the sense of justice of the Finns used to prudent public spending. In 2020 I spoke to a town planner in a municipality of one of the auction winners, and he described this sentiment:

> *"Generally speaking, everyone who got on it, makes millions of profits. Because they got in with the newer turbines compared to the old turbines… so 3 times more efficient than the ones they had calculated that* [FiT support level needed] *and hence makes 3 times the profit. That is such a golden goose on society's money, that surely leaves many with sour flavour… and it would be nice to know how much of the FiT payments stay in Finland.*"

This criticism of "over subsidising" was well-founded. One research estimated based on public records of profits and amount of subsidies received (which can be easily calculated from an open public online database) that the profits were as high as 50–65 % in 2014 for companies that managed to build more than one project for the FiT system (Sillanpää 2015). This was partly due to the higher 105.30 €/MWh price for any "first mover" generation before 1.1.2015, after which the subsidy fell into 83.50 €/MWh. The tariff was publicly coined as "*wind tariff*" even though it was open to other technologies of which a small number of biomass and wood chips was accepted to the system as well. The prominence of how everyone from developers, citizens and town planners to state planning authorities referred to the FiT critique in their interviews. E.g. state planning officer:

> *"It still comes up all the time, in newspaper opinion pieces, social media, public events, that it is expensive… the critique has specifically been that wind power gets state funds, as it did during the FiT time, but then the reverse auction came which was much lower."*

> *"You still see at the opinion pieces, in newspapers and social media, in public hearings as well. At least for me, I've come across that it has such big subsidies.. The project developer needs to do some serious explaining, how the financing has been organised."*

A lucrative price of course was very popular with the developers, and served its primary goal of starting a new industry. While the level of FiT might have been needed in the beginning, the technology price curve meant that every project permitted, not just the windiest or otherwise best

projects, could be realised with the FiT. Especially towards the end of the scheme, when the LCOE had dropped considerably from the time of setting the FiT price, it offered very good revenue certainty. As one developer and a resident describes their contrasting views:

> *"The first projects weren't gold mines for the owners, but just scraped over the profitability line. And then when the technology leaped forward, almost every project which got permits, could be built, which was good." – Project developer*

> *"it was negative all around Finland, and it was in the news in a negative light. And it was, no one could have anticipated that the electricity price went that low, and the guaranteed price was so high. There was some envy… that some foreign companies had built turbines here and they had paid the investment back in only a few years as expensive subsidies."*

This sentiment of windfall gains pouring on foreign investors' pockets was widely shared in the public domain (e.g. Korjonen-Kuusipuro and Janhunen 2025) to the extent that changing the terms *afterwards* was even considered by the centre-right government at the time. It was quickly deemed against the Constitution to overturn existing State subsidy decisions that generators had relied on for their investments (principle of security to ownership), but the fact that it was considered is extremely unusual in Finland – which likes to pride itself as a very stable and predictable investment environment. As a politically palatable solution, instead of overturning the subsidy, there was an amendment to the original FiT Act motioned to lower the maximum capacity of the scheme from 2500 to 2000 MW. This decision was perhaps only to show that issue is being addressed rather than an actual change, since by the time that was brought to the parliament, the amount of applications left to the Finnish Energy Authority already exceeded the original 2500 MW limit, and hence the original amount was awarded. Changing the FiT was still occasionally proposed in the "shadow budget" (means opposition budget response) of a right-wing popularist party "The Finns" in mid-2010s even after it had already been deemed as against the Constitution. These shadow budgets especially around 2015 provide, however, an indicator of the negative public sentiment era when proposing "cutting the wind tariff" could win votes – even if the right-wing party in question, in fact, did not propose cutting the existing government FiT contracts when they got to form the government in 2015 and 2023.

Interviewees directly involved in policy making and designing the auction also talked about how the feed-in tariff was set up to create an industry. Before the feed-in tariff there were a few dozen wind turbines, but no project pipeline and the percentage of yearly electricity production was less than 0,5 %. Blanco and Rodrigues (2009) estimated that just before tariff was announced in 2009 that there were 800 wind energy related jobs in Finland. Vast majority in renewable energy jobs were in biofuels and biomass, and wind energy jobs were mainly in certain component and turbine manufacturing. Blanco and Rodrigues (2009, p. 2852) also estimated that "*improvement of the support mechanism could drive large investments, since the resource is good and the Nordpool*

market offers an adequate framework for the integration of wind energy into a large power area". In a recent employment estimation done for the Finnish Wind Power Association (Savikko et al. 2019) the wind industry had created staggering 55 800 FTE (full-time year equivalent) based on statistics 2017/2018. In this case it is however important to keep in mind, that the estimation was done for industry organisation and the estimate includes indirect and induced jobs as well as direct jobs. For example Rutovitz, Dominish et al. (2015, p. 1) point out that the inclusion of both indirect and induced jobs increases job numbers by 100–350 % compared to just estimating direct jobs/job years (see also e.g. Blanco & Rodrigues 2009). Regardless, it is fairly safe to say that at least considering the employment and generation numbers, 5.9 TWh (7 % of total electricity generation of Finland) in 2019 (STY 2020), the feed-in tariff indeed did manage to create a wind industry, which subsequently has become competitive without any direct state subsidies. Interestingly, an auction of some sort was already considered when the decision about feed-in tariff was made in 2010, but as one of the interviewed policy makers describes "*it would have just failed… there were just no projects*", because "*you can't create a tender if there are no ready projects that could be offered*".

A wind industry association employee discussed the fact how FiT tariff did create an industry. Which was the original main goal of the FiT itself, to incentivise private investment in renewable energy generation.

> *"The main critique of FiT was aimed at its costs, but the FiT did what it was supposed to do. It created this industry in Finland, and due to FiT we got an enormous amount of projects to development pipeline, and now we have that mass we can pick the best ones to be built, that's all created on the basis of the FiT."*

While the criticism about expensiveness – which means overly lucrative profits for private capital at the expense of tax payer money– is true, she thinks it was a combination of many factors, not that the FiT as a principle was originally a terrible idea.

> *"It started a bit late since we had a couple of years delay because of the Defence Forces, before we actually started building. The price was for 2009/2010 technology prices, and because the building didn't really start until later, we couldn't have adjusted the price level until maybe 2015. There* [in the Act] *was the section of adjusting the price levels, but because there were not enough projects earlier operating and in 2015 there was already a decision that the FiT will be closed. At that point everyone already had a FiT tariff decision even if they weren't built yet, so who could we have readjusted the price for?"*

The amount and recipients of FiT subsidies is still a topic that resurfaces in the Finnish media, even though the system has been closed from new applications for almost a decade. Even amongst the state authorities it is common to criticise the policy. For example, in 2022, a tabloid run a story

of receivers of subsidies and the director of Finnish Energy Authority, Pekka Ripatti, commented that while achieving a rapid growth of wind power industry in Finland, there were two substantial faults in the FiT system: the uncertainty of electricity price estimates and more importantly, the lack of periodical review of the technology price development (Waris 2022). Especially the lack of review of the support level needed by accounting the technology price curve, led to the fact that the projects accepted to the scheme towards the end of the support scheme in 2017 would have not had nearly the same level of generation costs than the projects joining in early 2010s. Effectively this meant that after the early years, a lower level of support would have been enough to accomplish building of the projects.

The key aspect to understand is that the public critique of FiT especially during the drafting of the reverse auction policy profoundly impacted the policy, its goals and arguably the whole industry. As one of the developers describe the mentality why the auction was so appealing after the FiT:

> *"The FiT, it had a flaw from the beginning that it practically gives out too much support. We have even said that in public… Probably based on that it was decided that the original model does not work, and they started to think about what would be a reasonable cheap model for the taxpayer. And apparently state did a study and we ended up with the reverse auction."*

The main objective of cheapness was formed in the policy space against the background of the FiT critique, and reinforced the already existing EU guidance of an auction model as a support mechanism. The narrative of cheapness and its impacts to the reverse auction policy are discussed further in the Finnish case chapter 6.

Chapter 5 VRET1 – the reverse auction scheme in the State of Victoria

The policy model based on competition, chosen reverse auction design, and its impacts are a combination of several processes analysed using the five aspects introduced in the literature chapter. The first four aspects describe the internalised belief in markets, capitalist commodification in Australian energy landscape and (political) policy processes behind the auction. The last aspect, local sentiments and transparency considerations, are focusing some of the impacts of these choices. Firstly, there is a short summary of the key features of the auction scheme design. Some of the terms, such as 'pay as bid' are common in policy and energy auction space, and are explained in the glossary.

Design of the auction

If the Finnish reverse auction design was fairly simple, the Victorian one had quite complicated goals, bidding and evaluation. The target capacity, 650 MW, was "over-subscribed" several times (4x), as was the Finnish auction, which is another generally desirable outcome from the policymaker point of view, to ensure competition and hence relative quality of the projects awarded. "Over-subscribing" in general means that there are more bids than the announced award capacity, meaning not everyone who puts a bid in, gets a contact. This is believed to improve the outcome, because it means that the auction was a competitive process and only the best projects were awarded. In the Victorian reverse auction, VRET1, winning projects included more capacity than the target capacity of 650 MW, altogether 928 MW, of which originally 673.5 MW is onshore wind and 254.6 MW solar (669 MW contracted). This is common in a volatile price environment: projects contract enough capacity to gain low-risk, low-rate funding via state contract revenue certainty, but leave out a part to gamble for possible spot price gains or better market prices via a shorter-time private PPA contract. Any completion sanctions or obligations from a state contract is another reason for building slightly larger project than contracted: this creates some buffer to meet any minimum requirements (generation or other) since the project is larger than contracted. Of the contracted projects, 5 out of 6 were realised within the scheme (one solar farm dropped out, likely due to grid connection issues) and the State Government website was subsequently updated to VRET1 having delivered 800 MW of renewable energy (State Government of Victoria 2023).

One of the less typical auction design features in Victoria was the inclusion of non-price criteria. IRENA stated in 2019 that it is increasingly common for governments to try to achieve objectives beyond minising the price – though price is still the main driver for using reverse auctions in general (p. 28). The Victorian auction can still be seen as unusual, because there were several other-than-price criteria: economic development (usually called local content requirements),

community benefits and the more usual locational, grid and past experience evaluation on top of financial assessment. The practical consequence of this design was that preparing and assessing the bids was described by all parties involved as laboursome, expensive and time-consuming. This, together with a strict generation start deadline of 2020, and a 10 MW minimum project size meant that the auction design targeted large mature projects, even if criteria such as "community benefits and engagement" could have favoured smaller community projects. The weightings of different criteria were published, but most developers still said that understanding the calculation details and how they would be scored was difficult.

The bidding was blind, meaning that potential bidders had no knowledge of other possible bids, and the contract offer was pay-as-bid. The short-listed candidates were given the opportunity to submit best and final bids before the final decision. The contract on offer was a 15-year two-way Contract for Difference (CfD), which means that there was a fixed "strike price" for each MWh produced during the first 15 years of operation, giving a long revenue certainty for the winning bids. In practice, "*when the market price is higher than the strike price*", the government "*will receive payments for the difference from the generators*", and when lower than the strike price, the government "*will make payments for the difference to the generators*" (VAGO 2019, p. 18). The government had published indicatory floor prices for the tender, and bids included the proposed deviation of those prices plus an annual additional fixed payment. In addition, applicants had to nominate a whole contract maximum payment ceiling. This was to limit the government total financial liability over the 15 years contract time. None of the winning bid prices were ever published, but in 2019, DELWP reported a derivative financial asset with an estimated value of $285 million to the state Auditor General. However, given most of the LGCs the projects created for the existing green certificates scheme were likely surrendered to the state, this value could just reflect the estimated income of those certificates instead of expected financial gain from higher than strike price electricity prices. Notably this contract did not include any transmission risk allocation to the government. Transmission risks in Australia can be significant due to the slow connection process, unusual generator performance standards ("GPS") and yearly changing marginal loss factor ("MLFs", see glossary). These impacted the scheme realisation and timelines and are discussed in more detail in "Power of the grid" on page 124. The contract terms included typical "change of law" clauses, which mean that any future government or policy change could not easily undo the executed contracts. This is typical for government energy contracts to give assurance for private financers against change of government and political whims.

Some key features of the auction design

Bidding
- Pay-as-bid
- Blind bidding
- 14.11.2017 to 14.2.2018 (18 bids)

Entry requirements
- Solar and wind
- Project size Min capacity 10 MW
- New production, not necessarily in Victoria
- With planning permit, already submitted Connection Application and registered with AEMO

Evaluation criteria
- technical capabilities
- financial capabilities
- impact on transmission
- community engagement process

>>> 'Best value of money' instead of cheapest bid

Support mechanism
- 15-year two-way Contract for difference (CfD)
- 2 price aspects bid: overall gap with "fixed price" per year and bid over or under the strike price defined in the tendering documentation, $53.06-56.85/MWh
- Floor price protection to the state
- Calculated monthly, indexed
- LGCs handed over to state
- Compensation clause protection against any future legislation changes

Obligations
- Constructed and connected to the grid by 2020
- Many reporting obligations regarding the evaluation criteria

Figure 7. Some key features of the auction design

The request for bids, instruction documents, contract terms and so-called "returnable schedules" (a template where the proponents fill out the requested details) were published in the Tenders Victoria online portal by the then called Department of Environment, Land, Water and Planning (DELWP) in November 2017. Bids were placed over the Christmas holiday period (by 14th of February 2018) and different criteria were evaluated by government internal working groups. As one of the policymakers describes the process:

> *"So you'd have those working groups, they report back to evaluation panel, and the evaluation panel would decide against agreed scoring methodology where each of those projects sat. So you'd go from poor, good, very good, excellent, and you sort of score each against those, and then depending on where you rate them, they got a particular score, so did they got the full amount of... 15 % for economic development, did they got the full score, did they got excellent for the full score, or did they just good and got ¾ of the available score for that particular…"*

The timing of the auction was difficult for the project developers. Each one described working over the holiday period and also trying to organise the community benefits when the local council staff and community members were also holidaying.

> *Developer: "Experience about the auction was the rush over Xmas and no one really answered the questions from the department."*

After projects were evaluated, shortlisted and 'best and final' bids received, six projects were offered a contract, which were signed by the Minister for Energy, Environment and Climate Change, on behalf of the State of Victoria. The contracts are administered by DELWP, and trading of LGCs is administered by the Treasury Corporation of Victoria (DELWP 2017).

1. Neoliberalism and the belief in competition

As described in the previous chapter, the energy markets were privatised in the State of Victoria in the name of competition during the 1990s neoliberalism phase. Both transmission and distribution networks are privatised but regulated monopolies. The generation is currently dominated by legacy brown coal power plants in the east of the state, whereas the solar and wind projects have so far been largely proposed to west of state. Generators are a mixture of large utilities with retail arms (called in Australia 'gentailers') and independent power producers (IPPs).

Whether privatisation has lived-up to its neoliberal promises of efficiency and benefits born out of market superiority, depends who you ask. The Institute of Public Affairs, a right-wing think-tank and part of the fossil fuel funded Atlas network, argues that "by any standards the privatisation has been an immense success" (Fearon 2001, p. 9). The reasons listed include reduction of workforce, improved performance in reliability and, most of all, the impact of the sale for the State cash flow, reduction of State debt and improved credit rating. Similarly, the chief economist of the Energy Council, an organisation representing large energy generators in Australia, recently argued that privatisation freed public capital for other purposes, solved the State debt crisis, created efficiencies that the public sector had proved incapable of doing and shared these efficiencies with investors and customers through lower prices (Brook 2022). The typical neoliberal belief that state-owned and state-led services are inefficient and expensive by nature still ran deep for many interviewees. For example, one renewable energy company employee described an example of the inefficiency of state-owned operations and how governmental institutions have done a bad job, when I asked whether energy system should have more state ownership:

> *"And in my hometown in Newcastle, when they uncovered it, it was a shit storm. What happened, what was uncovered was that the staffing numbers were dated about 1820… there were people who worked for the department of Maritime on tow boats, paid by the government, who never went to work. The department of maritime in Newcastle employed something like 300 men, and in any given day you could find 20 at work. The 300 was based on some 1820s shipping formula."*

Later he continues describing the SEC:

> *"On the whole, the state of electricity commission was very similar. They had staffing formula that was based around days before Sizzlers, it was based around calculations that were inappropriate for the modern era, and the government was unable to easily union bust and recast that without privatising."*

Opposite views about privatisation have been also presented. For example, Bruce Mountain recently calculated that the four brown-coal generators privatised in the 1990s have provided a $23 billion profit for shareholders (using a widely used measure of "earnings before interest, deprecation and amortisation"). If this were considered directly lost income from the State, it would far outweigh the income received by privatisation and debt cost saved by the State in the 90s, but it is of course impossible to know what returns would have been if the State assets hadn't been privatised. Another calculation by The Australia Institute suggests that between 1995 and 2012 electricity prices increased by 170 per cent while the consumer price index increased only by 60 per cent indicating that consumers had not necessarily seen the benefits of any possible cost savings (Richardson 2023). The increase in prices had been blamed on carbon taxes, but that was a short-lived policy which counted for a very small portion of the increase (Richardson 2023). The consumer bills are complicated since most of the cost is not the electricity itself but network charges, retail margin, tax and environmental costs (e.g. solar tariff, LGCs) which makes it difficult to estimate the loss to public revenue.

While it is difficult to know whether privatisation has brought any economic benefits to consumers, the one thing that arguably was improved, was the availability rate (which means the number of hours per year when the power station is not under maintenance but available to generate on demand) of some power stations. For example, several people supporting the privatisation I talked to referred to power supplies from Loy Yang, which increased after privatisation, although from a consumer perspective, reliability of electricity supply is much more reliant on the distribution, not generation. For example, Grattan Institute (Wood et al. 2019) estimated that between 2009 and 2018, only 0.1 % of household customer outages had to do with generation shortfall and 99.9 % were network related issues (p. 10).

The privatisation, private capital led generation and the concept of electricity as a market commodity is not questioned by the policymakers, residents or state or local government planners to whom I talked to. It is so embedded that no one I talked to besides one policymaker brought up, and she only in passing, any other model than the current private large-scale energy market system. The privatised system is so embedded that even the possibility of state-led energy supply – or other possible models – do not even enter the conversation. The concept of energy as a commodity to be traded in an independent self-functioning entity, providing the best service, goes unchallenged. While there is very little appetite to question the neoliberal ethos of market superiority, there are growing concerns of 'keeping the lights on' while existing coal power plants age and become increasingly unreliable. This has prompted several States to incentivise new investment or increase

the life of old generation, and changed the position that the market should be left to build the needed generation and transmissions assets undisturbed by the state governments.

New transmission lines needed to connect the wind and solar resources are difficult to build under the current market-based 'test' regulated by a separated authority, AER. The test is called RIT-T and it is designed to test that the investment in any new transmission line has more benefits than costs for consumers during the life of the transmission asset. The problem is that the test was designed in an era of extremely centralised, large coal power plants (typically several 1000 – 2000 MW capacity units) which could be built near population centres with very narrow definition of 'benefit' (e.g. Leich 2020, Healey 2021) – a logic that fits poorly for more geographically-distributed wind or solar farms with fragmented ownership (see e.g. Cass et al 2022). The 'market-managed' approach from the 1990s is increasingly unsuited for the energy system and energy transition, which is forcing the states to intervene – albeit that the belief in markets is unwavering. For example, one policymaker described the difficulties in energy transition and state role in it:

> *"I would say there's every reason for the states to take more proactive role, and even more than they have up to date, coordinating amongst themselves, offtake and reverse auction programs, incentivising transmission augmentation offtake."*

These practical measures, offering offtake contracts and incentivising transmission build, are tools that fit the current market design. This interviewee described in length what kind of terms could be used and how government contracts are important to reduce the cost of (private) capital. In other words, the competition and markets themselves were not criticised for any of the problems described, just a few tweaks to the market design and state support were needed to help the markets to transition to low carbon energy.

Many of the predictions from this policymaker (interviewed in 2019) have since been taken up. Victoria and the neighbour state NSW are both taking a more active role in transmission building, and there has been more rounds of reverse auctions. NSW passed a legislation in 2020 aimed to build more transmission to enable more renewable energy generation in areas called Renewable Energy Zones (REZ), and has a tendering scheme for every 6 months until 2030. In addition, State of Victoria has reactivated the old state electricity company, SEC, to build new generation, and taking a more active role in transmission planning.

Reverse auction as the chosen model

Any of the thermal power plants within NEM (the east coast energy market) are unlikely to be rebuilt by any private company since new coal cannot compete on price with wind or solar (in terms of LCOE as discussed earlier). This means that renewable energy is cheaper – which is often

used as synonym for better when it comes to energy – and is therefore the preferred way to replace aging coal power plants. However, the volatility of price, high capital investment to build a generator, uncertainty of grid related revenue impacts and the saturation of big gentailers in the contracts market all lead to the fact that renewable energy, while cheaper, requires revenue certainty in order to be built in time before the inevitable price peak after closure of thermal power plants. The closures would lead to the creation of a (high) price signal, as per the NEM's logic, by creating a significant energy deficit especially in States like Victoria which are heavily dependent on thermal coal. But with energy infrastructure there is an inevitable lag: letting the price signal lead the slow build of new capacity is seen as an undesirable outcome. The previous thermal power closure in the State of Victoria, Hazelbrook power station in 2017, led to doubling of the spot prices, and it took until 2021 to return to similar levels than before the coal power plant exit (Enel X Australia 2021). The NEM logic, while created in pursuit of efficiency, is seen too slow and inefficient to combat the inevitable and lumpy closure of earlier privatised generation assets.

The lack of a private capital led timely transition, without creating stark (and politically unpopular) price peaks, creates a need for state intervention, since providing 'affordable' and reliable power, is legally and also publicly perceived as state responsibility to its citizens. In the State of Victoria, the timing of the auction coincides with the Hazelbrook coal power plant closure, in the context of concerns about sufficient and 'affordable' supply, as well as the lack of national energy policy or belief that such would be introduced in any near future. One Victorian policymaker describes the process:

> *"Labor gov came into power, obviously more progressive, more interested in pursuing renewables as not only method for reducing state's emission profile but adding to economic development and new jobs. They indicated that they were looking to legislate RE targets … at the time I was working with the department's policy team, we did the analysis about what was sort of achievable and proposed that initially a target… The government realised that there was going to be a gap between what the private sector would deliver by its own. We identified that RE development in Aus was slow and… it became clear that the government needed to structure some sort of intervention in the market to bring forward high quality RE projects that we knew were in the pipeline, we knew we had a clear pipeline of projects* [in State of Victoria] *that had planning permission or close to planning permission. We just needed a primarily a financial mechanism that incentivised developers and also debt and equity markets to support that project".*

The reverse auction was chosen as the tool quickly, after the Department had arrived at the conclusion of wanting to incentivise the existing investment pipeline via a financial tool. The renewable energy targets were legislated in June 2016, and in August 2016, a consultation paper was published, proposing a reverse auction and seeking market opinions on the design. In

December 2016, an economic modelling was commissioned to EY (a consultant specialising in financial modelling) and the auction was announced mid 2017. The policymaker I talked to said they did a '*global scan'* of tools available and the reverse auction was deemed as the *'cost effective'* way to bring forward private investment. In addition, another policymaker talked about the existing interest of the then new Energy Minister, Lily d'Ambrosio, in the previous ACT (Australian Capital Territory) auction rounds:

> *"Lily d'Ambrosio was the shadow energy minister in Victoria and became the energy minister when Labor won the government in 2014, and she and I had a long relationship going back and we spoke a number of times when she was a shadow minister …how does this [the ACT auction] work, so she [Lily D'Ambrosio] was clearly interested in doing this quite some time… When the Labour won the government, they didn't have that explicit platform to run a reverse auction but Lily became the minister and she spent the next two years basically championing a reverse auction program."*

It is easy to see how reverse auction delivers a new promise of achieving the State political goals but within market terms: the reverse auction mechanism incentivises the build of new capacity with private capital while ensuring the state the lowest possible cost via the trusted mechanism of competition. The Victorian policymaker who performed the global scan, also talked about how to design a 'good' auction which attracts many projects:

> *"it's also interesting when you run an auction like this, you got to strike a balance between having a competitive tender process as in having enough projects being eligible to make a bid, and then having eligibility criteria that really deliver you good projects That balance was also something we wrestled with, and this auction it would have been a real disaster if we run the process and 2 or 3 projects bid, so we thought it would be better to get a large volume to bid and then we could filter it out through the evaluation process."*

Describing the auction as a disaster if only a few projects would have bid is telling. "Undersubscribing" – having less bids than the announced auctioned capacity – is in general seen as a failure in an auction design (e.g. Matthäus 2020, Anatolitis et al. 2022), or of other government policy (e.g. Grashof et al. 2022). The competition element is crucial to the 'success' of the scheme, because it gives the impression and confidence that the best possible outcome has been achieved. One of the public facing documents explaining the reverse auction winners and the Victorian renewable energy targets states that "*the 2017 Reverse Auction was held to provide certainty for the private sector to invest in Victoria's renewable energy industry*" and later that "*It was held as an auction to encourage competition between project proponents, ensuring that Victoria was getting the best value from the support offered to successful projects"* (State Government Victoria 2018, FAQ sheet).

While in general the principle of competition was accepted as a good policy tool, the details of the policy were too 'intervening to the market' to some policymakers. For example, one national level policymaker (and an economist), described the CfD model as:

> *"CfDs tend to expose the governments… done in the wrong way, it can expose the governments to significant long-term liability, just as a consequence of a coincident production of renewables, so you fund lots of solar, which kind of destroys the wholesale price and then it's the government that's wearing the risk on that."*

The problem he is describing is the (neoliberal) view that any market intervention done by the state should not intervene the market functioning itself. He, as most of the economists I talked to, advocated for a carbon price as the best mechanism, although he does not think "*that is going to happen anytime soon".* As an alternative, he believes that a more sophisticated reverse auction could be created, where the support would target times and locations where grid needs energy the most, or when the benefit to decarbonising would be highest (renewables concretely substituting more carbon intensive generation). The previous RET, as a financial market product, got his support as well. Especially in the project developer and policymaker space, the interviewees mainly talked about nuances of contract models, private PPAs and other market-based mechanisms as tools to build renewable energy installations. For example, one policymaker with also project development experience stated:

> *"I think you are going to see more and more evolution of that so that it's smart PPAs properly engineered… non-correlated renewable projects, bit of firming gas or batteries and all of sudden you can provide almost an equivalent of flat spot price contract. I think that's the next step of the evolution of PPAs, so some of them up to this point might have been virtue signalling, whereas now I think they are probably going to mature into a… proper financial product."*

When I asked what he meant by virtual signalling he said that in the corporate world, it is increasingly important to be at least seen to be meeting other than lowest price goals for customers, employees and board members. The adoption of PPAs tends to be followed by announcements of the offtaker (e.g. Amazon, IKEA 2022, Google), but at the same time, even if global providers are offtaking renewable contracts, the emissions keep going up (IEA 2024). The economic developmentalist narrative seems so strong, that the so far inefficient rate of transition does not shake the belief in the market system and mentality of 'keep buying'. Here the market ideology of emissions reduction becomes irrational: the private PPAs fit the ideology and are adopted for virtual signalling, despite the limited evidence of global emissions reduction. However, the policymaker calls it the 'social change' and tells an example of how companies like AGL (which is the single biggest polluter in Australia) are affected by the impacts of customers, and of their hiring pool, and investors wanting to know what "are you doing to save the world":

> *"I was talking to somebody, one of my ex-colleagues in AGL the other day and he was saying that in 10 years' time it's inconceivable that you would have a graduate intake without them all being, 'so what are you doing to save the planet?' Whereas 20 years ago the predominant question would have been 'how am I ever going to be the CEO and earn millions of dollars', but the social change that has happened around environment has been profound"*

While on the policy level, reverse auctions are mainstream and widely accepted, on a local level the reverse auction scheme, VRET1, was not particularly well-known. For example, one resident near a winning solar farm said that he does know that the solar farm has "won a government tender", but that he doesn't quite understand the mechanism or "who is funding it". Similarly, a pair of residents near a wind farm had heard the term, but were mainly describing it as government subsidy and how other industries are subsidised as well, instead of any fine details on the two-way contracting. Developers described the general awareness of the auction scheme as "non-existent" – but for the wind industry, it was huge news. The general concept of government tendering was well understood, and accepted as the norm, in the community as well as industry, even if the scheme details were obscure to the wider public. Reverse auction was simply seen as the mechanism to deliver the best outcome.

2. Constructing renewable energy under capitalist model

Crises and fixes

Fossil fuels have been and continue to be the main source of energy for the current capitalist society, and this remains true for Australia, with 68 % reliance of fossil fuels in 2022 (DCCEEW 2023). Climate change presents an existential crisis of capitalism disrupting the ecosystem (e.g. McCarthy 2015). Renewable energy presents a solution for climate change that fits the capitalist growth model as it is a new 'frontier' (Moore & Patel 2015) to invest and reap profits. While renewable energy might be primarily a way to decarbonise the energy system to curb CO^2 emissions and climate change (e.g. IRENA 2017), which is "threatening lives, economies, health and food" (UNEP 2021), the policy landscape around renewable energy is not nearly as simple. The interviewees were all asked about their views of the current climate issues which energy policy is meant to solve. The two main themes that came up were transmission related issues (access, uncertainty), lack of national policy and reliability concerns created by exiting old coal when new (renewable) generation is not yet available.

In the Victorian, and in general Australian interconnected east coast grid, context there are pressing practical issues with the aging (and exiting) coal power plants discussed further in this and the next

chapters, and the imminent generation shortfall impacting reliability of supply. These issues often override climate change as a justification for policy. And as a federal policymaker describes, the development of new industries and jobs is more important in politics than global climate action:

> *"In Australia, it's politically effective to talk about the climate change in the context of economic opportunity."*

When I asked from renewable energy developers and town planners, whether climate change comes up much in their work with local communities, it was widely agreed that economical aspects of renewable energy are a better message both to the local community than climate change.

> *Developer: "Very very rarely, odd conversation with landowners and farmers, when they talk about lack of rain or weather often it comes up there, but industry wide no, not really."*

> *Developer 2: "No it doesn't. And on the landowner stuff, usually that's part of those landowners' motivations, Dundonnell wind farm was kind of the idea came from the landowners and part of that was around, I mean the suitability of site but also climate change, but that is as far as it went."*

> *Town planner: "We don't talk about the environmental benefit as much as we talk about the financial benefit, because the financial benefit is the one that we can really easily explain to people. We can say to people, look this solar farm will save so many tons of greenhouse gases being emitted but it doesn't sort of gel, it's not sexy, it's not trendy, you know they don't really want to know about that"*

Besides the economic opportunity narrative, the policymakers mentioned uncertainty in the grid as old generators close. Many criticised the lack of a national policy framework on climate change and the 'big picture' direction of energy policy. Both relate to the lack of power to control power prices and energy security in a privatised energy system, and to the issue of time and revenue uncertainty for private capital-led investment. Similar to climate change, these tend to be treated as 'market failures' to be addressed by the state. In a privatised and fragmented energy system, such as in Australian East Coast, issues like ensuring matching the demand and supply at all times and enabling affordable energy for consumers present as 'crises' for policymakers. The solutions rely on complicated market rules enforced by bodies that don't actually own any of the assets. Hence it is easy to see how the deteriorating reliability of old coal power plants and energy transition are seen as 'crises' that need policy solutions. The energy security and grid related issues are discussed in more detail in the next aspect. In the Victorian context reliability and economic development are more popular justification for renewable energy. The Victorian legislated renewable energy targets are under a law called "Renewable Energy (Jobs and Investment) Act

2017". Climate change and emission reduction are mentioned, 4th on the list, but other (domestic) concerns of securing supply and winning regional votes seem more pressing and urgent.

Climate change and lack of national policy

Australia has long been a laggard in climate policy, mainly because of politicisation of the topic (left vs. right) and history of reliance on fossil fuel resources both for domestic energy supply and the export industry (e.g. Lin 2021). Coal especially has played an important role for many decades, and arguably it has slowed down transition significantly (Rentier et al. 2009). As one Federal policymaker describes it, the problem centres on the 'resource curse' of relying on fossil fuel exports:

> *"Australia is such a resource rich country, it becomes very challenging to accept that decarbonisation is something that is worth pursuing. And unfortunately it ignores the elephant in the room which is that the big risk to Australian economy is that the rest of the world stops buying coal and gas."*

And:

> *"If we had an alternative export industry that would replace the coal and gas industries, I don't think anyone would lose sleep over the fact that we are transitioning away from coal and gas."*

Many of the people (not all) I talked to were very aware that some kind of action is needed and noted that Australia is very exposed to the impacts of climate change. Issues mentioned included fires, draughts, sea level rise and for example tourism impacts (such as coral bleaching in the news). The worry of impacts in the rural way of life and livelihoods is shared in policy space and in the stories of draughts, horrific fire seasons and lost crops:

> "*Farmers who had years of failing crop, poor rainfall, excessive rainfall and a climate basis that is dramatically different in the last 20 years to what it had historically been, they are conscious of it." -Resident*

> *"It already is* [climate change disrupting current way of life].. *Just whether we can grow crops, you know so we might be growing x y z here now and in 20 years that might not be viable due to changes in rainfall and water is just a huge issue here. Huge. Like it's just not enough of it, I often have investment enquiries and people wanting to do something and there is just not the water to do it." – Town planner*

> *"My son and his friends are concerned about having children, because they don't think the environment is in good enough shape to bring children into the world." - Resident*

Yet, this shared worry, experiences of rural livelihoods and the feeling of existential threat is combined with very slow energy and climate policy adaptation. Several policymakers, renewable energy advocates and developers name the lack of any kind of meaningful national policy on climate change (besides the previous RET which did not incentivise any new investment anymore at the time of the interviews) This was seen as one of the key problems in the policy space:

> *"There's no national energy policy and there's no national climate change policy... You got a government that is completely unconcerned about climate change, they won't do anything on a national level."*

The federal government used its power mainly to prevent and dilute any climate action, which led the states have instead to take up role in climate policy, setting emissions targets and renewable energy support mechanisms (McConnell 2020). As one of the policy makers puts it:

> "*The big problem in Australia has always been just we're a federal system of government, so the states control energy policy despite of requiring national approach and the converse is true on environmental issues like climate change that the Commonwealth has the responsibility and the states don't. So it's very hard to integrate climate and energy when the two tiers of government both responsibility for one but not both of those."*

The reluctance to embrace climate action by the conservative government in power (from 2013 to 2022) manifested – and frustrated many of the interviewees – in watering down several of the attempts at energy transition, especially relating to renewable energy uptake. It also created uncertainty for private capital, which much prefers revenue certainty, and hence the uptake has been very uneven in Australia. The national green certificate system has been changed, creating uncertainty, and new national energy and climate change policy has failed several times. One of the examples of failure was the National Energy Guarantee (NEG), which was proposed in 2017 to attempt to bring climate change and renewable energy – with reliability – to national level. The proposal had very low emission reduction targets (Murphy 2018), but any attempt to form national energy policy with emissions targets was too progressive for the right-wing coalition government: the prime minister was changed from Malcolm Turnbull to Scott Morrison, and no national policy was proposed (Vorrath 2018). As one of the federal policymakers involved in drafting the policy describes the disappointment as leadership tensions defeating the policy despite a wide consensus for it:

:

> *"In August last year* [2017] *we got it through the energy ministers, all of the state energy minister and the Commonwealth minister, all agreed we are going to do this, and that was seen as the big hurdle. It's so hard to get all states and Commonwealth government to agree on anything and to get them to agree on this, we thought OMG, we've done it, we've gotten over the final hurdle, and then it was like tripped on other things."*

This politization of climate action and energy policy is often dubbed as "climate wars" in Australia (e.g. Butler 2017, see also history chapter). The right wing of politics has long opposed renewable energy and presented climate denialist views. This also impacts the local views towards renewable energy proposals: town planners in VRET1 project locations stress the rural voting block is mainly conservative and "*people don't want to identify as greenies*". Especially wind farms have been publicly called 'ugly' by the right-wing Tony Abbott (Australian prime minister 2013 - 2015) or inefficient, and local opposers can repeat these views. The right-wing narrative of Australia's small contribution to global emissions, or technological fantasies such as carbon capture and storage, give force to the local narrative of not needing to build renewables now – and certainly not in their areas. Only very few people I talked to expressed clearly climate denialist views, even amongst local opposers of a renewable energy proposal, but the right-wing narrative of Australia doing enough, when big polluters are somewhere else, is often repeated. The politicisation of climate questions is described as unfortunate by many:

> "*It's unfortunate for Australia, that's why climate change has become so poisonous because you just got those people that go straight to their factions of deep green, deep coal, and then you've got the vast majority the middle of the population that is probably so disengaged from politics." – Federal policymaker*

> *"It fascinates me that in Britain, renewable energy and climate change are just not political at all. They have become such political issues." -Resident*

> *"Just because we don't have a green vote, it doesn't mean that there's not people there in the community that do have a strong environmental and climate change opinion and view, and feel quite strongly about it." – Resident*

After a decade of waiting for national policy, the states have indeed started their own energy policy drafting. The model all the states have adopted is to rely on private capital instead of state building new low emission generation The national RET, attempted NEG, the state reverse auctions (to date ACT, Victoria, Queensland and New South Wales) and the current favourite, Renewable Energy Zones (REZs) aim to incentivise private investment inside the existing market.

Jobs, jobs and more jobs

While climate change and emissions reduction are also drivers for renewables policy in the State of Victoria, the jobs narrative does seem politically more important. Jobs and economic development were the main public-facing narrative and justification for renewable energy targets and especially for the VRET1 reverse auction. Interviewed policymakers mention the legacy of regional identities centred on manufacturing, offering a politically important voting block, in contrast with climate change, which is seen as a difficult and divisive topic. In this context the regional narrative is central. As one of the interviewed policymakers describes:

> *"Traditionally in Victoria, if you're going to win government, it's because you win a large number of regional seats. In Victoria, it's got a very significant regional population. Traditionally it has been very hard to sustain population and employment in regional centres, everything's coming to Melbourne… so politically is very important for both parties to demonstrate that they are delivering jobs in regional centres that prevent people for having to come to Melbourne."*

Another key element is the types of jobs. Many of the initiatives under the scheme announced and applauded by the state government were mainly assembly or manufacturing focused such as Vestas, which established a component assembly location in an old Ford factory in Geelong and a tower part manufacturing plant in Portland. The policymaker continues his explanation of the political context around the importance of jobs narrative:

> *"Manufacturing in Victoria has been through period of quite serious economic decline over the past few decades, car manufacturing, other heavy manufacturing has left, because of the broader macroeconomic changes at a national level, so again a lot of pressure on the state gov to demonstrate what they're doing around jobs to address this decline. So for all those reasons, pitching an investment in renewable energy not just about affordability or climate and greenhouse gases, it's much more sellable politically to pitch in the jobs context."*

Hence pitching (regional centre) jobs is politically easier than climate or even affordability of electricity. This is reflected especially in the media releases and community facing documentation of the reverse auction policy (see Picture 4) that overwhelmingly focus on employment and economic development aspects. Problematically, the term often used is 'local jobs', despite the absence of any clear definition of both what a job means and who is the job for. The similar term 'local content' is discussed further in the next section on page 111. The jobs narrative is purposeful and geared to political gain, but the outcomes were believed to be meaningful and important:

"That might seem a bit mercenary from political perspective but it's actually a real imperative as well in terms of those regional communities. So it's actually something that delivers real benefits to regional centres."

Picture 4. The (only) picture on the DELWP auction website (DELWP 2019b), presenting the successful VRET auction projects – and how many megawatts and jobs[4] they offer.

Besides a picture implying employment in specific locations, the narrative of local jobs was used widely in State Government documents and press releases. The term 'local content', discussed in the next sub-chapter, is the regulatory term used by project proponents and is a concept often used in trade and investment agreements. But from the employment perspective, the use of the word 'local' tended to polarise experiences of the auction itself. In the auction the term 'local' might have been defined as Australia and NZ, but for local residents it meant their and perhaps the neighbouring postcode area. As one of the community liaison personnel explained, the confusion

[4] The number is likely full-time equivalent years (FTE) instead of long-term permanent employment positions to which local community might be eligible for or offered training to do. In the news: Local sourcing has meant nine out of ten of the 100 construction jobs are [filled by locals] (https://reneweconomy.com.au/local-industry-leading-the-charge-at-mortlake-south-wind-farm-38707/) - though [once operational] (https://www.acciona.com.au/projects/energy/wind-power/mortlake-south-wind-farm/) the plant is only expected to employ ten people. Only some of these ten people would be wind power technicians employed full-time: some would be FIFO specialists e.g. for periodical maintenance (see e.g. Skyborn Renewables 2023).

in the definition was highlighted when several job seekers walked into their shopfront after the VRET1 winners were published (with the picture above) only to be disappointed:

> *"Government's definition of local is regional. A marketing company that has no rural experience has written words that would work in Melbourne. Those words have very dramatically different emotional attachment, and you say local to somebody in Mortlake, you're talking about two or three villages surrounding Mortlake and Mortlake. That's local."*

> *"The reality is the circus has come to town, they'll be here for a bunch of time, during which time, you'll have to queue at the pub, the booze and food specials will be sold out before you get there and you get woken up by the first tib truck thundering the street at half past six in the morning, and then they'll go away. But there would be none of the animosity if the language applied from the very first day was regional conscious, or rurally conscious. That whole simple switch from regional to local in every single approach, people would not be combative." – Community liaison employee*

Another developer described how they have since been very careful in their materials to use the word regional instead of local, since the disappointment around Mortlake so clearly had to do with different interpretations of local. From top-down perspective and State political level the local content was seen as huge success with Vestas founding a component assembly location to the old factory of Ford in Geelong, the Federation University founding wind power focused training facilities in Ballarat and local content commitments enabling regional supply chains and training in Geelong, Ballarat and Portland. As one of the policymakers describes:

> "*Geelong Ford assembly for Vestas… again such a direct outcome of a local content requirement and wouldn't have been possible without VRET. The government loves the Ford assembly story because it's exactly how they communicate transition, keeping manufacturing jobs in the state, maintaining the state's reputation and position as the manufacturing state, but it's old car plant renewable energy product. Politically that's really powerful storytelling… And that's what you need if you're going keep doing more, driving the clean energy transition, just transition."*

While the Geelong facility was not utilised after the VRET1[5], the training facility did succeed and is still running. One of the big factors of the disappointment around Mortlake was that especially

[5] The closure of the Vestas facility in Geelong was never announced. In 2019, the opening of the assembly in the old Ford factory was celebrated in Premier press release, newspapers across the country (e.g. Geelong local paper, Sydney Morning Herald), energy specific news sites (e.g. RenewEconomy), but nothing has been published after 2020. In my 'accidential ethnography' notes I have a discussion with a Vestas employee who talked about how the parts are all manufactured in one location in Asia, where they used to be assembled next door, but for VRET projects

wind turbines require specialised skills, when many rural available workforce "*tend to be generalists*" as described by one of the developer community liaisons. One town planner said that while there is no data publicly available where construction workers come from, some are coming from Geelong, Ballarat, Lismore, Coolag and Camperdown (all regional towns). What is common to all of the people she has come across with, is that all of them have worked with wind farms before. The training facility is offering both short-courses (called 'tickets' in Australia) and whole degrees. As Federation University employee describes the goal of a local education provider to understand the future work needs of the area and prepare:

> *"We saw back in 2016, that there was a huge need for someone to effectively step up to the plate and to help lead the* [renewable energy] *industry by providing support, if you like, to the development of location training centre."*

> *"At some stage we are got to have a very tough conversation with our* [traditional energy and ICE car service provider] *industry participants and say well, how are you preparing yourself for the transition? Because it's coming. We got to help our communities to transition to that future, in whatever our business is without putting our head in the sand. Because if we put our head in the sand, people that rely on those wages that come in they are going to be devasted when they realise that their future doesn't exist anymore. And it doesn't exist because they couldn't see it, because we didn't talk about it. So we got to talk about it."*

The VRET1 helped to give the first seed funding to this training centre, which subsequently has received more funding from the wind developers operating in the area and state government. According to the university employee I talked to again a few years after the interview, said that especially their turbine technician students, while not many yet, have been employed mainly very well with the OEM (operation and management) contractors in the area, and there is ongoing collaboration with turbine manufacturers in the form of developing the program, guest lectures and small joint research projects. Arguably this facility is, while less impressive in state announcements in job numbers, a more sustainable employment pathway for the region.

Besides the definition of local, the other issue of expectations created around jobs narrative, is the quality and lack of long-term roles especially in the construction phase. Residents, town planners and developers all reported that the workforce mainly comes for a short time, either FIFO or 'drive in drive out'. The local businesses that had got work noted that they had to be careful not to alienate their usual customers by tying all the capacity to the more lucrative but short-term construction phase of the wind or solar farms. One of the residents near a solar farm location works in a civil

shipped to Geelong to be assembled. There was no point to keep assembling in Geelong after the VRET projects were done. It was reported in 2024 that Geelong old Ford factory was remodelled as housing hub for modular buildings (Smith 2024).

company that has done work for wind and solar farms in Victoria and NSW. Mainly his experiences have been positive but especially solar has had problems with overly optimistic cost estimates for constructions and subsequent problems of profitability for building contracts (that in Australia are usually packaged into large chunks under so called EPC contracts):

> *"I've got some friends that have worked in the solar farms, and they have a little bit of reputation of being really careful working for them. People have lost fair bit of money, that the developer or the person putting it in, gets to certain stage and then runs out of money or runs out of funding. So there are a couple of friends as electricians, whose lost a bit of money. They just never paid the bill... .He's actually gone back working for this solar farm, but he's got a different structure now, he's just a labour hire for him. And I know that company that's doing the building in Cohuna, they've had some financial issues too. The company that I work for supplies concrete and quarry products and have supplied a little bit of product to them, but we're very careful of monitoring our terms with them."*

Some policymakers criticised the focus on jobs or employment as "mudding the goals" of energy policy:

> *"I think the objective of these auctions or renewables targets or whatever they are, they're really primarily decarbonisation so in other words substituting our thermal plant. And the secondary objective is to the extent possible is that they should lower prices. Part of the framing of what's the objective of these things, is reason why energy has been such a disaster from a policy perspective, because no one's ever wanted to be up front about what the goal is. Is the goal to lower prices, or just to have efficient prices or is the goal to decarbonise? If you don't have a clear goal, then it's not going to work."*

Not all policymakers, or residents, thought that jobs are a reasonable goal for a renewable energy policy. For example, one Federal level policymaker criticises the narrative of renewable energy bringing rural or regional jobs:

> *"I don't think that stacks up though. And the reason that I say it doesn't stack up is that energy infrastructure is becoming more and more heavy fixed cost infrastructure, so it used to be that you needed a few hundred people to operate a thermal power station. Once a wind farm is built, there's one person, and it's his or her job basically walk around and make sure that things go, it's not labour intensive operation, and I think that's my concern around the rhetoric around green jobs, is that Australia has never made turbines, and we never will. We might make the towers for say for wind project, but the blades and the turbine itself are going to be made somewhere else, same with solar panels."*

In the larger policy context of the State of Victoria the primary focus on justifying roll out of renewable energy projects because of jobs has other wider interesting implications. There is no legislation in Victoria about phasing out fossil fuels, or reducing energy usage, just increasing the share of renewable energy in state's own electricity usage. Promoting of jobs instead of environmental reasons allows contradictory policy from a climate policy perspective. The State of Victoria has funded and promoted various "clean coal" projects, like the "Advanced Lignite Demonstration Program" to turn coal into char and oil, which collapsed in 2018 (Millar and Schneiders 2018). Another project funded by the Victorian government is called "Hydrogen Energy Supply Chain" which will use brown coal mined from Latrobe Valley to produce hydrogen – which will then be transported to the Port of Hastings and shipped to Japan as "clean" fuel for cars (Hydrogen Energy Australia 2020). The State defends fossil fuel jobs and the established relations of wealth and power built around fossil fuel energy (Marshall 2023). When energy policy's major goal is job creation and economic growth – and energy and climate action governance are separated to different teams in government – the obvious internal contradiction of pushing both renewable energy and fossil fuels doesn't create a problem of conflicting narratives for the State.

Local content

'Economic development' was only one of the evaluation criteria used in the auction, but it captured a lot of attention both for policymakers and developers. Local content, while increasingly common in reverse auctions (IRENA 2019), tends to attract a lot of criticism from the developers. As mentioned before, 'local' means in this context Australia and New Zealand. This is due to trade agreements which mean that in government tenders, all tenderers that meet the requirements and are within the same trade agreement, need to be treated equally. One developer describes this dilemma of politically needing jobs in Victoria, the trade agreement putting limits on what can be demanded, and the local community expecting 'local' to mean local to them:

> *"The Victorian government is in a hard situation there when they rely on local content, or always their focus is in Victoria but in reality it is, that it's Australia wide and NZ. It depends on where you are in the country, who to find, in terms of community and perception what defines local. Look at Dundonnell, people who live in Dundonnell would say, hang on, local is Dundonnell. If you're in Warnambool, you probably see Dundonnell as local. We see it from Melbourne in Victoria."*

The auction included "minimum requirements" of local content, which were calculated by 'quantity surveyors' estimating possible Australian and New Zealand existing supply chain. This method relied on the principle that what in theory could be delivered 'locally' is expected to be delivered in full extent to maximise the political capital of creating work for local businesses. For

example, if Australia had a small/medium size business that manufactures inverters, the calculation assumes that this can be sourced locally without considering whether these inverters were suitable for the specific models or types of technology a project would use in the actual year of construction. The process of favouring the local supply chain in exchange for the all-important government contract and revenue certainty, was quite opaque and not much is published. The industry itself has been and is reluctant to reveal any details or prices of existing supply chains – under commercial confidence of course – which meant that inherently the government process could have not been particularly well informed.

Neither of the two of the most celebrated manufacturing locations, the Geelong facility or the tower manufacturing in Portland, have been used outside local content requirement. The main issue industry employees described was that renewable energy technology is already well-established and all the large manufacturers – which are 'bankable' and hence the most realistic option for a utility-scale installation seeking project funding (Bryant & Webber 2024) – have already set up their supply chains. The existing supply chains are very large, specialised and either in Europe (the legacy of 'first mover' benefit) or in countries with cheap labour (in Australia the closest is China and East Asia). Setting up a new facility in a country like Australia with high labour cost, long distances to any other markets and no expertise simply made no sense compared to the existing "*mega facilities in Shanghai*". Especially the equipment manufacturers pointed out that many of the 'jobs' were only created for VRET without any prospect of long-term use in the global industry. The local content mandated steel tower manufacturing attracted criticism for being slow and not competitive (it would have been cheaper to import even the simple steel parts); it also had several quality problems the established suppliers don't tend to have.

> *"Some of the requirements around local content, local steel has put a lot of pressure on certain unique suppliers, so there's suppliers that can supply to the industry that have been relied on over the years to facilitate the wind industry in Australia, they are now very stretched. Basically all of the VRET proponents, us, GPG and Acciona are relying on some of the same suppliers to deliver goods and services, won't go into the detail but there's a couple that have overstreched themselves, and now we are seeing implementation and delivery issues on all 3 projects" – Developer*

Self-sustaining local content is notoriously hard to achieve through content requirements (Bourne 2018). In addition, VRET1 was a so-called 'ad hoc' auction, or a single auction without a predetermined regular auction schedule. In auction research, a repetitive series of auctions is seen as superior to a single auction since it decreases investor risks, improves financing conditions and allows manufacturers to plan their supply chain investments by offering certainty and longevity to the (slow to develop) renewable energy industry (see e.g. del Rio & Kiefer 2019, p. 44). It is hardly surprising that the assembly and manufacturing facilities in a location like Australia are not successful in the context of global competition when they were put in place for a single and

relatively small auction. The companies with a long history of manufacturing products such as steel or transformers for many industries, not simply for renewable energy, fared better after the VRET projects had finished, as they were not set up only to satisfy VRET policy. Setting up a temporary facility does not provide long-term benefits for the hosting community, and it is unlikely that the facilities set up only for local content requirements are beneficial to any long-term social legitimacy questions.

From an industry perspective, local content is difficult to organise, especially when many locations (e.g. USA, Taiwan, Brazil) are demanding local content at the same time. Project tendering processes usually favour large national or global contractors with established supply chains also due to the need for specialised equipment and quality requirements which are unlikely to be met with a local supplier, especially if they are only setting up production for a few projects. Local small (and rural or regional) suppliers tend to lack the specialist training, and hence are less likely to get hired.

Space and enabling policies

As with many commodities, the production of RE relies on 'fictious commodities' (Polanyi 2001 [1944]): land, labour and capital. Renewable energy companies often need active support from the state to access land, especially given the extent of land needed for large-scale renewables. Renewable energy uses the same structure for development as all other major developments. One Victorian policymakers notes that from planning regime and electrons moving to consumers, there is little difference between wind, solar or coal as fuel for a large-scale development:

> *"And we have to go through all the same... it's pretty much the same. It's the same as the coal industry, it is just, this is how you get energy and you still have to pay for it through the same lines. Different fuel, energy comes from different spot but pretty much it's the same thing."*

The developers saw the planning framework in most parts as fairly unproblematic albeit slow. Getting a planning approval from the Minister was not considered particularly uncertain in the State of Victoria, if planning guidelines were followed and the impact assessment was done by experienced consultants. More projects tend to stall and not progress promptly to building *after* the permit is granted (see also Cass et al. 2022). The company structure is set usually as a 'project company', which allows the selling and buying of projects, quickly and easily, and shields the parent company from bankruptcy. Mostly it is the easiest way to gain project finance as well, since the project owns all its contracts, permits and equipment – and is hence removed from parent company problems or bankruptcy, which allows the bank to accept the project as collateral against the debt finance. The state planning regime does not require the project to apply for the permits for the parent company – which usually hosts the employees – and hence there is no limitation for

the project to change hands. From a community point of view this does not foster long-term relationships, and usually the community and state are the last to know the outcome of confidential commercial negotiations. This was, however, often described as business as usual by the town planners and community engagement specialised policy makers that see it in many projects. For the residents the change of ownership can come as an unpleasant surprise. As one of the policymakers describe the problem of the model:

> *"We also find in that some of them, are put up, building a project, with the intention to sell it. It's always the intention. The people that build it can be excellent in engagement and built all these wonderful relationships and expectations and conversations, the new people don't. And it can be quite disruptive for the new people to come in and close everything down, because that work is done and I'm just here to run the place. And they don't see it as important because it's done, they've built the thing, so they don't have to fight any of those battles then. And the only see it as smoothing exercise not as something that is important in its own right.*

Besides granting environmental and land use permits, the state also has a role in enabling land access in the form of a binding lease agreements regime. Unlike coal, renewable energy companies prefer to make lease contracts for several decades. After establishing a reasonable solar or wind resource, the first step is to get the landholders to sign lease contracts. The key consideration here is that even if a land holder changes their mind later, or if the owner of the land changes, any equipment and the future right to put in that equipment is held by the company. Usually landowners tend to be happy hosts, as one puts it (laughing): "*there is not many other things that [allow you to] get paid 60,000 dollars a year to stay in bed*". Some landholders had signed in a (previous) round, and had since become opposed to renewable development, usually over procedural justice issues or health concerns. These landholders told me that they would rather not have the rent income if they could just get off the agreement. A few had tried and sought legal advice, but the contracts were iron clad.

I do not mean to criticise here a regime that gives security against a change of mind, just point out how important this piece of state legislation is for utility-scale renewable energy. Renewable energy requires vast amounts of land and it would be an unviable model especially for wind turbines to buy all the land they occupy. For example, Berrybank wind farm has 43 turbines and is on 5,000 hectares of agricultural land. If GPG, a European developer, would have had to buy all the land in advance, it would have first of all tied up large amount of capital before knowing whether the project would be viable. Secondly, buying big swatches of land that forms a whole usable area, is unlikely from farmers that are – and can be after the wind farm as well – using the land for their livelihoods. Thirdly, the developer would have a problem of how to manage or farm the land that is not used by the wind farm infrastructure (for wind power usually 98 – 99 % of the whole area is not under the footprint of any equipment). The renewable energy developers or utility

companies do not have agriculture knowledge, nor want to tie-up their resources for managing farming land.[6] On the other hand, 'prospecting' the land and trying to get lease agreements, that tend to have very small payments before the project is built, but tie the land under that contract against any competition, is very cheap. One landholder talks about how he was approached by several 'prospectors' before signing, and some of the conditions were not agreeable:

> *"They were proposing in my property, I think it was 30-year plus another 20 years, it was going to be a 50-year contract, I said no way, 30 years is max. So they were wanting to take advantage of me, they were entitled to ask, I refused, all of us refused, so they agreed to that."*

Making land lease agreements and accessing the land has not been seen as a problem in Australia so far according to the developers. This is possibly changing now, as further proposals near Mortlake (especially a project called Mt Fyans) have had a much more difficult time signing land lease agreements for big installations. One of those opposed shared a map with me of people that 'are on their side' and have been approached but refused to sign (picture 5); in another state, in NSW, one of the big planned new renewable energy zones (REZ) has had very difficult time getting projects started due to lack of interest from landholders. The issue of access to land is hence starting to show Polanyian (2001 [1944]) double movement dynamics: the large size of the development model and the typical concentration pattern due to grid access is raising more and more concerns from the local community about the land – and landscape – grabbing.

The relative ease of signing land lease agreements with one landholder is also the reason why there is less interest in Indigenous-owned or controlled land, which would require negotiations with a group of people instead of one-on-one negotiations. In other states, where a much bigger part of land is controlled by Indigenous groups, there has been more interest, but in Victoria so far there are few examples of land for renewable energy in areas where Aboriginal groups could benefit from lease income.

[6] This is slightly different for solar farms, that sometimes do buy some of the parcels, especially if there is no interest in co-grazing of sheep (dubbed as 'agri-solar', gaining interest as the pressure towards more installations grows).

Picture 5. Mt Fyans wind farm proposal, red properties had allegedly aligned with the local opposition and refused to sign any land lease or neighbour contracts. Riikka Heikkinen 10.10.2019

Imagined futures in the State of Victoria

One of the questions I asked everyone in the semi-structured interviews was how they would change current energy landscape if they could do so freely. The motivation was to understand what kind of ideal energy futures people imagined, and how, or if, that might impact choices made in energy policy today. Neil Brenner (e.g. Brenner & Theodore 2002, Brenner et al. 2010) talks about path dependency and while neoliberalisation "*processes have been entrenched at various spatial scales and extended across the world economy since the 1980s*" (2010, p. 327), the contextual embeddedness of inherited institutional frameworks vastly impacts the outcomes. The existing institutional framework together with this 'neoliberalisation' process, of applying market and competition based thinking to policies, produces context-specific outcomes (Brenner & Theodore 2002), but it also seems to profoundly constrain possible policy futures. As Gramsci (2000) argued, the power of hegemonic worldview and what is perceived as 'common sense' is its ability to repress dissenting voices and make itself seem natural and inevitable. Hence, as path dependency has been useful in understanding the "*place-, territory-, and scale-specific projects designed to impose, intensify, or reproduce market-disciplinary modalities of governance*" (Brenner et al. 2010, p. 335), it also useful in how the shaping of the future is perceived.

While the energy transition represents a huge opportunity to reimagine how energy is produced and people's relationship to energy, the dominant descriptions of people I talked to limited to shares of fuel types, and perhaps increasing energy efficiency and consumer solar panels and

batteries, very few had thought any completely different models. A common way of describing the future was talking about "clean alternatives" such as pumped hydro, wind and solar. In other words, technology can solve this inconvenient problem of climate change (see Spaargarten & Mol 1992). For many, future energy transitions retain coal-fired generation, or at least part of it:

> *"I'm not sure that it's all about renewables, like 100 % renewables, but it may be changing the generation model from 80 % coal to say 80 % renewables and 5 or 10 %. I think it's just turning it around." – Town planner*

> *"Ideally most of the time you get your energy met by renewables, which are now becoming increasingly cheap. And then enough demand response, batteries, you'd need probably some other things as well, like gas, dispatchable pumped hydro, that can then ramp up, so it's sort of to complement that when it's not generating. It's about how you do it at the lowest cost." – Policymaker*

Many policymakers and developers settled to propose small tweaks to the current market design, such as a different structure to fund transmission building or deal with system strength issues better. Some go as far as describing the imagined energy future in the light of how to best allow current lifestyles to continue. The assumption made by one policymaker hints that it is what he thinks the public wants, and hence it is the goal in policy and politics:

> *"If it comes through, hydrogen will be a great technology and a lot of things we do we can continue to do. We replace one not noticeable gas with another not noticeable gas and I kind of live our lives as we like, we can still chargrill our capsicums on our stovetops at home without losing that ability. But we need a contingency plan. Better not need it than not to have one and do need it." – Policymaker*

The policy papers or the legislated renewable energy targets in State of Victoria do not entail any possible future model outside large-scale private capital investment for renewable energy. The renewable energy targets under the 'Renewable Energy (Jobs and Investment) Act 2017' itself specifically lists as objects of this Act to increase the proportion of Victoria's electricity *generated by means of large-scale facilities* that utilise renewable energy sources.

Cheapness or 'affordability' for consumers is important in the Australian context, and is mentioned several times in the policy design and the background modelling report by EY (an economical modelling of benefits and costs of a possible auctions scheme). Some of the future visions discussed included why the proposed future fuel was the best one – because it was cheap and fitted the current model.

"I would completely depoliticise energy, and by doing so technology will promote itself and the cheapest cost of energy will come to the forefront and developed. Call me biased but wind is a big part of that and we work so hard in the construction and project management side of it to bring that cost of energy down." - Developer

"Renewables has been so popular in Australia, because it doesn't involve a behaviour change. People just want… they can crumble their electricity bill when it comes through but then you pay it and for the next 90 days you forget about what's going on with the decarbonisation, because you don't have to do anything, the government is doing it for you. And that's why it's so popular, as well as it just being a more cost-effective way to decarbonise." - Policymaker

Interviews were conducted before the inflation peak after Covid-19 and the Russian invasion to Ukraine leading to global energy crisis and price peaks in 2022. In Australia, the 2022 crisis highlighted the right to profits and export prioritisation. The export mentality meant that especially gas companies were allowed to keep exporting gas outside Australia without any mandatory reservation for domestic use, while the domestic prices went up due to better prices being available overseas. This actual situation in Australia was very different to Europe. Australia has plenty of domestic fossil fuel reserves and does not rely on imports from Russia, but the prices went up regardless. The Australian Energy Market Operator (AEMO) first introduced a gap for prices, then suspended the spot market trading altogether on 15th of June 2022 , because it "became impossible to operate the market". The high prices for most of the second half of 2022 meant that many energy companies, especially fossil fuel export companies, reaped record profits, while some of the smaller retailers went bankrupt and customers were faced with rising costs (AER 2022)

The crisis brought the possibility of nationalising the grid and power generation into the public discussion of possible energy futures (Nepal 2022). The Victorian government did indeed take a bigger role in network planning and reignited the old state electricity company to invest in new, state-owned generation projects. Notably, during the 2022 crisis, public ownership of generation assets didn't necessarily guarantee any kind of certainty for electricity supply when it was needed. For example, Snowy Hydro, state owned (but corporatised) pumped hydro project, withheld supply after a price cap was put in place by the National Energy Market Operator (and the national regulator opened up an investigation into this, AER 2022).

One of the views from interviewees was that Australia could become a clean energy "superpower". This has been proposed more or less seriously for example by the Federal Energy Minister (Bowen 2024, 'Future Made in Australia'), Ross Garnaut (2022) and the Smart Energy Council (2019, "500 % Renewables" goal). All of these proposals rely on high renewable energy resources in Australia, and capitalising on the existing export mentality. The majority of Australia's gas and coal industry is for export, and the energy transition hence presents an existential threat to those

livelihoods. The narrative of unending growth and exporting either hydrogen, ammonia, manufactured goods (such as steel) or even direct transfer to Singapore[7] is very appealing in the Victorian and in general Australian context. This capitalist growth fantasy narrative is also crucial to firming of the large-scale installation model for industry and export, and drawing state attention away from possible other models (e.g. smaller scale, distributed and demand-based responses, such as through microgrids). The growth potential was described in the interviews as an opportunity:

> *"Australia has a massive opportunity, Australia could become the hydrogen centre. It could be the renewable energy production centre for the whole of Asia. If you cover 2/3 of Australia with solar panels and export the energy, greenies wouldn't want that, but you know that's just the way it is, we have so many opportunities and the projects are so big in Australia." – Education provider*

> *"Australia's got more resources than anyone in the world, when it comes to sun, and yet here we are, sitting around looking at it – Town planner*

Another type of technological fantasy was the description of ideal futures from the people opposing a particular project. While every opposer tended to declare early-on that they were not against renewable energy, none described the ideal future as fuelled by solar and wind power. Rather, opposers tended to bring up a technology not used at the moment in Australia: solar thermal, wave energy, or "*3rd generation wasteless nuclear*". The justification for these technologies was that Australia's emissions were so small that there was no rush to build 'unproven' wind or solar technology, when the breakthrough for these other technologies was seen as just few years or decades away. One resident questioned both renewables and fossil fuel models:

> *"I know it's happened in the past and it always comes back to us. What with the La Trobe Valley, the other side of Melbourne, Loyang and all the coal power stations, they had to create it to the rest of Victoria. But haven't we learned 40 years later, being next to a coal power station is not great, and we're now finding that living next to a wind farm is not great. Court cases have proven that there are nuisance issues with these wind farms. So as we learn more and more, we don't want to copy what's happened in the past with parallel industries, we wanna make things better and more level. People will have a greedy need for power, we admit that, but why are we lumped with these wind farms? They are gonna power 550 000 homes in Melbourne or Ballarat. Now I don't know how many homes are in Moyne shire, I'm guessing probably not that many."*

[7] The project dubbed SunCable was proposed in Northern Territory to generate 6 GW of renewable energy for Darwin and Singapore via an subsea export cable. The project has attracted investments and support from the NT government and two richest men in Australia, Mike Cannon-Brookes and Andrew Forrest, has been delayed several times, and gone into voluntary administration, but the vision and the project live on. See https://www.suncable.energy/

Some questioned the lack of discussion in energy efficiency, and some criticised the hegemony of the large-scale renewable energy into the future:

> *"It shouldn't all be large wind and solar because we are still in, and that's my opinion if we are still then relying somebody else far away, or nearby, doesn't matter, somebody else creating electricity on our behalf and we buy it, at whatever price."*

Some of the developers wanted to see more engagement with the energy system and projects nearby, albeit still large-scale:

> *"My biggest magic wand would be that I really hate the fact for working on wind farms that the energy produced doesn't go locally unless you into the distribution system. And that's the biggest issue, overcoming the community issues as well, is that, if you could guarantee to people that, yes, you are going to have a wind farm in your backyard and in your area but you're going to be directly linked to outputs of that and you'll see the benefits of that. I would love to change something like that in the future but unfortunately most grid systems, don't, or will never do that."*

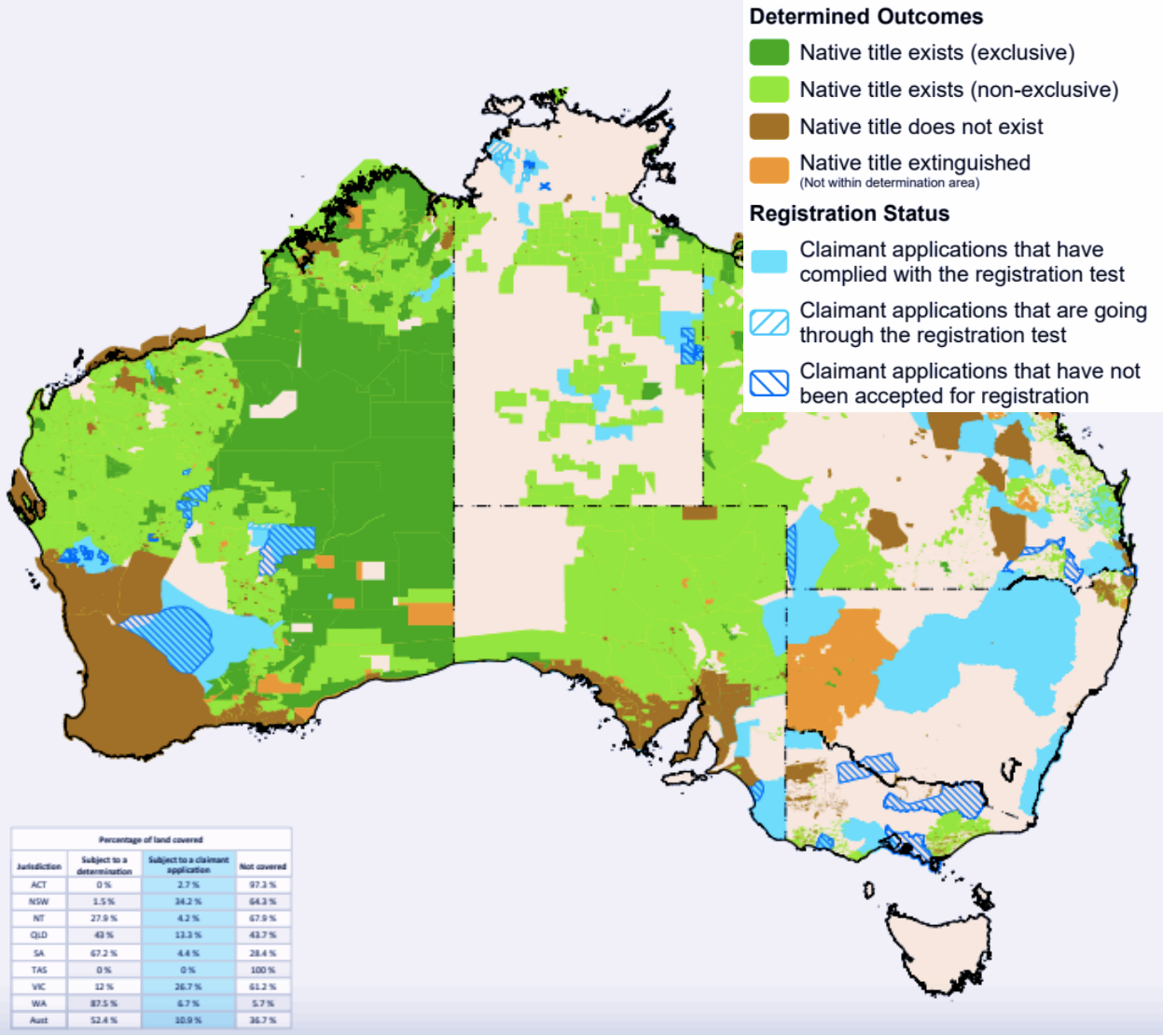
In conclusion, imagined futures are important to choices made in policy as they help to forge the path to the models, technologies and social organisations required for transition (see Brenner & Theodore 2002). For over 60 years, Australia has relied on coal in domestic electricity generation. However, it seems easier to imagine life without coal, than a model not based on utility-scale generation. In a way, constructing renewable energy under the capitalist model, and using reverse auctions to help in the commodification process, is an obvious 'pathway' for that development to continue. It reinforces the hegemony of what energy transition could become - in the minds of policy-makers as well as concretely.

Indigenous considerations

Chandrashekeran (2021, p. 380) writes that "[*t]he law is a key site of struggle for the redistribution of economic and non-economic values to Aboriginal peoples*". In her case studies in WA and NT, the land where large-scale renewable energy installations were proposed was under Aboriginal title. This is different for most other states in Australia. In the State of Victoria, none of the winning VRET1 projects were under Native Title or other kind of Aboriginal title at time of project development. This also means that none of the projects have Indigenous Land Use Agreements (ILUA) in place since there are no successful Native title claims.

From National Native Title Tribunal (2024) mapping it is obvious that in Victoria the recognised Native Title determinations, or Victoria's own legislation, such as the Aboriginal Land Rights Act

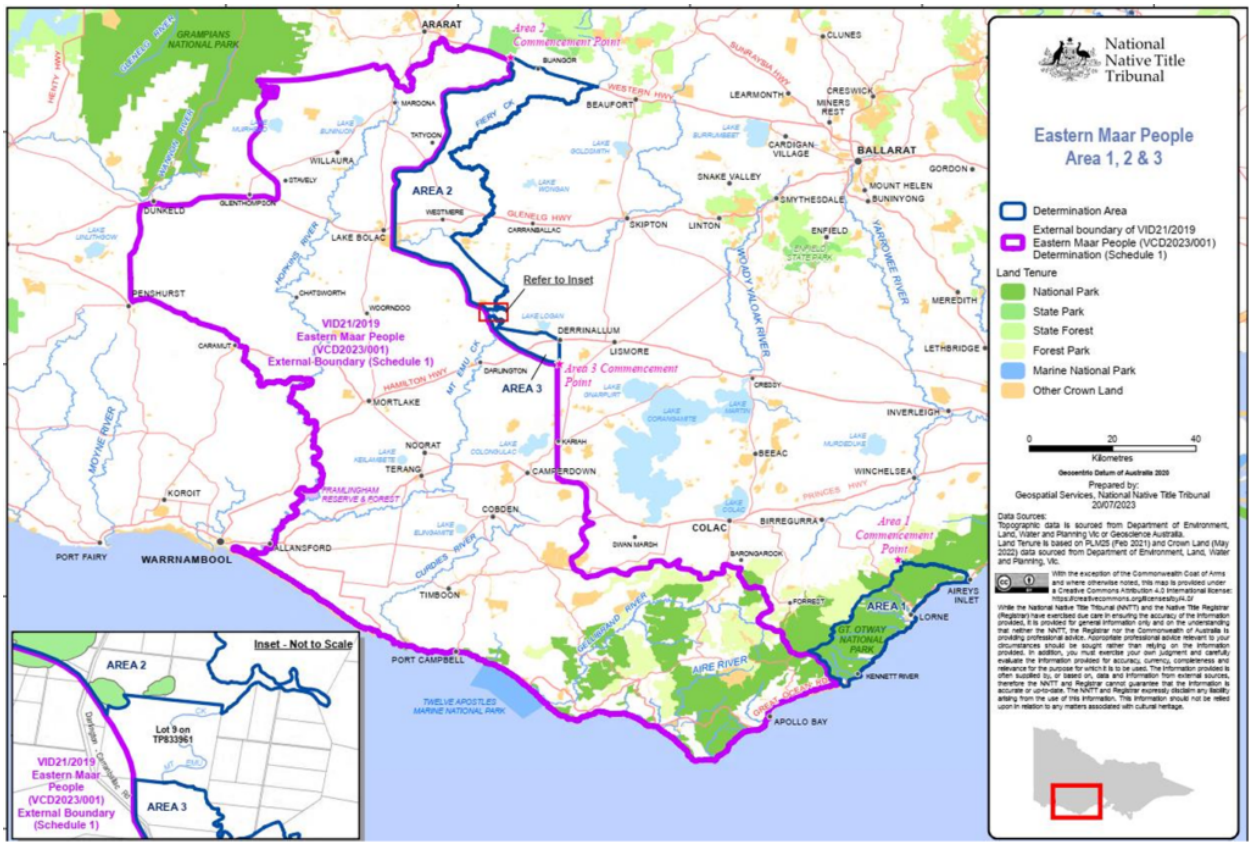
1970 and the Aboriginal Land (Lake Condah and Framlinghan Forest) Act 1987 (Cth), are quite limited compared to Western Australia, Northern Territory and South Australia. Some of the VRET1 projects are within active Native Title application areas. Carwarp (near Mildura) solar farm was located on an application area by the Millewa-Mallee First Nation peoples, made in 2015 and was “Accepted for registration”. However, the Carwarp solar farm was not built. The Cohuna and Winton solar farms in the north of the State had Native Title applications in the 90s, but the Tribunal had ruled that Native Title does not exist on this land. In 2023, the Eastern Maar people won Native Title in the first determination (VCD2023/001) in Victoria for a decade, which gives the Eastern Maar people the right to protect public land and be consulted on land use development proposals. While the determination area does include Mortlake South and Dundonnell wind farms from the VRET1 projects, the Native Title strictly speaking only applies to public land and is extinguished on private land. The project infrastructure is all within private land, meaning that lease agreements are private contracts between the landholder and the renewable energy developer company.



Percentage of land covered

Jurisdiction	Subject to a determination	Subject to a claimant application	Not covered
ACT	0 %	2.7 %	97.3 %
NSW	1.5 %	34.2 %	64.3 %
NT	27.9 %	4.2 %	67.9 %
QLD	43 %	13.3 %	43.7 %
SA	67.2 %	4.4 %	28.4 %
TAS	0 %	0 %	100 %
VIC	12 %	26.7 %	61.2 %
WA	87.5 %	6.7 %	5.7 %
Aust	52.4 %	10.9 %	36.7 %

Picture 6. Geospatial Services, National Native Title Tribunal 18/07/2024



Picture 7. Eastern Maar successful determination in 2023. The application area was larger but parts of it were left out from this decision (Eastern Maar Aboriginal Corporation 2024)

Due to the lack of existing successful Native Title applications at the time of project development, and the fact that project developers prefer the private landholder land lease model where that is available (which is most of Victoria), the Indigenous voices in the projects are relatively silent. The projects need to do cultural heritage assessment as part of their environmental permitting process, but Indigenous involvement does not appear to go much further than that. When I ask about possible First Nations benefit-sharing or other programs, one of the project developers describes the relationship:

> *"We have funding allocated to them, but there has not been something that is been dedicated for them because we have not been able to get them to commit to an initiative as of yet. But we are working with them but because we couldn't do anything with that timeframe. We just have a pocket of unallocated funds to do something in that area… There was an offhand comment about art installation, but nothing specific so… obviously we will have open welcome to country ceremony and things like that, but in terms of them putting money to specific project there's nothing solemnly put in place yet."*

All the developers I talked to also emphasised that their sites had no significant cultural heritage values, which is believed to explain some of the perceived lack of interest from the local Indigenous groups. The experience that *"it is quite difficult to get a hold of a lot of them*" is repeated often, which might be more likely to do with how poorly the standard consultation template fits to 'Free, prior and informed consent' framework promoted by First Nations groups (see e.g. First Nations Clean Energy Network 2023). However, everyone was adamant that there has been no deliberate dismissal:

> *"I wouldn't suggest that… there's definitely no dismissal, they are a huge priority, and they were a priority within the department's documentation as well, it's something that we were working forward to as well as…Depending where the land is, not necessarily a large sacred land or anywhere that has any kind of artefacts or anything like that, there's no song lines, so they don't have a huge concern about that area. So they'll work with us because we can provide something for them, but we haven't been a huge focus on them because there's nothing too concerning out there." -Developer*

Similarly, a Victorian policy maker sounded almost offended when I enquired about First Nations being somewhat invisible in the scheme. In the consultation paper or public summary of submissions for the scheme policy design (DELWP 2016), there was not one mention of First Nations perspectives. When the VRET1 scheme winners were published, there was no obvious First Nations specific substantial initiatives or programs, though they were mentioned in the community engagement criteria. Still, the policymakers insisted that there was a lot of emphasis on First Nations engagement.

While VRET1 does not provide much evidence of redistribution of economic or other values (see Chandrashekeran 2022), lately there has been more attention to the role of Aboriginal people in renewable energy transition. The formation of First Nations Clean Energy Network (NGO), First Nations Clean Energy Strategy (DCCEEW 2023) and some ambitious partnership announcements (e.g. Pollination Group 2023), all indicate that the quite limited position and role might be changing into more meaningful participation.

3. Commodification process of renewable energy and reverse auctions

As discussed earlier, in order for renewable energy to be built, it needs to be carefully constructed by the State as a commodity. Renewable energy, while enjoying the "free gifts" of nature provided by abundant and non-exhausting solar and wind as 'fuel', also needs land, capital and institutional frameworks to be able to be built. In addition, the model based on private investment needs to make a profit (Christophers 2024). This section discusses more in detail the systemic barriers for

renewable energy and state aid in creating revenue certainty in the Victorian case. Grid considerations are especially important in the Australian context, and are discussed first, because the grid presents a profoundly important aspect of where new installations are spatially placed and acts both as an enabling physical structure and as a policy tool, and manifests the pervasive "carbon lock-in" (Unruh 2000) in Australia.

Power of the grid

While in theory the NEM is an open access network and is technology agnostic, where the lowest cost of generation should always prevail and hence onshore wind and solar as cheapest forms of generation should need only little to no incentives to take over the grid, the reality is more complicated. There are several practical obstacles for new utility-scale solar and wind to connect to the grid infrastructure and to allow power to be dispersed to consumers in the East Coast of Australia. Especially the areas of high transmission capacity, which in Victoria are particularly the Greater Melbourne area, the interconnectors and smelter in Portland, are valuable for generators. One of the policymakers describes the current issues in energy policy as:

> *"Short list* [laughing], *transmission, transmission and transmission. Availability of network to efficiently transmit and distribute electricity from RE projects to load is critically important and is not currently available, so there's significant transmission constrains in most jurisdictions, and there is insufficient regulatory framework that either incentive new transmission infrastructure, appropriately allocates risk, issues around MLFs."*

Developers I talked to, other policy makers and industry advocates all, in unison, name grid related issues as the single biggest obstacle for new renewable energy projects. The power of the grid does not go unnoticed by local residents and town planners either. One of the Local Government planners names the capacity of the grid currently the biggest issue. Another resident, who is pro-renewables, frets that "now the grid is becoming a blocker". The issues can include technical, regulation, locational and financial barriers. All of these together form what I believe the most substantial practical example of 'carbon lock-in' (see Unruh 2000) in the Australian electricity market, and it is slowing down the energy transition.

Firstly, solar and wind generators operate on completely differently to typical legacy fossil fuel operators as discussed in Chapter 3. The discussion around the technical details of how the system adapts to energy transition tends to be highly technical and technocratic in Australia. One policymaker notes on his journey into the technical details around the debate of future market design:

"It's kind of complicated and you need to understand how the system works, to really appreciate it."

A moment later he continues that what is missed from the public discussion is that the grid – in its current form – is functioning in a certain way and changing that is not straightforward. Inertia and system strength issues might be due to the grid being originally built for big, rotating fossil fuel generators, and they remain the current reality:

"And particularly once you get more understanding, especially with electricity which is quite complicated and technical, you start to have much more appreciation for all the trade-offs… it's not just a conspiracy of the coal lobby"

The National Energy Law and Rules ('NEL' and 'NER's) seek to manage how these technical issues are managed in Australia. The NEL was originally drafted at the time of privatisation, to regulate the electricity markets and transmission management in 1996, and the rules in their current form came into force in 2005 (AEMC 2024). The law and rules were logically geared towards and reliant-on the fossil fuel generator logic, as that was the generation model at the time. The NER has grown over time as more and more rule changes and additions have been added to try to fit the old model into new technology – the current rules version is the 215th, and it comprises of 11 chapters, each of them up to 350+ pages in length (see AEMC 2024). Trying to address system-wide problems of lacking transmission to high value solar and wind resources and the logic of open access via single rule changes is slow and so far, ineffective.

The technical and regulatory aspects come together in a process called the connection application. AEMO requires generators to model all the impacts and to prove compliance with technical requirements posed for all generators under the National Energy Rules. This modelling can be very time consuming and can't be done much in advance of the actual physical connection because the situation in the NEM changes often with new connections and grid assets, old generation exiting the system and grid strength changing accordingly. This modelling is needed in order to secure financing and to line up contractors and supplier agreements. After that, there is a process called registration process where the design is more detailed and compared to the original modelling. For the applying generator, there is a certain amount uncertainty within the rules what connecting generators can be asked to do. Sometimes, even the slightest change in how the generator was modelled to be able to perform against what the actual situation is, can lead to opening up the original modelling and looking into every technical detail of the generator performance standards. As Christiaan Zuur from Clean Energy Council explains the issue in an industry podcast talking about a rule change to help the situation:

"*Even tiny deviations were causing those assets to have to reopen large portions, if not all, of their technical standards and go through a very extensive modelling process. That was*

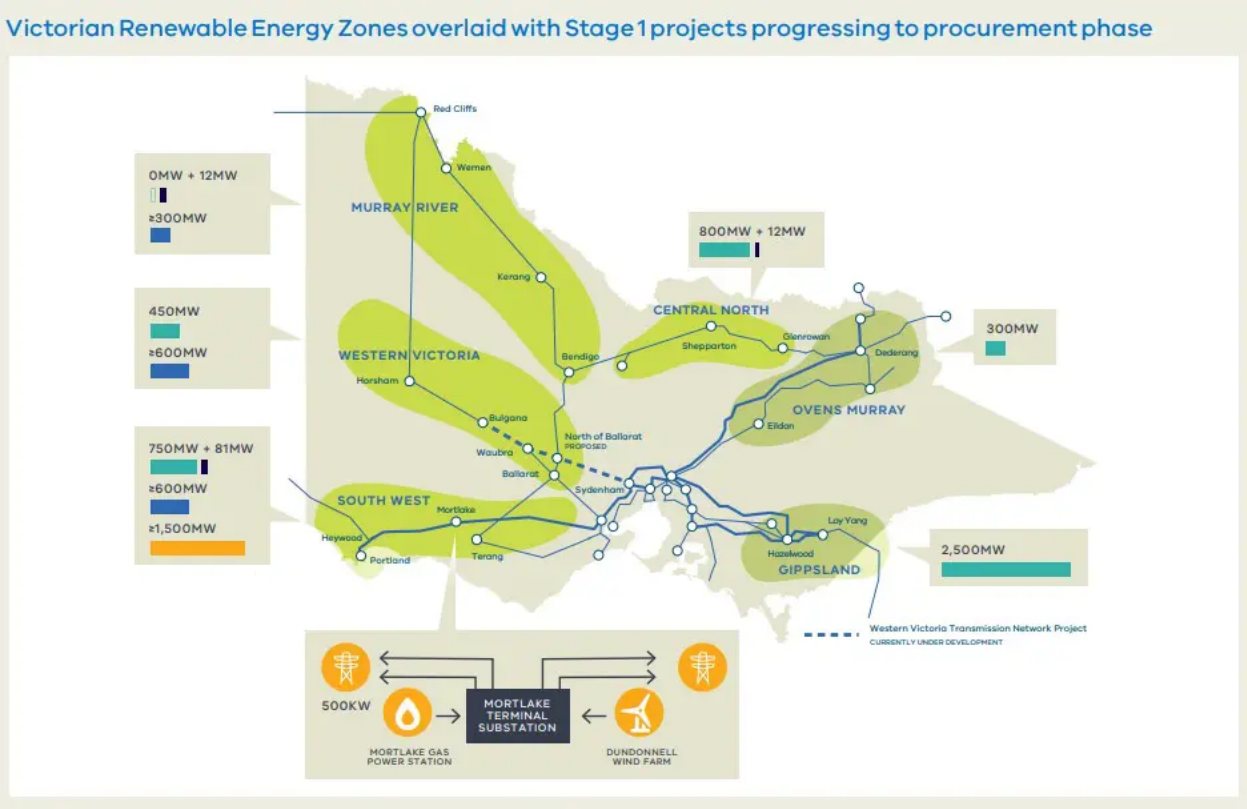
imposing huge delays on a number of projects" – Christiaan Zuur, 26.5.2023 in EnergyInsiders podcast

One policymaker explains this complicated technical and regulatory barrier via the history of the rulemaking process and the various reviews over the years into the slowness and expense of Australian electricity market. In 2017, after the South Australian blackout and the Finkel Review, AEMC introduced the 'do no harm' principle which put the emphasis on new generator to take care any system strength issues and model a single generator impact in detail before a connection could be approved. This, together with RET changes, led to delays and difficulties for many projects. Several attempts were made to abolish this rule, which was changed, at least to somewhat better direction, in 2021 (AEMC 2021). The key criticism of the 'do no harm' principle was that a small single generator such a wind or a solar farm had no visibility over grid system, and they were poorly placed to manage grid stability issues:

"*At the very same time all that was happening, the AEMC had put in place generator performance standards that basically required individual generators to ensure that they did no harm to system security. My personal view is that was the wrong decision and the easier way of dealing with the system security issue would be just to make the TNSP* [Transmission Network Service Provider] *responsible for ensuring there's enough system strength, voltage whatever the system security service is and then over time the TNSP can plan how it needs to spend money"*

The third barrier is the location of current strong grids, which in Victoria are between La Trobe Valley and towards Portland, which hosts a smelter (picture 8, the La Trobe Valley to east has thousands of MWs free capacity vs e.g. northwest of the state which has good solar resources but almost no capacity to add new projects). Picture 8 illustrates also why most of the wind in Victoria concentrate to southwest, as it is the only direction with good wind resource and a high capacity (500 MW) transmission line and substation between Melbourne and a smelter in Portland.

"It costs a lot of money and it costs a lot of time to go through the grid connection process so that's putting a lot of people off, and really what we are looking to do is change the grid around. We are looking to take power from Northern Victoria and send it south, whereas in the past we've generated coal fired generation in the south and send it north, so we are completely turning things around." – Town planner in Northern Victoria



Picture 8. The renewable energy zones proposed in 2022 to address the lack of transmission for suitable areas with renewable energy potential (State of Victoria 2022, Mazengarb 2022)

The old coal power plant locations are not well suited for utility-scale renewable energy installations. Renewable energy requires vast amounts of space and wind or solar resource instead of the proximity to coal depositories like coal power plants. The large transmission lines are 'regulated assets' which means that AER approves any costs passed to consumers in energy bills via a 'consumer benefit test' called RIT-T. RIT-T test notably does not consider environmental, or social, benefits or factors at all (Healey 2021). In fact, the test itself was never designed for new large transmission projects, rather for augmentations and improvements and to stop overinvestment and 'gold plating' in early 2000s (Bashir 2023). The test is solely designed to estimate whether the cost benefit of improving an asset, to enable lower wholesale electricity prices, compared with doing nothing. In reality, even a massive solar plant or wind farm, where they need a new 'regulated asset' power line, would find it very difficult to prove that is the case. The RIT-T test was crafted at a time where new connection points were centralised coal power plants located relatively close to large population centres. In this regulatory framework coal power plants did make an appealing case especially when environmental costs nor the price of carbon emissions is not considered. Basically, it also means that none of the existing coal power plants on the Australian East Coast have paid any major connection costs to transfer the electricity created for customers. Instead, these costs were coordinated by the state and have been directly charged from every electricity consumer independently of their actual electricity provider. For a new wind or solar farm, the options are limited to paying for their own power line to the nearest existing

connection point, grid size substation, and in addition, pay any additional augmentation costs created by the new connection. The lack of success in building new transmission under the RIT-T test logic is the main reason why all east coast state governments and the system operator, AEMO, have proposed 'Renewable Energy Zones' (see picture 8) in the last few years to try to build transmission lines in a coordinated way to enable building several projects.

Another locational issue new wind and solar generators have faced in Australia, is something called a 'marginal loss factor' (MLF). This is defined yearly by the Australian Energy Market Operator (see AEMO 2024 for yearly reports and calculated factors for each generation asset in the system). Whenever a new generator is built, an old one retires or anything in the transmission lines themselves changes, the capacity to export the electrons to consumers for any one location changes. Every generator gets a factor from 0 to 1 (or sometimes slightly higher than 1), which is then used to multiply how much of the yearly generation is compensated in the spot market. For example, a 0.9 multiplier would mean that 90% of the generation would be considered generation (which can be sold) in the spot price market. The idea behind the MLF is that it is supposed to guide new generation to optimal places where the least amount of augmentation is needed for the whole system. The problem of this logic is of course that generators have other locational priorities, notably to maximise MLF, which then can change drastically during the life of the asset. *"Basically, an older project has no protection against newcomers in the same connection point*", and cluster of projects accumulating to the same transmission line "*can impact all the projects negatively by limiting the amount of usable capa*city" (Cass et al. 2022, p. 3). One well-known example is the Broken Hill solar farm, which started at +1 coefficient and dropped after a few years around 80 % of the actual production being accepted to the grid after it has been built (see AEMO 2024, especially financial year 2018/2019 to 2020/2021 which show the drop of MLF), just because other projects were later built 'in front' of the Broken Hill solar farm (closer to the East coast large cities). It is important to note that this is on top of other kinds of curtailment which relate to grid congestion or financial incentives (such as negative pricing). One policymaker describes the situation:

> *"The thing that's been unfortunate is that if you look at Broken Hill, the Broken Hill solar plant has now been in existence, operating for 5 or 6 years, and finds itself being significantly curtailed, that's not a good outcome. Because it's been there doing what it's been doing, so… I guess that would be my simple take on why everyone is talking about the grid."*

Another describes the impacts of this uncertainty as:

> *"MLFs are an interesting one, because you've got lots of people who've been burned by MLFs. You need locational pricing signals of some type, otherwise people will build something in the middle of nowhere and say now that it's built, connect me please. But I*

think that the bluntness of those tools is probably something that is leading to people being a little bit more risk adverse around new investment."

This describes well the real problem of these technical, regulatory and locational barriers. The issue here is that the barriers created by difficulties of privatised grid access, impacts the profitability of renewable energy and introduces risk to financing. As Christophers (2024) points out, these are crucial elements in willingness to invest to renewable energy and if they are not favourable, private financing will be difficult and slow. This in turn puts the logic of private capital-led energy transition at risk. The uncertainty related to whether and how much of the generation will be able to be sold in the market creates uncertainty for the revenue which in turn means that the asset finance will be more difficult to gain from banks or other financial institutes, it will cost more (as higher rates for a riskier investment) or the profit rate for own capital invested is uncertain.

While technical viability (25% weighting) and impacts to network (10% weighting) were considered in the VRET1 assessment criteria, and the state committed to support the projects in any permitting issues, the reality was that state had very little power to control the grid connection issues. Practically all the projects had some kind of delays or difficulties with their grid connections. For example, the Dundonnell wind farm – which is located in a strong part of the grid and had completed the turbine construction on time in mid-2020 as agreed with state under the VRET1 contract – had issues with commissioning the whole project due to "unanticipated concerns" from AEMO relating to "system strength issues" (Vorrath 2020a). This delay went on for more than a year (Tilt Renewables 2021), despite the generator following the plan required by AEMO before financial close in 2018 (Vorrath 2020b. The delays impacted the publicly listed Tilt Renewables revenue expectations in several financial years and added to the backlog of renewable energy generation that could not be used (Vorrath 2020a, Tilt Renewables 2021). Another project, the Carwarp solar farm in the northwest of the State, was not even built, presumably due to weak grid and consequent risks to the project viability. The project is still in 'early project' stage in AEMO's generation database but has never proceeded further even after receiving $270k funding from ARENA to investigate possible battery and other options for grid connection (ARENA 2022). The project was subsequently removed from the State Government VRET1 page, and there is no mention of the project anymore or public explanation of its removal in any of the newer policy documents.

Lastly, it has often been pointed out that the institutionalised nature of the fossil fuel sector gives it a 'legacy,' or 'lock-in' (see Unruh 2020) advantage, with the sunk costs of investment in fossil fuel infrastructure together with the presence of machinery which depends on fossil fuels (e.g. Goodman et al. forthcoming). Fossil fuel companies do not want to lose that sunk capital, and will actively campaign to keep it (Goodman et al. forthcoming). In practice, this campaigning takes several more or less subtle forms in Australia. Besides political donations to both sides of

the two-party system, the fossil fuel companies and their business associations have time and resources to put in submissions to any public hearings of any suggested electricity rule changes. As one Federal policymaker describes it:

> *"I think some of the renewable energy companies have less influence than some of the big energy companies. Big energy companies just have more resources, and they pay really smart professional people, so the input that they give is such so much more sophisticated and useful. They understand how everything works, so they are giving really detailed input in development of policy process… someone else can also make a written submission but if all they say is renewables target isn't high enough, we don't like how you are going to lock in the trajectory for 5 years, it's kind of like, we'll take that onboard, but it's just not as sophisticated."*

And later he continues:

> *"And often there will be technical working groups established, on a really specific issue, sometimes everyone who made a submission will be invited but generally it'll be a smaller group where… they'll pick experts on the field, and that's more through informal networks."*

Another subtle way this comes up in the discussions, is in the entrenched cultural assumptions around the normality of fossil fuels, in the form of what is not said. While climate change is mentioned in policy documents, it hardly comes up in the discussions with developers or local community who all might mention climate change, but quickly delved in the concepts of reliability, variability, price and new infrastructure. The wealth and power built around fossil fuel energy is prominent and defended by the state in the Australian context (Marshall 2023), and too vocal criticism against fossil fuels was obviously not something developers or policymakers felt confident to do. Even the attempt to include emissions in any form to general goals of the electricity system has not been possible and hence is not considered in the market rules:

> *"I think the NEO (national energy objectives) should say long-term interest of consumers subject to Australia meeting its international emissions constrains, because that then would mean the objectives to least cost, subject to being able to meet emission reduction targets. And targets over a long timeframe, not just next year or the year after, something that allows people to plan for the grid and for the generation stock that is required to ensure there's no stranded assets. Or not necessarily no stranded assets, to ensure that if people are stupid enough to build to stuff, that's incompatible with that decarbonisation goal, they bear the risk of that."*

Constructing renewable energy auctions – policy creation process in neoliberal context

In the neoliberal context, policymaking needs to cater for the political election cycle goals within the neoliberal market ethos. The state's main goal is to improve how the market works, not to be seen to intervene or disrupt it. The policy creation process itself impacts the result and defines the culture of policy creation. Observing this process in the particular energy policy tool of reverse auctions, step by step, revealed two important insights of the culture of these settings:

1. The problem definition and policy goals were fairly pragmatic instead of very ambitious climate change action, striving towards energy democracy or other drastically mode of governance. The documentation, templates and language used reinforced the model that was familiar for the policymakers, developers and financiers.
2. How evidence is gathered from existing cases limiting the scope to what has already been done instead of imagining what could be done. The power of commercial and legal advice, as well as the large established utilities giving more "sophisticated" feedback also guides the outcome to focus on those aspects. This is discussed in the section "Policy transfer and learning process".

The problem to be addressed was defined in pragmatic ways, instead of the very ambitious climate change action or ideas for energy democracy or other drastically different mode of governance, such as striving to reduce energy usage. One of the policymakers within Victorian government describes the setting up the renewable energy legislated target as:

> *"When you move back to 2016, or 2015, was the election of Andrews government, so Labor gov came into power for the first time I think 6 years, obviously more progressive, more interested in pursuing renewables as not only method for reducing state's emission profile but adding to economic development and new jobs."*
> "[The policy team] *did the analysis about what was sort of achievable and proposed that initially a target, 25 % by 2020 raising to 40% by 2025, so that was the initial target that became legislated through parliamentary process in 2017… We identified that RE development in Aus was slow and by legislating these targets a good opportunity to bring a lot of the investment to Victoria through the targets."*

However, it soon became obvious that with the Federal government's 20 % RET target, the State goals would not be met despite the "*high number of high quality projects we knew were in the pipeline*" as the policy team was part of the Department of Energy, Land, Water and Planning (changed into Dept. of Energy, Environment and Climate Action in 2023). Basically, private capital would not invest with limited revenue since the LGCs (which is a green certificate system under RET mandating retailers to contract 20 % RE) system was going to be full and hence certificate value was going to dramatically drop, in a market with very high price volatility

dominated by large gentailers. After this problem was recognised, the policy team set out to find a mechanism fitting to the current energy market:

> *"We just needed primarily financial mechanism that incentivised developers and also debt and equity markets to support that project"*

This shows that the starting point in achieving the policy goal, in this case the renewable energy target, could be done by incentivising the market to deliver the investment needed, preferably within the current (energy) regulatory system. Private capital-led building was the starting point, and as noted, no other options were discussed in any of the background reports, materials or submission rounds published around the VRET policy. State- led projects are not mentioned by any of the interviewees as an option – even though only a few years after, in 2023, the State Electricity Commission was reignited to build government owned generation whether because of windfall gains of some generators, lack of control or just aiming for another revenue stream. At the time, the policy needed to be cheap and under the market rules, while creating the politically important regional employment story.

> *"A lot of the research showed that auction of some sort, is generally one of the better more efficient and cost-effective ways to bring forward a renewables projects."-Policymaker*

The policy team performed research int different models available around the world for government to support renewable energy development, and an auction as a tool was chosen as 'cost efficient' way to achieve the policy goals. Interestingly, given Australia already had a well-understood green certificate system under the RET, the green certificates did not seem appealing to the policy team. After the general model was chosen, the policy team moved onto more detailed design on implementation details. This also relied on looking into concepts and impacts used in other jurisdictions:

> *"So once we landed on an auction as a framework we… obviously there is a lot of different kinds of auctions, with different market specifications, so we did a lot of analysis there what kind of auction would deliver the outcome, but also in a way that fitted into the Victorian government process."*

As discussed earlier, while the auction itself is an increasingly common model, mainly I would argue because it fits so well to the neoliberal capitalist model of competition providing 'the best outcome for the lowest cost' it can look very different depending on details of the design. The most common method is to only set simple entry parameters to try to ensure completion on the agreed price and have projects give monetary bids with the winners being the cheapest bids. This was noticed by the Victorian policy team, but in their case the main driver of the auction was not

just emissions reduction, but also other objectives such as system security and need to stimulate economic growth:

> *"Often RE auctions happening around the world and basically the only metric bided in was basically capacity in terms of megawatts and price, and we saw that being quite a significant risk, we wanted more information from the developers to ensure that we were getting the best quality projects in terms of their planning permission status, their standing in the community was important, particularly their progress with AEMO, how close they were to achieving a connection agreement, we saw them as being key risks."*

A crucial part of the policy process was the creation of the important policy documents ('artefacts'). These included a Community Engagement Guidelines, eligibility criteria, the contract defining commercial terms and conditions, info and FAQ sheets as well several information sessions. In addition, several documents labelled as 'returnable schedules' were created for the proponents to submit their proposals with all its details in a unanimous form so that each project could be evaluated by the State policy team in the same way. The idea was to both assess the merit and price to determine the best value for the taxpayer money instead of just the cheapest projects:

> *"We performed a number of assessments to value for money. We gave each project, there were five evaluation criteria relating to technical capabilities, financial capabilities, impact on transmission, community engagement process and the economic development… So each project received a score against those criteria and then we developed a formula that factored in price plus their score against the evaluation criteria"*

Besides the scoring system developed to systematically assess each project, the other consideration was the actual commercial term contract that both the winning projects and the State would sign, called the 'Support Agreement'. This document is the legally binding document of terms and conditions set for the 15 years of operation - the CfD itself. The over 100-page document describes how exactly the revenue is secured for the winning projects in different future scenarios – as well as the liabilities the project would need to achieve. For example, the Victorian government contract, as CfD contracts globally tend to, includes 'change of law' provisions: a different government in the future cannot change the contract directly without incurring heavy compensation liabilities nor indirectly, for example by taxation, that impact the revenue. From the State perspective the financial risk relating to contracting renewable energy was drafted at the level that was seen acceptable, and any 'legal departures' proposed by any of the projects willing to be contracted were perceived as highly undesirable.

> *"We published the generic contract that we would be signing in, entering into with the proponent… Also part of that process because we wanted to understand how many legal departures they would be seeking from the standard terms we offered. The projects were*

looking for less departures were more favourable from our perspective, so more departures, more risk."

The detail of the contract and its 'legal departures' was the key focus after the 18 applications were scored (of which 15 were described as eligible by one of the policy team members partaking in evaluation). There were 8 projects shortlisted, of which 6 ended up contracted, which went through a more thorough negotiation process, and were asked to submit "the best and final offer". All returnable schedules, requested attachments (e.g. relating to connection process), corporation documents (relevant policies, financial documents and other proof relating to financial/technical capabilities) and other documents were to be uploaded to the Tenders Victoria website, the existing platform used for all government tenders to private providers.

"The best way to run the auction would be through a request for proposals process so that we ran that through tenders in Victoria website, Nov 2017 posted the request for proposal, which set out a list of around 70 or 80 documents that each developer had to submit for evaluation."

The process was costly, with estimates of how much it cost to put together a bid ranging from half a million to a million dollars. It was also recognised that this was very busy period (3 months over 2017/2018 Christmas period) for the proponents who decided to invest in putting together a bid. This in practice meant that even if there would not have been a minimum 10 MW limit to participate, any small projects or community or volunteer led projects would have struggled to participate. The language of 'returnable schedules', 'legal departures' and 'liabilities' fits better to the corporate world than to public discussion on energy futures: the process was clearly catered to the intended audience: utility-scale developers and their financiers.

The search for revenue certainty and price discovery

The privatisation of the energy system and very volatile spot market pricing has led to an unregulated contracting market outside the spot prices, which are supposed to provide a price signal for investors. To combat this inherent risk of spot market-based energy system, a large portion, if not most, of generation and consumption is nowadays under some kind of contract in NEM. A hedging contract is usually between two entities, a generator of electricity and a seller or user of electricity. Two typical types of hedging contracts in Australia are a swap contract or a cap contract. It is also common to have several types of contracts all done in a different time to further limit the exposure to the market price variations. A policy maker describes the logic:

"At the moment most retailers use a combination of swap contracts which would be like coal fired power stations so that's kind of like contracts for difference it's just like we agree

no matter what the price is, we'll just swap money so we end up in a 90 dollars/MWh and then there are cap contracts that kicks in when price goes over e.g. 300 dollars per MWh, and it caps your exposure."

The NEM price signal has been designed as very volatile to have a sensitive feedback mechanism to incentive more generation. Moreover, the underlying assumption in the NEM (and many other markets) is that while spot prices are price-based, not cost-based since no one has visibility on generator cost structure after generation privatisation, the market forces are supposed to drive down the costs and therefore bids in the system (Mcardle 2018). This is obviously not the case, and especially bigger generators have the power to drive the price up if they believe they will get dispatched regardless of the high price. Similarly, older government contracts with revenue certainty even in negative pricing events, tend to bid the lowest possible price to be dispatched in every case (as they get paid by MWh exported to the grid):

"*In general, the way AEMO dispatches is just in order of cheapest first, so that's why particularly those old legacy wind farm contracts, where they get paid anyway, they just always bid -1000 so they are the cheapest so they get dispatched first. But that's why the possible floor price at 0 is really good because then it potentially offers some incentives to not to always bid at -1000. Because if half or over half the market are all bidding -1000 that kind of destroys the whole signal of the spot price, if it's just always minus a 1000."*

In practice, most market participants just avoid the spot market by entering into different contracts. As one of the policymakers puts it:

"You got your electricity generators and electricity retailers, and there's the spot price that varies a lot, both of them generally enter into hedge contracts to manage that price, because we are talking about 14500 to – 1000, that's very risky for them, so they enter into these hedge contracts, PPA or Cfd is a type of hedge contract."

The contract market in NEM is mainly outside any regulation and prices are not public. The government contracts, like the Victorian government CfD, are somewhere in between. The CfD works like a swap contract except the State is not actually consuming the power themselves. Rather, the CfD is a financial contract with a maximum 15-year total liability cap, but otherwise the generator gets an agreed price for every unit of energy produced for the grid over 15 years, providing a very good 'derisking' tool for the investors (see Bryant & Webber 2024). Until recently, the State has been reluctant to invest themselves into new generation. Hence a contracting structure is seen as the most preferable option, where the State does not invest themselves or really even decide where new generation is best placed – this is left for the market to decide. It was generally agreed that "government offtake" is very important, since the role for state action was

seen increasingly oriented towards leveraging and derisking climate investment (see Bryant & Webber 2024, p. 21)

Auctions are generally believed to lead to lowest possible support level for the state and efficient 'price discovery' (IRENA 2017, Buckman et al. 2019), when the state does not want to design, plan and build its own generation. For the ACT auction, which was the first one in Australia and very influential to the Victorian design, Heuris Partners (2010), which is a consultancy providing advice to the government around auctions, offered initial advice. Their report states that the goal of the ACT Government for the first Feed-in-Tariff solar auction should be to pay the lowest price, subject to matters such as technical capacity to deliver the renewable energy generation capacity on agreed time (p. 47). In order to achieve this, the report introduces several ways how a state government could maximise the number of capable bidders participating in an auction, such as stable and transparent rules to decrease risk calculated in the bids (p. 48). By the time the VRET1 auction started, the role of the auction as an efficient 'price discovery' mechanism was well internalised and all policymakers referred it as getting the best possible price available by ensuring the rules of the auction foster as much competition as possible. While prices were not published, the policymakers, developers and renewable energy advocacy groups seemed to think the price discovery had been successful with lot of competition "*on a level field*" and produced "*good value for the taxpayer*".

4. Policy transfer and learning process

Reverse auctions adopted from other contexts are increasingly common internationally, and it seems that the more repetition they gain, the more prevalent the model is becoming (see Carroll 2007). In Australia during this research project, the jurisdictions which had held reverse auctions increased from ACT and Victoria to include also Queensland and New South Wales. The State of Victoria is also implementing its second round of auctions, VRET2, and has signalled that the yet to be established offshore wind power will have a separate auction round (Vorrath 2024).

The first reverse auctions in Australia were held by the Australian Capital Territory (ACT), which had five auction rounds between 2012–2016 as an integral part of its 100 % renewable by 2020 target "*with significant local benefits*" (Buckman et al. 2019). The auctions were realised by contract-for-difference FiT payment model, which transfers one of the key financial risks, spot price risk, to the ACT government, giving the project long-term revenue certainty. In the last three rounds of the reverse auctions, other criteria besides the price, like local community engagement and the quality of local investment commitments for ACT, were added (Buckman et al. 2019). None of the successful projects besides the smaller solar farms in the first two auctions were local (two wind farms in Victoria, three in South Australia and two in NSW), and the economic benefits referred to in the article, such as companies establishing their regional headquarters in the ACT, a

new renewable energy trades training centre, establishment of a micro-grid at a local university or a local hydrogen production research facility, were located to the ACT instead of to the local economies of the project sites (see Buckman et al. 2019). Many of the 'local' benefits of an ACT auction were therefore local for the organiser of the auction, and the payer, instead being local to the areas and economies of the actual installations, which could obviously cause antipathy in the places of installation. To address this potential risk, the scheme also had an emphasis on local (meaning local to the installation site) engagement and benefit sharing of community funds. One project even offered rare in Australia co-investment both for the area of the installation and ACT residents (Saphire Wind Farm 2019)

In electricity space, policy transfer and researching perceived peers as evidence for models to introduce has been very common for several decades. As early as 1991, Industry Commission refers to more "market orientated" (Industry Commission 1991, p.110 – 111) designs of UK, New Zealand and parts of Europe and US as recommended characteristics to introduce in Australian regulations (such as 'open access' regime). The report also uses evidence of these countries to justify privatisation of the assets because of the 'inefficiency' of Australian state-run utilities by using ratio of customers to employees (NZ and UK had higher cost of electricity but more customers per employee). The power of this report and evidence is evident since both models were adopted to Australia a few years after.

Inter-jurisdictional policy transfer of neoliberal policy prototypes circulated and repeated via networks of knowledge sharing across places, territories and scales is typical for neoliberalism (Brenner et al. 2010, p. 335, see also Carroll 2007). The Victorian renewable energy target is no exception to this: The first task of the policy team was to gather evidence inter-state and internationally of options to support large-scale renewable energy building in a fairly tight timeframe (i.e. in one state election cycle). As one of the interviewees describes the process of using perceived peer experience, both from ACT auction and internationally:

> *"At the time we performed kind of a global scan what kind of initiatives are used around the world to bring forward renewables projects and deemed that, …auction of some sort, is generally one of the better more efficient and cost-effective ways to bring forward a renewables projects."*

The reverse auction design was hugely impacted by the ACT auctions had at that point had several rounds and iterations of the policy. The policymakers reported direct conversations and hiring some of the same experts. Some parts of the auction design were directly mirrored from the ACT auctions, such as the inclusion of "*peripherical benefits*"[8] other than price criteria (economic

[8] A word used by one of the policymakers to describe that other than price benefits were pursued and achieved. The choice of words makes it rather obvious that the main consideration was the cost for the state and possible benefit to consumer by increased generation in the spot price market. The goal was officially described as 'best value for money; considering the costs and promises of local benefits and job creation, instead of cheapest bid.

development content, community benefit sharing). Some of the ACT auction features were tweaked based on 'lessons learned' experiences shared by ACT policymakers. One of these was negative price protection which ACT didn't include in their auction. An ACT policymaker describes the problem they are facing which was also discussed with the Victorian policy team:

> *"One key learning ACT would take into future auctions that… It is a difficult one actually, it is something we would consider in future auctions rather than necessarily actioned, but you are obviously better off. Instead of having a CfD that here we are paying the difference between energy price and 80 dollars, or whatever, but say, if the spot price is negative, we will pay you 80 dollars to shut off, instead of paying you a difference of -1000 and 80."*

One of the key 'lessons learned' from ACT auction was implementing a better protection to negative pricing. ACT payment scheme does not consider the negative time periods, but the generators are paid to generate no matter the spot price. In the VRET1, the state did not want to allow the compensation of the strike-price agreed in the auction and negative price events to the generators – or in other words did not want the negative pricing risk for the state. For context, the intensity and occurrence of negative pricing is steadily growing in a volatile rooftop solar penetrated market such as Australia (e.g. Brook 2024). As one policymaker, who had worked with the ACT auctions, and then hired to Victoria to help with their auction design explains the connection:

> *"…How does this* [the ACT auction] *work, so she* [Lily D'Ambrosio] *was clearly interested in doing this quite some time. When the Labor won the government they didn't have that explicit platform to run a reverse auction but Lily became the minister and she spent the next two years basically championing a reverse auction program and it was basically exactly the same, mostly exactly the same objectives than the ACT, which was incentivises the shift to clean energy generation, address the climate, ghg challenge and drive broader economic development outcomes in communities, so essentially the same… priorities."*

When auction as a model was chosen, expert and consultancy advice was used to draft the policy, especially influential was the economic modelling produced by international management consultant (see Carroll 2007) called Ernst & Young. They were engaged by the Department of Environment, Land, Water and Planning "*to provide advice and modelling assistance to inform implementation of Victoria's Renewable Energy Target scheme"* (Ernst & Young 2017, p. 2). The report mentions a series of auctions was directed by the Department as a starting point, and recommends a series of design details based on impact modelling to the cost of the scheme and consumer bills.

The most influential groups seemed to be large advocacy groups and big utilities. The auction design included four workshops and request for submissions. There were calls for attention to small-scale, community and distributed projects to be better accommodated in the design by for example including a specific tranche for community energy of the total auction (see Embark and Lane 2016), but the auction still favoured only the large corporate projects. For example, in Environment Victoria's statement is a mention of community energy, whether there could be a "scope for community scale projects to access this scheme" by "carving out a small percentage for community power projects that are below that currently proposed minimum size for projects", so that Victoria's energy future would "not come exclusively from large-scale development" (Aberle 2016, p. 304). Similarly, a not-for-profit organisation called Embark, proposed a small tranche of the auction awards to be dedicated to small (less than 30 MW) community energy projects. In the final consulting report published by (DELWP 2016, p. 12) it is just stated that smaller than the minimum generation capacity or 'behind the meter' projects "will be provided through other avenues such as New Energy Jobs Fund". As one of the federal policymakers described the various public hearings and submission rounds:

> "*Anyone can put in a submission. They all get read, they all get summarised and get taken on board, but the reason I say that I think some of the renewable energy companies have less influence than some of the big energy companies is, big energy companies just have more resources and they pay really smart professional people. So the input that they give is such so much more sophisticated and useful, and they understand how everything works, so they are giving really detailed input in development of policy process."*

The request for submissions public hearing documentation makes it obvious that at that stage, the model of utility-scale private investment to meet the state renewable energy targets had already been decided. The questions the state sought feedback to related to cost of capital, design of revenue certainty and risk allocation. These are the kinds of design elements, the global agencies also focus on when giving advice on reverse auction design to policymakers (see e.g. IRENA 2016).

Opposition networks

Especially trust, health concerns (often noise related), birds and farm animal topics intertwine with each other and with the anti-renewables websites and social media. Some of these websites, such as "Stop These Things" have no contact name or details. The content especially on this website and many of the local specific project dedicated opposition social media groups share clearly, though not necessarily intentionally, fossil fuel funded or interest (dis)information. I followed several of these groups between 2018 and 2023, and while Facebook algorithms undoubtedly impacted what I saw, the content was a mixture of local news of projects and international 'horror stories' of turbines burning, wildlife suffering and used equipment being buried in a landfill.

The same stories, experiences and sources are linked into local groups without any oversight of which ones are true or evidence-based information. The experiences read from these online groups hold narrative power in the local opposition groups. The stories with most lure were often from perceived peers, such as in the policy transfer space, and extreme or sensationalist:

> *"In Gippsland and Tura, when the wind farms got built there, the dairy farmers suffered a 30 % still born in their calves and milk production losses and things like that, and the company said no, nothing to do with us, nothing to do with us. I rang one of the farms and had a long talk to him and he replaced his poor performing herd with salten and bought new ones and the same thing, he slowly has been replacing them until he's not getting that milk production loss, because animals are worried about the noise too"*

> *"Nothing to do with us, but there was one town in America at a ridge, above the town, the turbines fully down the ridge and half of the women in the town aborted, and that hit the press for about 30 seconds, and all of sudden you can't even find a trace of that and everyone was paid and everyone was moved, nothing was said about it again."*

Neither of these stories have any other academic or news mentions besides websites such as Stop These Things and links in Facebook or other social media. Yet, they were told to me in a group setting, seemingly as truths for the people telling them (see Askland et al. 2016). The information produced in the corporate elite transnational knowledge networks for policymakers was very far removed from the information produced by a mixture of anti-renewables fossil fuel interest groups, national politics, and their allies on the ground.

5. Impacts: local community concerns and (lack of) transparency

In this chapter I discuss some of the on the ground impacts of the VRET1 reverse auction policy using social acceptance literature, Polanyian and the utility-scale model legitimacy concepts introduced in Chapter 3. The local responses for a specific project ranged from not being able to name one good example about the project or the company to feeling that the project was important part of climate action and had been planned fairly (see also Smith and Howe 2015). Just the fact that a project had been selected to the reverse auction scheme did not lead conflict-free situation. Project development is quite lengthy process, especially in wind power, and all the companies or their predecessors had been around in the area better part of 10 years already. On the surface level, the issues raised were largely recognisable in social acceptability literature: place attachment, trust, distributional and procedural justice issues, health concerns of themselves, their families and their communities and worries about wildlife and biosecurity. Extending the frame beyond the locality to wider policy arrangements and assumptions, such as privatisation and marketisation, also tells

a story here. As mentioned earlier, there is rarely a connection made between how national or regional policies are perceived, such as feed-in tariffs, carbon schemes or power purchasing policies, when the acceptability or legitimacy questions of renewable energy are debated on a local level.

At the time of this study, from 2018 to 2023, especially the two winning wind farms near a small rural town called Mortlake were controversial in the community. These two are not the only ones proposed in the area. Salt Creek and McArthur wind farms were already built, and several others proposed in the area. This is mainly due to the strong grid connecting Melbourne and a smelter in Portland, west of the State. The third windfarm, Berrybank, connects to the same line but is a bit further of towns, on a cropping and cattle field crossed by regional roads. The solar farms were seen as much more benign developments, and while there was not unanimous support, there were no evidence of the same kind of division within the community, strong local opposition and consistent legitimacy battle than near Mortlake. Importantly, the time of the longer, several week field trips, North and Northwest of Victoria was suffering from one of the driest and hottest draughts in the recorded history, which impacted the views of land use. As one resident near a solar farm described the perceived additionality of the solar farm proposal instead of replacing some other form of land use:

> *"It's pretty much dry land farming. It's a massive amount of land they'll be taking to use it, but again… it's not massively productive land at the moment. Farm paddocks that are bare and not green productive, so this is a different way of being productive. I haven't heard anyone complain about it. It will provide a small regular maintenance crew to do some work, so that's good, would be good if it would be a large maintenance crew, but any employment is welcome in the community."*

Whether seen as benign or a threat, the new forms of energy infrastructure necessary for the energy transition based on corporate-owned utility-scale renewable energy are disproportionately impacting rural areas (McCarthy 2015). For the reverse auction policy as well, all the projects winning the government contract are located in agricultural areas, near small rural towns. These sites of primitive accumulation are often contested as people push back against the commodification of their local ecology (McCarthy 2015). Many of the following examples and quotes are from Mortlake area, which had the most prominent evidence of Polanyi's 'double movement'. The dynamic of energy consumption hubs harvesting from dispersed local areas, while profit is collected by a large corporation, was evident amongst the opposers, who resist the often cumulative impacts to their local environment and power imbalance under the corporate renewable energy model, which aims to (re-)industrialise their area "*for Melbourne latte-sippers*":

> *"Just get the feeling that we're being bulldozed, we're being bulldozed by companies that just got lots of power, lots of contacts and lots of money, and they just do what they wanna do, so they just barge on and create heavy.. in our landscape."*

Developers described Moyne Shire as a special case as well due to the density of the development (see also picture 9 on page 145):

> *"Moyne Shire, it's had quite a lot of wind farm development in that area, so I think it's still quite unique compared to some of the other areas in terms of community, and that conspiracy and the drama behind it."*

The reoccurring land use conflicts during previous waves of commodification fronts have resulted in environmental and planning legislation and regulation framework, which the large-scale renewable energy developments follow. The specific policies and forms in place to protect ecology and people (see Polanyi, Chester & Paton 2012) is intended to protect the legitimacy of the state and the process or (re-)commodifying land for renewables, but for the opposing residents that is not either seen strong or reliable enough:

> *"Even if they have a permit, they don't obey by the conditions, and no one forces them to."*

The residents, who think that wind power around Mortlake is something to support, describe the opposition being due to "*hysterical and thoughtless anti-wind farm agitation in the community*" by a loud minority. Some of the issues gather understanding from the pro-renewables residents, such as worries about lack of financial guarantees for decommissioning, the installation of Salt Creek wind farm powerline without consultation and visual amenity of multiple projects in the same area.

> *"I suppose 10, 12, so small, but people who are in it tend to be… not sure if you would say influential but tend to be people that other people listen to. MCDC* [Mortlake area community association] *is a go between the community and the council. There was a move by a couple of members that MCDC should address the wind farm commissioner because there's been a lot of discussion and in particular… and I'm very biased that I can consider that there's been quite a bit of quite hysterical anti wind farm and really thoughtless anti wind farm agitation in the community."*

The "social gap" in the State of Victoria

Australians in general are supportive of renewable energy and energy transition. In a recent survey by CSIRO (2023), more than 80 % replied at least tolerating living near renewable energy infrastructure and supporting moderate speed energy transition – as long as it does not cause blackouts or paying more for electricity. Not surprisingly, rural residents had more negative attitudes living near large-scale renewable energy infrastructure solar farms being viewed more

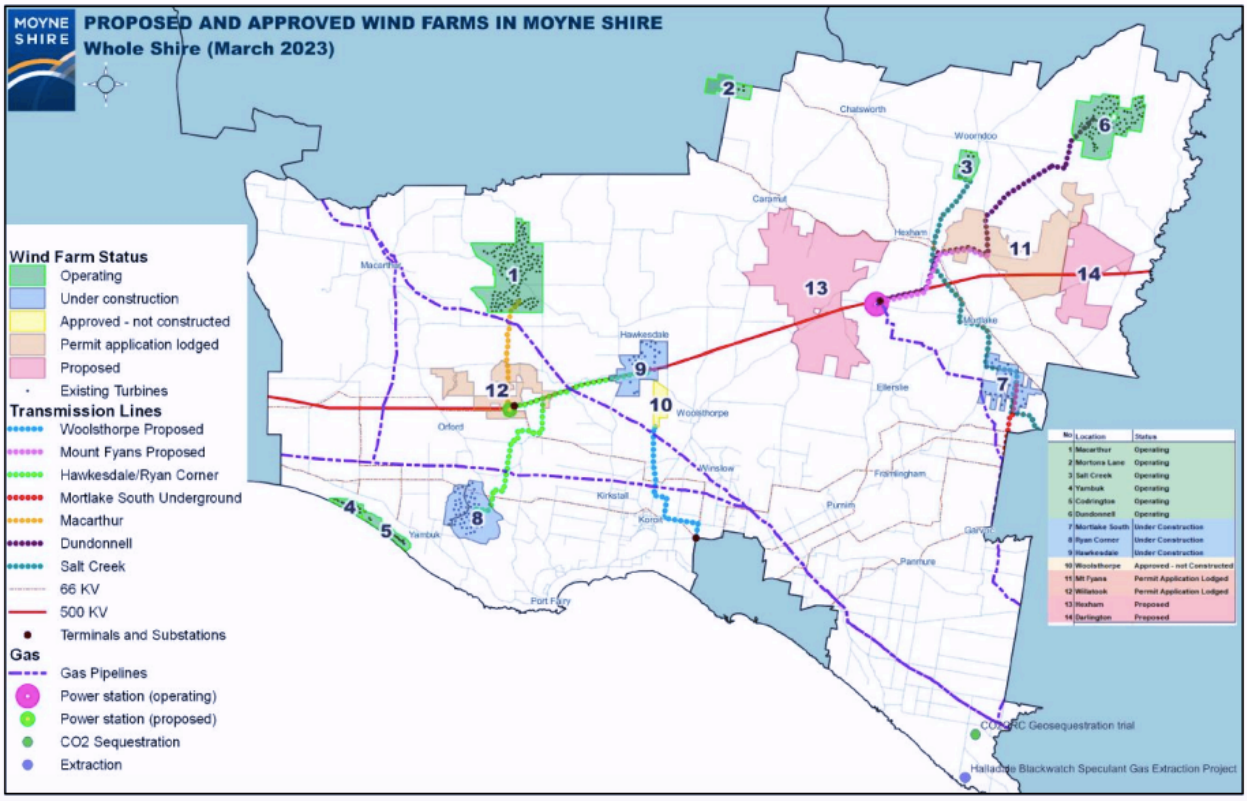
positively than new onshore wind farms, offshore wind farms or transmission lines (CSIRO 2023). As discussed in the theory chapter, this general positive attitude does not indicate what the local responses to a specific proposal might be (Bell et al. 2005). I observed responses ranging from fierce opposition to mild interest in the topic and to embracing support – all within the same project. For example, Mortlake South wind farm, developed by Acciona, a resident described them as engaging well, even amongst the fierce opposition phase, when Salt Creek power line had just been built as a "*surprise to the community*" (at that time smaller overhead lines did not require community consultation, which was later changed due to the uproar around Mortlake) and several projects were in different phases of development:

> *"Acciona, like I said, has been very good, in that they have engaged with the community, and I think that took a lot of the heat…"*

Group of opponents on the other hand could not think a single positive thing to say about Acciona (or any other renewable energy project) besides grudgingly mentioning that at least Acciona had changed their overhead line into an underground cable:

> *"Resident A: "they bowed to public pressure, and they are the only company that I know that have put their powerline underground. Which is great step forward, when you look at all the bloody power lines coming down the road in here..*
> *Resident B: That was because of community outcry, they weren't willing to do it."*

Another resident continues to explain that Acciona was "*shamed into it*", because the previous powerline built into the area caused "*such a stir amongst the community*", and people thought it was the Mortlake South wind power line. In fact, it was the Salt Creek wind farm powerline, which was developed by another company, but that did not change the fact that any further proposals to put in powerlines as close to the town, were fiercely opposed. A map of wind farm proposals and powerlines (Picture 9) highlights the density of the development around the favourable grid infrastructure, and it is not hard to see why so many people I talked to expressed concerns of being surrounded by wind turbines.



Picture 9. A map of wind farm proposals in Moyne shire. Mortlake is between Dundonnell (6), Salt creek (3), Mortlake South (7), Mt Fyans (11), Hexham (13) and Darlington (14) wind farms. Map by Moyne Shire (Planning Panels Victoria 2023, p. 99)

Even though part of the community fiercely opposed the wind industry development, almost no one was willing to declare being anti-renewable energy. When I asked about tendering renewables as a concept in general, the common response was that the projects were in the wrong place and should be "somewhere else".

> *"If you'd travel just 20 k on the road, there's hardly any homes towards Lake Bolac after Dundonnell the wind farm, there's hardly anyone there, put them out there." -Resident*

This being said, I spoke to opponents who would immediately after saying they are not anti-renewables, spend then the next while talking about they don't work, how solar or wind farms cause more emissions than they help to avoid in their lifecycle, are a waste of money, how other countries or how little renewable energy production covers of total energy consumption after all the money spent:

> *"Resident 1: You look at the government, they say they are going to be whatever precent renewable by whatever time, the amount of money that they have spent on renewable energy, and they are only like 2 % of the generation capacity, and worldwide it's only 2 or 3 precent, and our emissions keep rising*

Resident 2: Germany's been a failure
Resident 3: They are shutting them overseas, but Australia is slower in the uptake because we are getting them
Resident 1: 6000 turbines turned off in the US at the moment. 6000. There's more than that turned off in China, there's Chinese wind farms that are claiming renewable energy credits around the world, they are not even connected to the grid
Resident 2: And not even 30 % of capacity"

Only one of this group went on to represent clearly climate denialist views such as climate changing over times and carbon dioxide being higher during last ice age. Though in a group setting, the other members promptly noted they may not agree with this:

"Resident 2: I reckon there's a lot of scientists say that we are impacting…
Resident 3: Absolutely
Resident 2: the human impact is impacting the climate change so I think it's here"

Most of the technology related anti-renewables claims repeated to me can be found in webpages or social media dedicated to opposing especially wind power. Interestingly, declaring anti renewable energy stance is either not seen acceptable even amongst the opposition or the community members I talked to do not perceive themselves as anti-renewables. The opposition especially around Mortlake was organised and re-occurring for each new proposal. The conflicts revolved around land use, council integrity and procedural justice (e.g. operation monitoring reports and their publicity, state permitting process, council stand on permitting issues) and benefit sharing (e.g. a proposal from a national advocacy organisation to combine several benefit sharing funds to a larger pool to fund a larger initiative was initially labelled as 'stealing from Mortlake'). In other words, a variety of issues relating to the 'social gap' of (conditionally) not opposing renewable energy but opposing projects (Bell et al. 2005, Bell et al. 2013, Devine-Wright et al. 2017) were visible in Mortlake.

I found support for each of the common social acceptability literature explanations and theories in the conflicts I observed around the VRET1 projects, which are described shortly below. The fact that there was evidence of place attachment, procedural justice, benefit sharing and trust issues, especially around wind power local opposition, leads me to think that the local responses can also be viewed by the lens of the corporate model supported by state which introduces large installations, in a largely top-down model. At the end of this chapter, I discuss how I see these issues of place attachment, procedural and distributional justice, trust and emotions, all stemming from the same legitimacy questions: who is it for and how is it done, are equally important than what has been proposed:

"It's just seems that we're creating or trying to create, or government is pushing on this

Shire to create a lot of energy, or potential energy, for elsewhere. Just one wind farm that could potentially could power 550 000 houses in Melbourne. Well, we got wind farm after wind farm." -Resident

The concentration of utility-scale installations is causing frustration and many questioned the number of proposals. There is no specific guidelines of how much development can be proposed in an area, as there has not been for other industries under the capitalist and developmentalist state model. The concentration is, in fact, well-documented and common in previous commodification fronts (see e.g. Moore 2000, p. 412, 2010a, p. 34). Moore (2000, 2010a) theorises that the uneven expansions of a specific commodity production of the "*capitalist system is possible so long as there remains uncommodified land"*, and to a lesser extent, labour, *"beyond the frontier*" (2010a, p. 34). Furthermore, capitalist corporations entering into new frontiers have amplified possibilities for accumulation since the area would have had minimal previous commodification – but over time the socio-ecological conditions to expand stagnate (Moore 2010b, Campling 2012). The 'free gifts' of wind and solar are not likely to exhaust as so many previous commodities, but the Polanyian concept of 'double movement' explains the opposed further concentration better: the expansion to more land (which is a fictious commodity and exhaustible) and landscape is evoking a 'push back' in the community wanting to protect their local ecology. In the case of solar farms, the VRET1 projects were mainly seen benign at the time (note that the interviews were mainly done in the time of a long draught and the extra income was welcomed to the dry paddocks), but as more solar farms are proposed in Victoria, concerns about solar farms replacing 'prime agricultural land'[9] have started to arise (see e.g. Jones 2024).

Place attachment: Visual impacts, the future generations and better tomorrow

Place attachments, or "place-protectors" (Bell et al. 2013), is used as one explanatory factor especially for wind power opposition. The perceived visual aspects, such as a place's scenic beauty and environmental features, and the meanings assigned to them, is essential when talking about place attachment. (Devine-Wright and Howes, 2010) found links between strong place attachment, feelings of anger and threat and seeing a planned wind farm as "an eyesore" and "industrialising the area". It has also been noted that "*it is not the landscape type that arouses the emotion but rather the way a person interprets a landscape with wind turbines*" (Janhunen 2018, p. 59). People opposing would use terms such as "industrialising our landscape", "eyesore" or "ugly". The supporters understood the change or loss of 'visual amenity' better than some of the other concerns: "*people are concerned that it's turning from agrarian community into industrial*

[9] 'Prime agricultural land' often avoids definition but is repeated in media and discussions. DELWP (2022) has guidelines for solar farm planning, which talks about strategically important productive land. The guidelines say that agricultural land may be considered to be high value due to "*high-quality soils, good rainfall, access to water, resilience to climate change, infrastructure investment and integration with industry*" (p. 15). Some of these are relatively easy to define, such as previous irrigation investment, but what is 'high-quality' soil or 'good' rainfall is left for the proponent – and public – to assess.

community". Some talked about the future of towns, whether it was in a positive light such as the rental income helping to drought-proof farms for farmers to stay on the land, and sometimes seen as money used for escaping to the coast or bigger city and hence the community losing a family. One farmer saw her fight against the wind farms surrounding her property as fight for the future generations:

> "*I've got 3 children who've got to fight over 1200 acres as… so it's taking away our kids future, so that's why I'm really strongly fighting because these are our future generation farmers*"

Instead of focusing on changing the landscape or visual impacts per say, and whether that is more common with neighbours or holiday houses (see e.g. Janhunen 2018), the context of imagined futures is a deeper concern. It is shown in previous research that for example in tourist industry it is common to see wind farm proposals negatively, because it is assumed that tourists are drawn to 'natural' environments, and wind turbines would disrupt that (e.g. Rudolph 2014). While there is little evidence of that happening, it nevertheless highlights the importance of 'place protection' in a sense that the opposition is seen to serve a greater good than a personal benefit or disadvantage (Bell et al. 2013). The worry for the future of rural communities is palpable here. The differing views of what is good for the community can also divide the community. Especially near Mortlake both supporters and opposers reported, and mourned, the loss of cohesion in the community, talked about having to set rules that no wind farm topics are discussed at place of their work and loss of friends because of differing opinions. One resident describes the situation:

> *"I found a big problem I see with these wind farms coming up is the community divide, I found Mortlake used to be really tight knit community, and unfortunately it's really dividing the community, which is really sad."*

Some of the supporters felt that they could not freely express their opinion because of the fierce opposition. This was also experienced by some of the developers who came across with people portraying different views in public and in private:

> *"We had an example of that when we were doing the neighbouring agreements in Moyne. We'd just finalised the neighbouring agreement with a neighbour, and a couple of days later we saw them at a townhall meeting photographed and advocating how bad these turbines are gonna be, and how terrible our company is and how we've never dealt with them before and they've never heard from us. I called the next day because we had a really good relationship, I thought, and she goes I'm so sorry, I had to, if the community knew if I signed an agreement with you… She said I was pushed into a corner. That was her reasoning, she was so scared what the community would think, that she tried to make it quite public about that she was anti."*

The rural areas where companies approach landholders for renewable energy hosting are mostly medium to large agricultural properties, are often economically disadvantaged, have poorer services and higher median age and lower weekly income and education levels[10]. Private landholdings fit the best to corporate private agreement model, but leave most of the development, design and income outside the community domain, and it is hence difficult to see for the community members how these large developments contribute to the community's better future. If indeed the only visible attribute of the utility-scale and corporate-owned wind or solar farm is the installation itself in the beloved familiar landscape, it is not hard to understand why residents oppose the change. To combat this inherent feature of capital accumulation and profit maximisation model the policy team in the State Government of Victoria added community consultation and benefit sharing into the assessment criteria.

Procedural justice & fairness: Rural-urban divide and rural phycology

It is widely understood that procedural aspects play a role in in determining public responses, including which of these public concerns are sufficient to trigger objections (Devine-Wright, 2011, p. 91). Emphasis on *procedural justice* or *fairness* has often been stresses as a plausible explanation for public responses and high level of public participation is seen as one of the key factors in gaining support for a project (e.g. Wolsink 2007, Coleby et al. 2009, Gross 2007). The common complain quoted to me were feeling that the company had already made the important decisions before announcing the project, the state process was difficult to meaningfully participate, and any complaints were brushed to the side. One of the residents describes the felt unfairness of not being included:

> *"One of the ringleaders of that anti Mt Fyans is a neighbour whose short answer is, I've seen the proposals, my land ends here, they never knocked on my door, they never rang me up."*

Many of the rural residents I talked with feared metropolitan 'outsider' decision-makers did not understand the rural context enough to make decisions on the rural areas' behalf and did not care enough about rural towns to consider their benefits. For example, residents in Mortlake would use phrases such as "*State government don't live here*" and "*they don't care*" when we talked about the wind farm approvals. One resident described the planning regime that "[rural wind farms] *win a lot of votes in a city of Melbourne but they really don't care about the people here*" and another

[10] For example, in 2021 cencus (ABS 2021), Mortlake had median age of 49 (38 average in Victoria), $984 household weekly income (vs. $1,759 in Victoria) and 11.8 % tertiary education rate (vs 24.5 % in Victoria). The other areas of VRET1 projects have similar socio-economic disadvantage issues.

declared that "*it's not achieving anything, but they're prepared to put the people's lives and everything else at risk to please a handful of latte sippers in Melbourne*".

Sherval et al. (2018, p.101) note that current legislation is "seemingly ineffectual" and "does not appropriately cover what rural towns need". Similarly, Askland et al. (2016, p.8) point out that many policies adopted in metropolitan areas can have severe consequences for rural towns without sufficient testing or consultation. For in Australia, with the distances involved, and the sharp income and status inequalities, small rural towns are out of sight, out of mind, from metropolitan policy development, leaving them to fend for themselves (e.g. Goodman et al. 2020). The mistrust and experienced neglect of the metropolitan decision-makers were fairly common in all of the rural areas I spent time.

The cynicism towards the capacity and willingness of city-based politicians to represent rural areas' needs (see Goodman et al. 2020) was as apparent in rural Victoria. Considering this sense of resignation among some, another commonality between residents became clear. Regardless of the interviewee's level of support for renewables, all participants expressed an anxiety about rural communities bearing the brunt of the decisions on energy policy and land use made by metropolitan decision makers (see also Goodman et al. 2020). One resident in Mortlake described the feeling of having state government not understanding that rural areas have own ambitions and needs:

> *"In the end we are more than powering our part of our world, so you can't just be selfish and say we are only going to power 550 homes, because there are only 550 about living here….but a bit of a buffer in there, so you got room to grow, people can still move to the area, you still got power for them, we shouldn't have to worry about powering rest of the country*."

Especially in Victoria I was interested of the different views of who should have the final say in granting permits. Some of the opponents of the wind farm developments, besides having a deep mistrust of metropolitan decision-makers and a desire to exercise self-determination in deciding which (energy) futures to pursue (see Goodman et al. 2020), also mistrusted the council. "*Councils are crooked too*" materialised the disappointment of opponents who felt unheard. The community, or a popular vote, was offered as an alternative with more openness of benefits and harms displayed before the decision. Though, as both opposers and supporters believed to be the majority and advocating for what is best for the community, it seems unlikely that a direct vote would solve the legitimacy issues.

Wind farms have been long under state authority to decide under the planning and environmental legislation in the State of Victoria. The solar farms were mainly decided by councils until 2019. Earlier the Minister for Planning had the power to intervene in, or "call in" permit applications,

but council was responsible for issuing the planning permits in general. But, when the solar farm applications in Victoria started to increase around 2016, the local councils reported *"a lack of consistency in decision making across the state and difficulties in dealing with solar farm applications"* (Lee et al. 2018). Consequently, in September 2019 Minister for Planning became the permit authority for all energy installations over 1 MW. One of the policymakers describes this changing of authority as "streamlining the process" because:

> *"Most councils don't have knowledge or the capacity to do anything to do with solar farms, they don't have capacity to manage wind farms on their land… Some did it well, because they had the extra capacity, they put on extra staff or they had that skill or that knowledge already in there. Gannawarra for example has been very good at that, others no idea."*

As the policymaker mentions here, especially Gannawarra, which had taken a very proactive stance towards encouraging solar farm development in the council area by mapping out suitable areas and approaching residents of interest in hosting solar farms in their properties, was not particularly supportive of the decision-making power being taken away from the local government. The council still gets to put in a submission to the state planning permit process, as with wind farms, but the local councils were seen too inadequately resourced and inconsistent in their approvals and conditions to support utility-scale solar in Victoria. The experience was that many approvals and refusals went to VCAT (Victorian Civil and Administrative Tribunal), either via appeals from the proponents (in case of refusal), neighbours or other community members, where the decisions often changed (e.g. Beaufoy 2019). Taking the decision-making power did not stop projects ending in VCAT, rather about 20 % of all renewable energy planning applications end up in VCAT (Victoria State Government 2024). This caused years delays for projects which was eventually seen as a problem by the state. In 2024, Premier Allan announced that renewable energy projects would be eligible for Development Facilitation Program (DFP), which removes the right to appeal to VCAT. The justification used was that objections still have a place in the approvals process, but the removal of appeal right stops the same matters being processed again costing time and slowing down investment to state and creation of" new jobs" and "cheaper energy" (Victoria State Government 2024).

While now even harder, in general it is extremely difficult for small groups of people to challenge the state permit or large corporate entities in large-scale energy projects. One of the opposers had an on-going court case over brolga (which is a bird species) protection, and he also had a 'go fund me' page to cover some of the legal expenses, since it was not his first court case. The opposers describe the consuming time and financial investment as:

> *"Resident 1: We shouldn't be having to do this.*

Resident 2: No, that's right. We should have departments and authorities that are supposed to do this kind of stuff, but they don't. It's up individual people to make a stand. Most people give up."

Unlike granting permits, the administering and monitoring of permits is on the responsibility of the council whose area the wind or solar farm is located in the State of Victoria. This has caused lot of grief for small rural councils, who do not have specialist employees for solar of wind farm monitoring:

Policymaker: "As soon as it [granting the permit] *happens and it gets signed off back to council. And all the wind noise complaints go to council, they don't have capacity or the people, the time, the effort, the money to do what is required, often monitoring that is now put on to them"*

In conclusion, from renewable energy company perspective, the model of prioritising firstly land lease agreements ('securing the site') and determining feasibility of the area (adequate sun or wind resource, grid access, state permitting likelihood) before reaching out to the wider community makes sense. The logic of finding out first whether there is a technically feasibly project and having something concrete to present (technical feasibility and exclusive access to land), before using resources for community engagement, is deeply seated. Often the bulk of engagement is done within the state permit process (Howard 2015), even if early engagement is widely accepted as the best practice (e.g. Lane & Hicks 2019, Gross 2007, Aitken 2010). While securing the early markers for feasibility is logical for the developer before engaging the wider community under the utility-scale large corporation model (companies usually several projects under development at any given time in different states, and often different nations), from a local resident perspective, it inevitably means that basic parameters of the projects have indeed been decided by the time the community learns of the project. This model is also procedurally perfectly compliant with the state permit process, and hence developers tend to rely on that (see Howard 2015). Local residents, however, are often not very familiar with the state permit process, which, in addition, is led by out-of-town developer and state authorities, who have not established trust and existing robust relationship with the local residents. The utility-scale large corporation and state-led permitting model, while suiting the company and state needs very well, is not designed from the community perspective, and it is therefore not hard to see, how the rural residents so often have a feeling of procedural injustice – even when everything is done right from procedural compliance perspective (see also Howard 2015).

The auction policy tried to tackle the issue of procedural justice as a source of local opposition by putting an eligibility criterion of at least 'involve' level of engagement according to the international IAP2 spectrum (widely used in public participation, see International Association For Public Participation 2019). By definition, this means that the project in question aims to work directly with the community in every stage of the process, and that public's concerns and

aspirations directly impact the alternatives developed. Given all the projects, which participated in the auction would have been years in the development (as the reverse auction had a deadline of 2020 to be generating electricity), the criteria could have not impacted the early stages of the project design, which is an important phase for engagement (see e.g. Gross 2007, Howard 2015, Aitken 2010). In practice, one of the policymakers involved in assessing the bids, said that it was difficult to exclude projects based on engagement levels in the tender:

> *"We found that really our evaluation team is very unlike to rule out a project on those basis when you're talking about projects worth hundreds of millions of dollars ,and they've probably put in hundreds of thousands if not millions to put a bid together, to rule out a project on that basis."*

Benefit sharing – distributional justice and changing expectations

Another aspect that often is a source of local opposition inherently related to the model of large-scale renewable energy developments owned by large multi-national corporations, are the distributional justice questions. Unlike a mine, gas field or a coal-power plant, which still funnels the profits mainly outside the locality but can create well-paid and long-term employment, renewable energy does not create the same kind of employment opportunities for rural areas. Wind and solar farms need very little personnel to run, the equipment is highly specialised and imported from global manufacturing hubs (in Australia mainly from Southeast Asia) and the profits are collected by institutional investors who have the ability to invest tens or hundreds of millions of dollars. For example, the several wind farm construction projects in Mortlake bringing in workforce outside Mortlake was referred as "*circus coming to town*" by one of the residents describing the short-lived "*sugar hit*" of the outside construction workforce. In this case, it was clearly difficult for the local community member to see any substantial benefits of the large-scale proposal. On the other hand, the supporters of renewable energy installations did emphasise that the rental income is often used at the farm infrastructure which helps to keep the farm businesses viable during the hard (dry) years, there was business also for locals and the benefit sharing had brought (small) things that otherwise would have not been provided by council or state funding. An urban-rural divide is also in operation in these dynamics, in that rural communities are not being supported to question the way the majority of the economic benefits of the project would be directed to urban areas (Askland 2016 p.8). Sherval et al. (2018 p. 101) speak to this notion, in stating that current legislation is 'seemingly ineffectual', and 'does not appropriately cover what rural towns need'.

As a response, 'benefit sharing' was introduced to the Australian renewable energy landscape in the early 2000s to the inherent problem of the very limited benefits of a renewable energy large-

scale installation to the rural locality. Benefit sharing can be favouring local employment, offering apprenticeships or other skills training, providing funding for community groups or organisations or for example, offering free solar panels or reduced electricity prices (Lane & Hicks 2019). The project areas with existing projects reported having experience such as solar panels for community buildings, electric bikes and yearly funds for community projects. In addition, as the town planners of councils with existing projects reported, in Victoria councils get 'in lieu of rates' payments from renewable energy projects, that can be some tens of thousands or even hundreds of thousands in case of several large wind projects. Internationally, different kind of co-ownership, co-investment or profit-sharing models have been trialled (see e.g Hicks 2018), but they rare in Australia.

The trend of both installation sizes and 'community funds' has been upwards (Lane & Hicks 2019). In the reverse auction policy, the policymakers and developers reported that benefit sharing had a lot of emphasis in the auction. In the released assessment criteria, the community engagement (procedural justice aspects) and benefit sharing together had only 15 % weighting, but that can be seen as substantial compared to the typical price only auction developers are more used to.

Nothing transformative was achieved in the auction projects: there was no community ownership, no co-decision making or any innovative model of generated profit – or electricity – sharing. Many hoped for free electricity in exchange of seeing the energy infrastructure:

There was, however, two important outcomes of the policy decision of putting emphasis on benefit sharing. Firstly, the projects did put more emphasis on thinking how to do more meaningful benefit sharing initiatives than merely a lump sum distributed yearly based on applications from the community (which is the typical 'community fund' benefit sharing model), even if it was mainly to impress the state. The initiatives included funding a domestic violence victims safe home unit, microgrid to neighbouring properties with batteries and solar, proximity payments, scholarships and funding to a local university / TAFE (vocational tertiary education institute). As one developer describes the impact of VRET1:

> *"We always committed to community fund but the rest of our benefit sharing program actually was developed after our planning permit was issued, as part of VRET… It essentially did really drive that thinking outside of the box in relation to how we share benefits. Which I think was a positive."*

Perhaps the most significant gain of the individual benefit sharing initiatives was the funding towards the local education provider's (Federation University & TAFE) idea of setting up an education centre. The Geelong assembly hub was celebrated in the state announcements and press, but the education program is still developing and growing after the initial help from VRET1 projects. The centre was named Asia Pacific Renewable Energy Training Centre (APRETC) and after the initial funding they received from all the wind developers who got the VRET1 contract,

the centre now has turbine technician training, internationally recognised safety training certificates, renewable specific several year training programs, industry collaboration research projects and a practice for heights purpose-built turbine tower (see Federation University 2024).

Secondly, the state adding benefit sharing into a government tender criteripn, did result in slight change of expectations of benefit sharing in general, which is one of the positive outcomes of the policy. As one of the regional Victoria policymakers describes that

> *"We're building engagement and benefit sharing in as a part of that expectation, for you to get this we expect this. It's great because it makes the whole industry pull their bootstraps up and recognise that this is very important so they can't just do the minimum anymore. It is expected and every player along the line is expecting them to do better and will.. ask them to do better… everybody's been empowered to push back and that's exiting. We wouldn't have been able to do that to this scale, now, without the auction"*

This policymaker thinks, that even though the community engagement and benefit sharing did not hold that much weight compared to price and other criteria, but it made the companies think how to do better. All of the local town planners, and many of the residents, agreed that the VRET projects had better benefit sharing programs than other developers. The policymaker goes on explaining how it created a space for imagination what could be done for the community. For example, the talk around Mortlake to combine community funds into a large new health care facility would have been unheard of 10 years earlier in the large-scale renewable energy space, but now it is seriously considered. Notably not all community members are in favour of pooling the funds they believe belong to them as the closest neighbours:

> *"The local councils are now trying to take over that money and redistribute it to other parts of the shire. Is that fair on the Mortlake community where the asset is?" - Resident*

However, there is now discussion of strategic focus on, especially with expansive wind farms, to get something transformative beneficial for the community, which indicates that expectations are changing. Several of the policymakers also noted that communities and local governments compare what others have received, which then means they are asking for more than before, and the programs initiated due to the auction have contributed to that. Many opponents, and also supporters, did point out that education pathways, scholarships, access to good quality services and funding for social infrastructure in rural areas should actually be offered by state government, not by individual companies.

The overall issue of the private utility model still remains: the large-scale installations are not done by the community or for the community: the benefits by definition will be mainly collected by

capital investors. The annoyance of hosting privately owned and state sanctioned large energy generation but not benefit from the power itself summarises the frustration:

> *"I think it's back to state and or federal response that says, we are producing electricity to feed this metropolis and that is a billable outcome of a substantial money.... there's a bunch of landowners with turbines who are getting a substantial revenue, everybody knows and understands that and the rest of us are getting nothing. So don't come here and flog local benefits, local jobs, it's bullshit, they're all full of crap."*
> *" – Resident in Mortlake*

Another resident comments on the political benefits of renewable energy which are seen to benefit the urban areas at the expense of the rural areas:

> *"…Win a lot of votes in a city of Melbourne but they really don't care about the people here."*

Trust: the battle of the brolga

One of the well-established indicators whether a project is objected or not is whether the local community has trust towards the industry and permitting authorities. If there is lack of trust, that can lead very easily to conflicts, spread of misinformation and in general, lack of shared understanding of the project and its impacts (e.g. Gross 2007, Korjonen-Kuusipuro & Janhunen 2015).

In some cases, there was deep distrust for the industry, the companies and their motives and the consultants preparing environmental assessments (see Howe 2019, p. 44). In Mortlake one of examples where lack of trust is very obvious, is the question of wind farms' impacts to a local bird species called brolgas. Brolga is a large crane, that habits freshwater marshes or meadows in southwest Victoria and feeds in pastures, which makes it a very visible species especially for farmers living in the area. It is also classified as an endangered species, mainly due to habitat loss of vegetated wetlands (SWIFFT 2023). The question of impacts to brolgas is discussed as an example of distrust between the community, industry and the state planning authorities. It is an emotive topic in Mortlake with almost everyone I talked from energy policy experts to local farmers having an opinion who is in the right.

What makes this particular species interesting is that for many, it is the manifestation of resistance towards negative changes in the local ecology. The community 'double movement' against the commodification process of their familiar environment seems to culminate to this species. One of

the policymakers explained that they had tried to put in place policies to address the conflicts around assessment and monitoring of brolga, but in every new project, the differing views keep coming up, and the state position questioned:

> *"I know the planning team have a very firm view on the management of that particular issue… We have implemented every single possible mitigation tactic to reduce the impact on brolgas. If you spoke to Tilt, I'm sure they would have told you they're spending millions of dollars on initiatives to build new wetlands and those kind things as a part of the Dundonnell wind farm… and to be honest I think the Planning Department are a little bit sick of this issue, there's a couple of members, as you know in the community, who are dead set and very sustained as well, they've been talking about this 8 or 9 years."*

He describes the special position of this particular species as:

> *"Because it is a species people identify with in that region, really closely… It's like koalas and Kookaburras, part of the Australian identity. It's like the brolga is part of Barwon region identity."*

The trust on city-based planning authorities, consultants and companies was equally amongst the opponents. The opponents of the Mortlake area wind farms told me numerous examples of why they think ecological reports done by certain consultants or approved by the State can't be trusted, especially when it comes to brolga. In South-West Victoria there were accusations of State officials working for the wind industry, not reading critically the environmental impact assessments, noticing or caring about the inaccuracies identified by the opponents. For example, one residents explains his mistrust as *"DELWP is so far into this that it's not funny"* and embarks on a long story of how the study methods are not adequate, names consultants who will omit data to make the results look better. He gives many examples of how he thinks the assessment is biased to allow wind farms to proceed when he feels they should not be built based on impacts to brolga. For example, he describes one of the many litigations on the matter:

> *"It's* [Environmental Effects Statement] *3000 pages, and I've asked DELWP have you read it? No, and no one's read it, well anyway you go through it all and you find this little bit of gold. They've mapped all these bird flight paths but when you look at it, you notice 20 % of the data is missing. So in the cross-examination hearing I said what's with the 20 %? They said we couldn't find the birds within 3 km, so they went more than 3 km. That data where they went more than 3 km was not included at all, because it doesn't suit the fantasy. For Dundonnell it was worse. They were watching the birds flying and what he recorder wasn't even used, because once they get beyond so many meters they cut the data off… There was a 100 brolgas there and they recorded 20, that whole flock size… it's completely weighted in the favour of the wind farm and DELWP."*

Another example used was a PhD study by Inka Weltheim, as a part of "South-West Victoria Brolga Research Project". Funding came from state, Sustainability Victoria and wind farm companies. Allegedly, she had "*omitted 90 % of the data*". Other residents described situations in the resident participation groups, called Community Engagement Committees (CEC), where they had agitated developer employees on purpose to try to make them "slip" something and proof that "*they only care about their project and not the community*". The mistrust of the locals to the state planning regime led to the perception that there was no neutral information available (see Marshall 2018) for assessment, especially around brolgas. The companies themselves are operating in a competitive environment where profit maximisation also means maximising the number of panels or turbines within the technical feasibility, and the question becomes what is the amount of acceptable impacts. The locals did not find the impacts to brolga, which is a proxy for their local ecology itself, acceptable nor did they trust that state to protect them within the regulations (Chester & Paton 2012, Polanyi 2001 [1944]) and kept challenging both the rules of assessment and how they were implemented by the companies prioritising most cost efficient (largest possible) project instead of lowest impacts.

(Lack of) Transparency

The privately-owned markets usually only have a limited amount of transparency, even if the neoliberal ideal of perfectly functioning markets would require transparency. In the Victorian electricity markets the key ones are spot price, the mix of generation fuel, and who has generation, transmission and retail licences. Publicly listed companies also have to publish yearly reviews of income, expenses and profit, but the list of publicly owned renewable energy generators is increasingly short. Individual bids from market participants are public but require a python code package to be visible[11]. All contracts between generators, retailers, electricity users and in this case, the state, are under commercial confidence, as are for example the grid capacity details, lease contracts and neighbour contracts. Project costs, technology prices, profit margins, share of own capital and loans are not 'open' to the markets either. As discussed before, the complexity of the market does not increase transparency either.

The Victorian reverse auction policy catered to commercial confidentiality remarkably more than many other global examples, or other government policies. Commercial confidentiality and not disclosing costs or conditions are not particularly common starting points for public policy but they were adopted by the state for the renewable energy reverse auction to 'distort competition' as

[11] The dashboard is available in https://nembiddingdashboard.org/. There are some packages developed to visualize this data, for example by Nicholas Gorman and Patrick Champers. The data is needed rather to observe market behaviour instead of actual prices for generation (LCOE)

little as possible. The prices of the contracts were not published, the compliance with local content is not available (local content goals were equally set based on deficient information as supply chains details and precise equipment details tend to be carefully guarded) nor the grounds why the winners were chosen. There is very limited release of the results and the (lack of) information readily available of the winning projects and the conditions they won with. While the core reason for choosing an auction is the internalised belief of an open market providing the best outcome, the lack of transparency is an interesting controversy to this underlying principle. The fact that the taxpayer does not know the financial gain or burden of each project prevents any public scrutiny to how 'competitive' the chosen projects are in the NEM or compared to the unsuccessful projects or each other. The same is true for the projects themselves. When it is not obvious to projects or the competition, which were the factors leading to a successful or unsuccessful bid, the information was not available for the market in the next auction which has since been held, VRET2. Of course, some aspects especially around the qualitive criteria has been published and used as political capital, such as the Geelong assembly facility, albeit short-lived, to give an idea what kind of initiatives have been seen favourable by the state. But all details especially around the financial bids are hidden behind 'commercial confidence' which means that the accepted bids could have not contributed to the knowledge within the market of state support level. The benefit of this is believed to be that not knowing price levels of others, even retrospectively, is seen as resulting bids only based on cost instead of speculating the possible support level possible to achieve – and thus leading to support levels higher than needed. There is a belief amongst tender designers that if the lowest current offer is known, there is no incentive to go lower than that even if it were possible. A Victorian policymaker describes the decision not to release any prices:

> *"When we released the results of the auction, probably the question I got the most was what is the State's capped downside liability. Unfortunately that was super confidential, because we didn't want to set a precedent if there is another auction."*

The controversy in here is that the narrative of auction as the best tool, is heavily impacted by the published constantly lowering prices of global auctions. This then sets the expectation of lower prices – even when the low prices aren't 'real' (e.g. in case of external PPA contracts in addition to auction income, or low completion rate of some auctions). It also not true that no one in the market knows the winning, or losing, prices: the participants of the VRET1 (especially the shortlisted candidates), do know more of the VRET1 results than any new entrants to the VRET2 round. There are plenty of rumours going around about VRET1 of 0 bids and even negative bids, but very few people actually know, certainly not the taxpayer. The mechanism itself is explained in detail in Victorian Auditor General's Office's (2019, p. 20) yearly review. Whether the two-way contract leads to income (very high electricity spot prices) or subsidy (low electricity prices) was unclear even for policymakers, as I was told opposite from two different members of the same team to the question whether government would get money in a case of high prices:

Policymaker 1: "No, it just reduces the overall amount of the support that the state has to support."

Policymaker 2:" So really interestingly, you are right. Victorian Auditor-General's office did its annual report against last financial year, and it reported that at the current moment the forecast suggests that the State will be making 285 million dollars over 15 years."

What makes the Victorian reverse auction somewhat unconventional is amount of qualitative evaluation criteria besides the price. This was largely "learned" from ACT auctions, but nevertheless, it expands the scope of just business-as-usual price-based tendering of renewables. The scoring of candidates, bids in general nor the price aspects have not been disclosed and will not be because of not "*wanting to release commercial details to competitors*" for the possible future auctions. The scoring of bids was done in working groups reporting back to a "*evaluation panel*", but none of these details were released to the public or proponents.

The practical scoring was something that both the industry and the policy people found challenging. The evaluation criteria was also found challenging by the proponents both because it was hard to know "*what does the government want" (Developer)*. Companies struggled with, what would bring the best score while trying to maintain lowest cost possible and to keep the monetary bid competitive. Not releasing the end results meant that the companies did not know why their project was winning or why another project not. The risk for random decision was minimised by creating as rigid as possible scoring methodology, but the process ended up being not transparent at all to the participants. The bidding and evaluation process in general was seen unanimously stressful "*with long nights and weekends*" and frustrating "*people not knowing answers to simple questions*" *(Developer)*, but the security of a CfD-contract offered was still very attractive. The bidding process was relatively expensive for the developers – I was quoted figures ranging from a few hundred thousand to a million dollars – but also for the government assessing, given how much resources putting together and evaluating all the proposals required. Still, as one project developer said they would "*do it all again in a heartbeat*".

Bringing the corporate world templates of contract signing and confidentially to community engagement and benefits, rental agreements and such is necessary from the company perspective (as financiers would see this as visibility what has been agreed under the project) but does little benefit for gaining legitimacy for utility-scale energy transition model in the community. Community responses to confidentially clauses and contracts signed for benefits were not positive amongst supporters or opposers of the projects. For example, accepting the proximity payment in Mortlake South project raised some questions:

Resident 1: "I've asked Acciona in writing whether that will affect their ability in the future to take legal action and Acciona basically replied in writing saying you need to get your

own legal advice on that. I think some people particularly round this area are very wary about wind farms and what that might inertly sign away… It's just the whole, sounds like a stich up, there's always confidentiality issues.
Resident 2: Neighbours can't discuss with neighbours, families are divided, there's an elephant in the room for some families."

This lack of transparency does not foster support or trust in the community. Almost no one I talked to, besides specific policymakers and project developers, really understood the reverse auction scheme itself. I am interested in this research on social legitimacy implications of reverse auctions, and given residents, town planners or wider public does not know what the mechanism does, it does not seem that there is evidence that wider engagement with energy space has increased. The utility-scale and highly technical legacy of energy production model has alienated public of energy generation and at least this auction design did not attempt to increase transparency in the energy landscape.

Summary of the Victorian case

In this chapter I have aimed to track the development of renewable energy as a solution to a capitalist crisis. In the case of State of Victoria the crisis include climate change, the changed conditions globally of manufacturing impacting regional livelihoods and concerns over sufficient generation after aging coal power plants close. The reverse auction policy was aimed at capturing the new generation needed under the utility-scale private investment model. Australia in general has two strong trends in renewable energy: very large projects and rooftop solar. Politically, these trends are not seen as competitive, since rooftop systems are mainly aimed at and marketed as lowering household bills, while large-scale projects are supported by state to do the heavy lifting of industrial scale energy transition, which is the model that can be controlled by the market operator and allows the climate crisis to be managed by capital.

The VRET1 reverse auction policy is a financial instrument, CfD functioning as 'a swap contract' in market terms, to gain cheaper project funding by reducing risk of revenue certainty. In the State of Victoria, the bidding process was seen as very tedious and expensive, but the government contract was seen as very desirable by the developers. The state role in the Victorian privatised and marketised energy system is reduced to producing policies to support investment in the market to solve the 'crisis' at hand, instead of state building more generation. The processes of "*marketisation and commodification under capitalism (efforts to extend 'market discipline') are always mediated through state institutions in a variety of policy arenas*" such as energy and land (Brenner et al. 2010, p. 330, see also Polanyi 2001 [1944], p. 140–141). In the State of Victoria, state role in supporting the framework where private capital renewable energy can operate is crucial: state offers environmental permits to operate, a legally binding access to land by leasing, and in this case, revenue certainty in a volatile spot market. The increasingly common reverse

auctions are touted as cost-effective way for states to incentivise renewable energy investment by international organisations (e.g. IRENA 2017) and energy experts in business elite 'knowledge networks' (Carroll 2007). As Brenner et al. (2010) point out, the transfer of 'all-purpose' solution policy templates that develops qualitatively over time to fit the current context, is typical for neoliberalism. In Victoria, especially the previous ACT auctions, a "*global scan*" of auctions as a cost-efficient model performed by the state policy team, and advice from mainly corporate submissions and energy modelling consultancy were influential to the design of the policy. Auctions tend to favour large utilities and developers (e.g. Grashof et al. 2020), as was the case in State of Victoria as well – all the winners were relatively large developers.

As a financial tool favouring large developers, the reverse auction had little impact on the longstanding and well publicised land use battles which stem with the model of production. As installations become denser especially near good grid locations as people push back against the commodification process of local ecology, which Polanyi (2001 [1944]) calls double movement. This was especially clear near town of Mortlake, where two of the three winning wind projects (as well as many other projects), are proposed. The other than price criteria were designed to address these local legitimacy issues, deteriorated by the commodification pressure of private capital led utility-scale renewables, and to include priorities important to the state, such as regional employment. With focus on cheapness, and pressure to create profit, there is little room to prioritise local community benefits or ecology. Hence, the other than price criteria around community engagement, benefit sharing and employment did not seem to address the inherent legitimacy problems of the model itself very efficiently. While especially the benefit sharing programs were better than usual which was not unnoticed by the community, and there was arguably more employment than there would have otherwise been, this criterion was no silver bullet.

First of all, the engagement criterion wasn't treated strictly (team found difficult to exclude a project which otherwise qualified, and had spent hundreds of thousands of dollars putting together a bid based on the engagement criterion). Secondly, the benefit sharing, while significant, could not by definition be a large extra cost compared to the project cost, because it would start to impact the cost of the project and hence the bid placed negatively compared to the competition in a way that a project investing more than probably a few percent into community initiatives, would be unlikely be competitive on price and succeed in an auction. Thirdly, most of the employment and economic related development only led to a short-time gain, instead of new permanent (manufacturing) jobs in the state. The expectation to 'cut in' the existing supply chains to start manufacturing established parts of the supply chain (instead of a new innovation) in a high labour cost, small market like Australia, is perhaps not very realistic in an industry that strives to cut costs in competitive global environment. In addition, the term 'local' jobs only served to highlight the people in the direct proximity of the installations, that the state had different priorities than the local towns and rural areas, and did not mean 'local' the same way as for example residents in

Mortlake. The funding directed to education and skills training on the other hand has led to more self-sustaining outcomes than the manufacturing related spending.

The state prioritisation of job creation over climate action also means that supporting any energy development, such as hydrogen production with coal for export, is justified and celebrated from state perspective. When energy policy's major goal is job creation and economic growth – and energy and climate action governance are separated to different teams – the obvious internal contradiction of pushing both renewable energy and fossil fuels doesn't create a problem of conflicting narratives for the State.

Usually benefit sharing, while expected by the community, has been ad hoc donations, single scholarships and yearly funds in an apply process, and relying on the good will of the proponents. The auction did achieve benefits not usually seen in renewable energy, such as a new home for domestic violence victims, local microgrid and entrepreneur support program. These kinds of initiatives, while not necessarily transformative, can have a wider relevance because they widen and increase expectations in general. There is already clear change in Australia around the recognition of importance of benefit sharing since the VRET1 auction, which is increasingly emphasised in policy texts, political announcements and corporate practices. The model of corporately owned utility-scale installations is, however, not questioned. The competition and pressure on cheapness to still gain 'enough' profits inherently means that the focus of these large-scale projects cannot be local impact minimisation or prioritisation of community needs. Especially near Mortlake with dense developments made the residents question who the energy is for, and reported concerns over too many impacts on visual amenity and local ecology.

In a privatised transmission system such as in State of Victoria, the state has very little oversight or power over the grid connection and system incompatibility with new types of generation. Just winning in a state auction did not mean that the projects avoided grid connection related issues, which form very concrete locational, regulatory and technical barriers (called 'carbon lock-in by Unruh 2000) for new renewable energy generation projects in State of Victoria.

The belief in the superiority of competition and markets was shared by Victorian policymakers, developers, residents and town planners. There were almost no alternative views of what energy future could look like. The centralised (and privatised) model established by the large coal power plants was internalised. The reverse auction policy as a concept, done by capitalist classes committed to 'sustainability', cements this managing of climate crises by large corporation.

Chapter 6. The reverse auction scheme in Finland

The chosen auction design – and the choosing itself – is a combination of several processes described using the five themes introduced in the literature chapter. The first four aspects describe the justifications used, internalised market forces and capitalist goals and (political) processes behind the auction. The last aspect, local sentiments and transparency considerations, focusing on some of the impacts of these choices. To start with, this chapter includes a short summary of the key features of the auction scheme design. As discussed in the history Chapter 4, the public discussion around the previous feed-in-tariff had a huge impact on the design and goals set for the policy.

Design of the auction

The Finnish auction design was fairly simple. There was only one deciding factor, the price, though entry requirements were strict in the sense that all the permits had to be in legal force to enter the auction. The reverse auction was labelled as technology neutral with most established technologies included, though notably hydro power was excluded after some contentious public and political debate. Also, forest biomass producers (combined heat and power plants) were lobbying for a lower demand of renewable fuel portion, but were effectively dismissed since as one of the interviewees puts it: "*it is a renewable energy reverse auction after all*". Legislatively the auction was organised by adding another chapter to the original Act of FiT (Feed-in Tariff) (2010). The original FiT legislation had maximum capacity for approved wind capacity (2500 MW) and also smaller technology specific maximums for biomass. The reverse auction legislative chapter came into force 18.6.2018, and the bidding time was 15.11.-31.12.2018. As a difference to the FiT legislation, the reverse auction was about yearly generation amount (1.4 TWh), not generation capacity. The Energy Authority released a press release in January 2019 stating that 26 bids were received for over 4 TWh of production, all wind power, and announced seven winners on 27th of March 2019 with combined production of 1.36 TWh (Energy Authority and Ministry of Economic Affairs and Employment 2019). There were 7 winning projects, all large-scale wind projects. Notably all the bids submitted were also wind projects, no projects relying on other eligible technologies put bids in. In capacity terms the winning projects have about 510 MW of new capacity – which means that proponents have bid relatively conservative amounts to the auction to avoid the underproduction compensation.

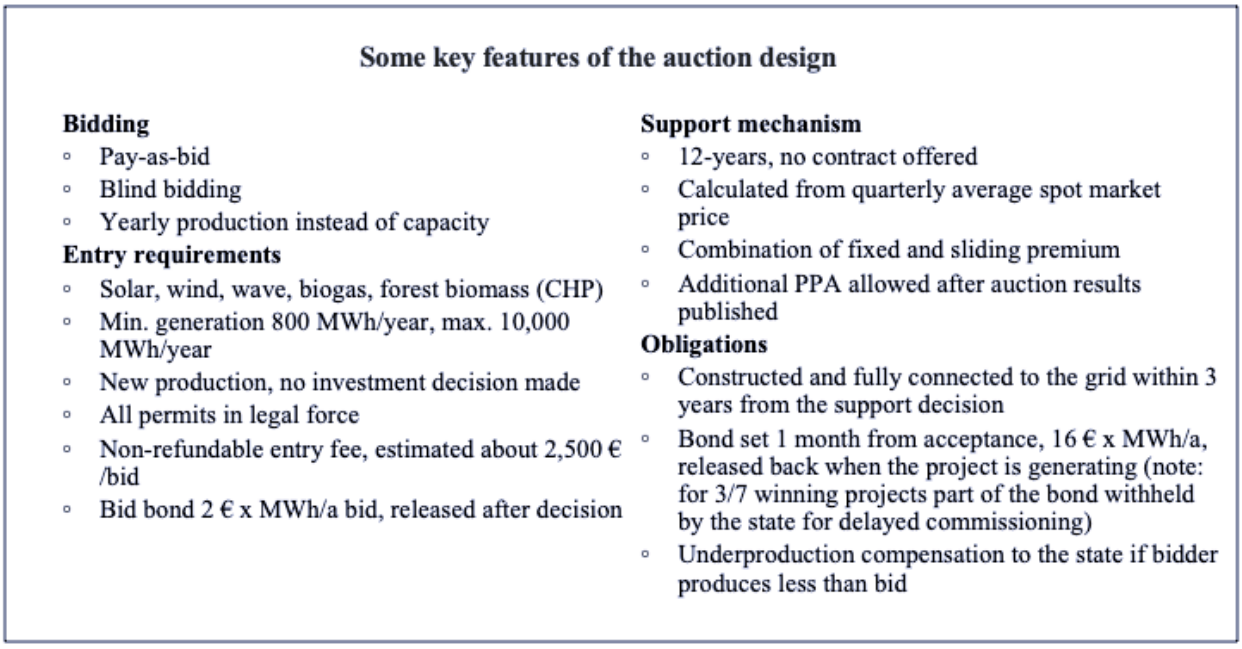


Figure 8. Some of the key features of the Finnish reverse auction design

While the mechanism was in principle similar, the (possible) support level in this reverse auction was very different from the previous FiT's guaranteed price of 83.50 EUR/MWh. In the reverse auction there is basically no fixed guaranteed price. The Finnish Wind Association lobbied some kind of fixed price as crucial for financing any new projects, but unsuccessfully. What was bid in this auction is a so-called premium on top of an assumed baseline – and only that. The premium is a combination of fixed and sliding scale, depending on the market price. The support is calculated from the 3-month average (quarterly) wholesale electricity market price, not from the project specific actual production time spot prices. The baseline reference price for bids was 30 EUR/MWh and the only case for the generator to "get" the price they bid for is when the average price is exactly that, 30 EUR/MWh. If the electricity price is lower than 30 EUR/MWh, the generator will still get the premium, but not more that. Also noteworthy is that the average accepted bids were very low, ranging from 1.27 to 3.97 EUR/MWh. For example, if a company bid 2 EUR/MWh, and the average quarterly electricity price on the spot market was 30 EUR/MWh, the company would get the market price for any electricity it has generated and 2 EUR/MWh additional payment from the government contract. If the average quarterly electricity price on the spot market, however, was lower than that, for example 25 EUR/MWh, the company will get the same 2 EUR/MWh support, not the difference to 32 EUR/MWh. So in this case, the company's earnings for electricity produced would be 25 + 2 = 27 EUR/MWh. The sliding scale steps in after 30 EUR/MWh price, so this project would get 1 EUR/MWh support if the electricity price on the market would be 31 EUR/MWh and no support after the average quarterly electricity price on the spot market exceeds 32 EUR/MWh.

All the participants that bid, no matter if they were successful, and the officials involved in processing the bids agreed that the participation was very easy. There was an electronic system set up on an existing permitting platform, to which the proponents simply placed two numbers, the premium bid in euros and the production amount in megawatt hours and uploaded as attachments the proof of permits and indicative agreement from the grid company. Auction as a principle – the lowest support needed wins – was easy to understand and agree on principle no matter with whom I talked with.

1. Neoliberalism and the belief in competition

Dominance of market economy ideology

All the interviewees I talked to from local residents and town planners to policy makers and developers describe the Finnish electricity market as liberal, market-led system – and repeat the principle that market conditions and competition should be left without constant state intervention. This, however, is of course only the neoliberal narrative, while in fact, the Finnish electricity market is constantly supported and commodification is enabled by the state. A long-standing policy maker reflects this often-repeated neoliberal ethos of the superiority of competition-based market, and its internal controversy:

> *"Finland is a market economy, so market should handle everything… but when markets don't produce the right results and we have international agreed obligations… then we need to calculate and assess, how do we support, or change land use planning system or add taxes – the markets are blind to the international obligations and carbon is cheap, so the externalities… this is the economist theory."*

And

> *"That is nonsense, that market shouldn't be intervened with, we have a parliament that is there to pass laws, and the cabinet has a weekly decision bulleting every Thursday, that impacts and intervenes to market function. The main reason why market doesn't work absolutely correct, you can have different views about that and that can be directed politically in some direction. Then every 4 years you can vote, what kind of parliament you want directing."*

Even if this policymaker is clearly skeptical of the liberal narrative of letting the market operate freely, she did refer often to economic theory terms such as "externalities" that need to be fixed in the market and "market failure". Economics and competition ethos seem very entrenched into the

legislation, to people's minds and imaginations what energy policy is for. In other words, even if an interviewee referred to the need and reality of public guidance of energy markets to achieve what was expected, whether cheap price, clean energy or reliability, the concept of a competitive private capital led market itself was never questioned. Economic principle of 'just getting the price right' and economic theories are overly represented in all policy making since the neoliberal state started to rely on other actors instead of delivering public services themselves, and energy policy is no exception to this (see Peters 2011, Bryant & Webber 2024). Economics terminology is entrenched into the discussion of what is the role of state in energy policy in the Finnish interviews and especially in the reverse auction working group report.[12]

There are several opinions how much it is state's responsibility to guide the market and set boundaries. All interviewees and policy documents agree upon, and favour the alluring – though seemingly never quite achieved – free market producing perfect outcomes and dominated by competition. As Polanyi (1944 [2001]) would describe: this goal of a disembedded, fully self-regulating market economy is only a Utopian project; it is something that cannot be achieved. In fact, Polanyi (2001 [1944], p. 146) argues, the "*road to a free market was opened and kept open by an enormous increase in continuous, centrally organised and controlled interventionism*".

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This internal controversy is visible for example when developers and policy makers talk about goals and targets. A fully autonomic market would only have one goal: cheapest product for the consumer with the highest profit for producers. Energy policy, however, has many other goals, whether it is about emissions, energy security or grid function.

> *"I think we should have no subsidies, taxation related hidden support, or auctions, rather we should go to market led direction. Sometimes we joke that it should be a completely state-led system such as in Soviet Union, or completely market-led, not in between."*

And a moment later:

> *"Of course there are things like environmental permitting, that you can't outsource the state completely from… And if the state would give a clear goal of x amount of wind power this year and x amount year after, I wouldn't object that kind of concrete guidance, even if that is against the fully market led principle."*

[12] A large part of the justification and potential benefit of the scheme presented in the working group report is defined as lowered cost of WACC (weighted average cost of capital). The logic presented in the report, and commonly repeated in modelling provided by economics or management consultancies, is that a less risky investment can gain higher portion of project finance from a bank. The interest rate of a bank loan is always assumed to be lower than capital invested by the investor itself – which is expected to create a profit that is higher than could have been gained by simply keeping money on a bank account. If a higher portion of total project cost is therefore financed by a bank, and only a small portion of own capital needs to be invested, the overall cost of capital is lower. This makes the project overall cost and LCOE lower, which, in theory, should lead to lower electricity prices for consumers in a perfectly functioning spot market and lower bids for the state auction.

A renewable energy industry advocate points out the other problem with purely market-led ethos:

> *"Market always solves right?* [ironically] *This is always the discussion whether politics need to get involved or does the market solve. And my opinion is that yes, it often does, but does it do that fast enough? That should be the discussion really."*

As discussed in the theory chapter, climate change is an existential threat both to capitalism and society as we now know it. There is very little evidence of markets solving the issue of emissions, as they are constantly rising (see IEA 2024). While all the interviewees share the internalised belief of markets and competition being superior in delivering, it is not always so clear what the market should be delivering.

Reverse auction as the chosen model

Reverse auction as a principle (though maybe not the design in detail) – the lowest support needed wins – was easy to understand and agree on principle no matter with whom I talked with. There were two main reasons for choosing reverse auction as the instrument for the state to incentivise new renewable energy generation – and meet the European Union and national renewable energy goals. First one was a piece of EU legislation guiding the allowance of any state support agreements, and the second widely internalised belief that a reverse auction delivers the best price and hence is superior compared to other support options. In the policy maker and industry interviews there was a strong preference for the state not to intervene to the market functioning – at least visibly. One policymaker describes it as:

> *"If money is handed out, it is state aid, which as a principle you shouldn't have. There are certain exceptions, such as you need achieve something with the support, state can't just give money to someone who operates in a market, just for the sake of giving money. It is always a political decision, and as you would have noticed, these are very complicated matters. Different fields, and I am representing economists, can describe this problem differently. Now, if we come to an agreement that the speed is not enough in the next 15 or 20 years, then we need to intervene somehow."*

This principle of letting the market operate 'freely' without state interference by giving someone money and hence making them more competitive against others, is reflected in the EU guidelines Feed-in tariffs and other guaranteed and foreseeable forms of state support for renewable energy were effectively banned by EU in 2014. More competitive types of giving state aid, especially reverse auctions, were recommend instead as 'exceptions' to non-market interference to achieve for example climate and environmental goals (EU N:o 651/2014). The Commission published guiding principles specifically for energy transition (as the private capital still required state

contracting for committing to investments) stating that the energy markets should include reserve and flexibility market signals, and any support mechanisms should be as competitive and as non-market distorting as possible. The Finnish government did not want the renewable energy investment to end (e.g. for increasing energy security and reduce the reliance on imports) at the end of the previous FiT, and hence set up a working group in 2015 (TEM 2015). The working group was set a task to investigate investment support (one-off payment), generation support (revenue) and green certificates and how to make them competitive in the light of the new EU regulation and desire to decrease state risk and costs. The group included members from the energy industry (established utilities), renewable energy developers, advocacy groups and members from different Ministries. The working group was invitation only, but a submission round was opened up in 2016. The working group report includes discussion on the options for support mechanisms allowed after the EU decree 651/2014 was put in force. These included reverse auction, investment support, certificate systems and rights to pass through costs to consumers via electricity bills (TEM 2016, p. 21-25). The working group members I talked to told that the clear emphasis from early on was some kind of direct support in a form of reverse auction, and mainly the discussion evolved around different technical design options. The subsequent Act (FINLEX 441/2018) heavily relied on the final report from the working group (TEM 2016), though the capacity was lowered from what the group recommended, and legislative process took over a year to be in force, as the legitimacy of state support for wind power was quite low in the public sphere after the previous FiT was perceived to siphon tax payer money to the pockets of foreign investors (Janhunen 2018).

EU has well documented history of adhering to and championing many neoliberal principles (e.g. McNamara 2024). While certificate scheme and other options were discussed in the working group, everything besides a reverse auction was quickly dismissed and were only formally options. An industry organsation for big utility companies were lobbying for a certificate system, but a policy maker in the working group described that they "*realised themselves*" that it isn't suitable for Finland, because biomass and timber market could have been impacted which in turn could have been very harmful to nationally significant forestry industry. Another problem working group recognised was that support also goes with "*wide brush*" to new and old facilities and technologies and doesn't target new technologies. Hence certificate system would have had "*0 or negative benefits towards the goals of energy policy"* as one working group member describes.

Another aspect which was both politically agreed upon in Finland, and European Union state aid guidelines recommend, was that, where possible, any support mechanism needs to be technology neutral to avoid disrupting free competition. Basically, this then means that only 'mature technologies', so the ones which LCOE is the lowest, are likely to succeed. Clear evidence of this is that no other technology besides onshore wind even participated by bidding to the auction. One of the working group members criticised this aspect with pointing out that, the "*the whole point of support mechanisms are to help technologies mature when they are not yet competitive on their*

own" – and technology specific support mechanisms in Europe and elsewhere have been a major reason why renewable energy technology is now competitive against fossil fuels based on price alone. In Finland it also meant that some technologies, such as hydro, were excluded as it had been "*around for 1000 years and doesn't need suppor*t", nor is there hardly any new projects proposed. Heat and electricity ("CHP") joint biomass power plants lobbied for low renewable fuel portion, but given it is a renewable energy auction, a compromise 85 % was agreed after the report came out and the legislative proposal was drafted. In the end, this did not seem to matter, as no other technology besides onshore wind even put a bid in.

The reluctancy to have any kind of new direct government contracts for renewable energy from state perspective is crucial also for any future auctions. Every developer, policy maker, town planner and resident I talked to referred to the desire of no state contracts in the electricity markets and how all new build should be 'market led':

> *"There is no other option than market-based, without subsidies. And to get to there, the turbines need to be bigger, taller, more efficient. That's how you get the LCOE down. This of course impacts to the social acceptability very much" – Developer 1*

> *"When the auctioning was first discussed and during the auction, it was not clear that the projects can get built on their own. And now when it obvious that they can, everyone is saying that there will be no other rounds or other support system in place." – Developer2*

> *"The question is why should we. Neoclassical economics starts with the notion that market can be regulated, but it can operate freely. State can do an intervention, but that needs to be based on something. If the market is failing, how is it failing? This should be the starting point in all policy work, regulation and goal setting. If we are happy with how the development is going, then you should not regulate it." - Policymaker*

In other words, no one anticipated any future auctions unless the EU climate goals are not met. The reverse auction also had no other joined goals of workforce, economic growth or community rural development, so it had no interest besides meeting the emission target as cheaply for the state as possible. The only situation where any future auctions could be considered would be if European Union renewable energy goals would not be met otherwise, or another technologies, such as solar or offshore wind are wanted in the mix.

The fixation on cheapness was also obvious in how developers talked about their interactions with project localities. The project developers noted that even though the perceived expensiveness of renewables and the era of the FiT still came up often, it has been "*definitely easier*" to defend their projects against the "*cost to the taxpayer*" antagonism by talking about the cheapness of the auction and the recent growing number of purely market-based projects moving into construction phase.

In public debate emphasis has lately moved into health impacts of low-frequency noise of wind turbines, the anticipated amount of waste in the decommissioning phase and the system costs, when especially in the end of FiT 2014 and 2015 the expensiveness to taxpayer was more the predominant discussion.

Any local content requirements would have been very hard to include to the auction due to European Union joined economic region which forbids any government tender preferring country's own workforce or suppliers. A few developers, town planners and policy makers said that community benefit programs could have been possible in the auction design, when I explained the Victorian auction criteria. However, it was never actually considered and is seen as somewhat problematic in the Finnish context as discussed in benefit sharing section.

2. Constructing renewable energy under capitalist model

Crises and fixes

Fossil fuels have been and continue to be the main source of energy for the current capitalist society. This is true also in countries like Finland, since essentials such as transportation, heat and food production still primarily rely on fossil fuels even if electricity grid has only a small portion of fossil fuels left. Climate change presents an existential crisis of capitalism disrupting the system too severely in one way or the other (e.g. McCarthy 2015). The need to decarbonise is fairly well accepted in Finland, and renewable energy – and perhaps biofuels due to long history of forestry related industry – as a solution fitting into the capitalist model is equally prevalent in the political sphere. Renewable energy for electrification, energy security and electricity present a solution for climate change that fits the capitalist growth model as it is a new 'frontier' to invest and reap profits from.

> *"At the end of the day, money talks. It is for these support mechanisms, even if people talk that it is for climate action, no one puts up generators from the goodness of their heart. Somehow you need to make a profit, all corporations aim for that eventually." – Developer*

Beyond the existential crisis of climate change, there were some context specific 'current crisis' the interviewees named standing in the way of decarbonisation. The issues named relate to consistency of energy policy which secures a favourable investment environment, local opposition (via appeal process), grid availability and Defence Forces issues. Besides climate change, in the Finnish context the main 'crisis', which renewable energy policy in the reverse auction design had to fix, was the perception of cheapness.

Climate Change

While Finland does not have coal deposits, other carbon-based sources, such as peat and biomass, have traditionally been used in especially heat production. Especially the definition of renewability of peat has been a hard political discussion and phasing out decisions have still not been made (while less controversial coal ban by 2029 was fairly easy political process). Peat, forestry (for energy, pulp and building industry) and biomass industries are major employers in rural and regional areas explaining the procrastination of any critical review of climate impacts. Finland has not been the first adopter in renewable energy technologies such as solar or wind turbines. Yet, fairly ambitious climate policy on a principal level has not been very politically contested, and climate change is widely accepted as 'a crisis' that needs political action.

Secondary climate denialism is, however, much more common. The arguments are familiar: action can't be taken yet, it would be too expensive, Finland is too small to have meaning in international emissions.

> *"Climate change is quite distant to these people, they say that we can't impact anything in here anyway, it's in China and India… the discussion goes there straight away, they think Finland has no role in this." - Developer*

Residents I talked to reported having noticed changes in their own environment, though not as existential risks such as running out of water like in State of Victoria, rather delayed onsets of winter. Finland's small portion of global emissions comes up often, as well as no need for action right now on problems far in the future. Some people describe the ideal future as technological fantasies which cannot be enacted right now. These all provide justifications why no renewable energy technologies should not be built now – and certainly not in their region. The built renewable energy installations don't link to climate change particularly strong in the local mindset either. As one of the residents describes:

> *"Well, I don't think it's the climate change that's on top of people's minds. Maybe in the price of diesel, more in that sense people talk about wind power. They are just these things going around over there, not directly linked to climate change."*

A developer describes one example of public event he was presenting a wind farm in a rural (conservative) area:

> *"It comes up but it's a bad argument. People don't understand it. Like for example in one rural town, perhaps related to the age of the audience as well, but I was talking about*

climate change and by 2100 this town might be under water as well if we don't act. And this one older gentleman raised his hand and said, but I won't be alive in 2100. I was like, right, I guess that's it then… It's just better to stick with the wind farm and its impacts."

In other words, climate change is not enough to talk locals into changes in their local environment for a large wind installation. In general, all the developers have similar experiences, and rather talk about local impacts and benefits. The local ecology is much more tangible and important to the residents than global climate action:

"For the local people, the most important thing is the local environment. We talk about climate change when we go to talk to the parliament of ministry, but for a regular person it is very faraway."

As one of the industry association representatives summarises the wind power proposals in Finland:

"Wind power benefits are global, and the negatives, they are local, so the local person needs to be able to see some other benefit than just climate."

Similarly, a town planner describes his view of local sentiment towards climate action in the light of renewable energy developments proposed in the area:

"It doesn't really come up. Maybe sometimes as a mention, but then they say that there has been changes in the climate before."

Another town planner describes the possible generational difference ahead. In his area, a forum of high school kids suggested that the municipality should join the carbon neutral municipalities network. The town planner says that discussion of importance of climate action is present especially in the younger generations, which he felt was inspiring, but in this case, they had decided against the proposal anyway. The town planner had previously investigated the subject, and the cost benefit analysis was not beneficial enough in his opinion. The typical actions recommended for the member of the network, were already done by the municipality, and the network had a hefty membership fee.

On the contrary, for developers and industry associations – as well as policy makers on national level – climate action is a clear motivation. One CEO states that in their company, besides profit for owners, climate action is added to the goals of the company. Another describes the motivation to work in the wind industry:

"Climate action is one of the big reasons why I have hanged around in here for 10 years, even though I've gotten good offers to go elsewhere. And also why even on the hard times, which we have had, I come to work happy. Because I know I'm doing work that has meaning."

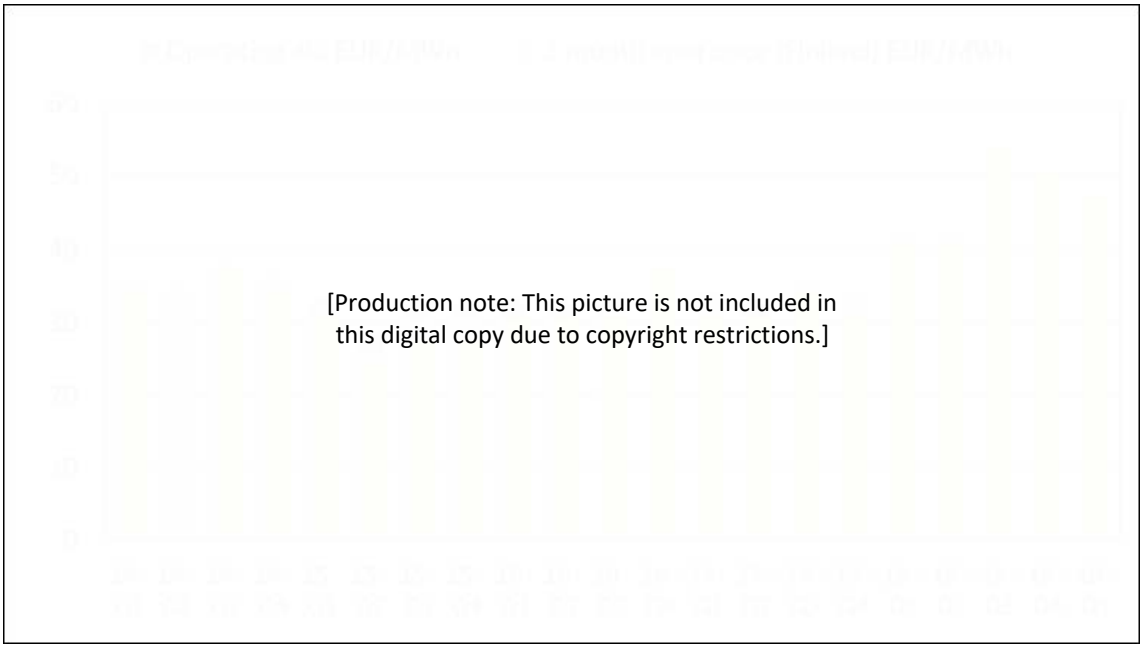
This, I believe, has a link to the difference of opinions on what kind of impacts are 'acceptable' in the name of climate action. The developer genuinely feeling the importance and urgency of climate action via building more renewable energy is much more likely to overlook changes in local landscape and working towards adequately securing revenue, building permits and purchase agreements, because that is within their skillset. The development of a wind farm presents a tangible climate action tool for a developer, and hence it is seen worth pursuing even when local residents oppose.

Price, risk, and cheapness

While jobs and regional development seem to be the main political selling point for renewable energy in Australia, cheapness of the energy and the scheme to the taxpayer was the key goal of the auction design and narrative in Finland. From government point of view, the reverse auction was seen and framed as a huge success. The policymaker interviewees, the mainstream media articles and the press releases all emphasised the low price achieved and the low costs "for the taxpayer", especially compared to the previous FiT. For example Maaseudun Tulevaisuus [Future of the Countryside newspaper, aimed at rural and regional residents], wrote that wind power subsidies "collapsed from 100 euros almost to zero", with current electricity prices "auction support will not have to be paid at all" and the total costs of the auction to the state are "less than 5 % compared to the previous Feed-in-Tariff" (Kyytsönen 2019). As a proof of the cheapness, there were presented calculations of the maximum costs to the taxpayer – which were then also compared in the media to the previous FiT system as mentioned earlier – and how little the costs would have been compared to the last five years of electricity market prices. A national magazine dedicated to news about technology and economics headlines "*the maximum subsidies paid over 12 years is 42 millions*" and calls the previous FiT system "*sort of mistake*" that will end up costing 2 to 3 billions to the state (Laatikainen 2019). Just the previous day of the auction winners press release, the same magazine wrote about how "supporting wind power has cost already 800 millions to the taxpayer" (Lukkari 2019), and hence the 'worst case scenario' of support of the new auction was indeed newsworthy.

When the results of the auction were published by the Finnish Energy Authority, the main message was around the cheapness. When the Victorian government announced their winners, the illustration published included the project locations and number of 'local jobs' (Victoria State Government 2018). In Finland however, the figure below was presented in the press release. It

focuses on comparison of the auction result to the previous FiT scheme, by presenting a calculation of how much less state liability would have been if the previous design would have been an auction with this rounds results. The Finnish Energy Authority policymakers were so proud of the achieved cheapness that they decided to also publish the auction results in English in an energy industry magazine. The article talked about maximum theoretical support of about 3 EUR/MWh for the 2018 auction scheme winners when the "support paid for wind power on the basis of the 2011 scheme was 47 EUR/ MWh in the same period, equivalent to approximately 140 million EUR/year for generation of approximately 3 TWh/year"



Picture 10. The content of the press release and graphs when the results were published concentrate on how cheap the scheme is and how low the maximum (taxpayer) impact is. *Level of operating aid in the period 2014 - Q1/2019 with the outcome of the 2019 auction (Magnusson et al. 2019, p.32).*

The key internal controversy in the auction design was the need for cheapness and removing price risk from the state as a response to the fierce FiT critique, and yet securing more private-led investment to renewable energy – which means providing price certainty. The previous FiT offered extremely good revenue certainty, especially for the projects built towards the end of the scheme, which got to enjoy the high tariff but lower technology costs. The new auction design had the same idea of a premium on top of whatever the project could sell in the spot price market, except the price was set by competition, not by the state. There was no appetite for a CfD type of firm revenue certainty for the projects, which moves all of the electricity price risk effectively to the state. As Bryant and Webber (2024, p. 21) write, state action is increasingly oriented towards leveraging and derisking climate investment. In this case, the state did want to reduce the price of capital (see TEM 2016), but did not want to accept the whole revenue risk. The impact was at best slight increase of security, as all the projects which ended up winning had other revenue plans in place (though not signed as per rules of the auction), such as a corporate PPA with fixed revenue or

utility “balance sheet” (see e.g. Bryant & Webber 2024) funded generation costs and customer demand model.

The primary goal of cheapness to the taxpayer was well known for the developers as well. As one describes the auction design:

> *”In reality it of course depends on electricity prices whether anyone is going to get anything from there. In that sense it was well designed format, especially from the taxpayer perspective. If electricity price rises, no support is paid.”*

A renewable energy industry association member described the workgroup thinking the state contracting model discusses how in the aftermath of FiT, a cheaper system for taxpayer was needed.

> *“It was known that a more cost-efficient support mechanism is needed, and perhaps a more flexible one as well, where government does not define the price. And then the EU Directive banned direct feed-in-tariffs, but still part of our members pining after continuation of the FiT system. Everyone understood in the end that it is just not possible, and the discussion turned into auction or certificate.”*

The 2022 global energy crisis warrants a mention here in the perception of cheapness. The electricity prices went up in Finland as well as most of Europe, and one of the impacts were temporary measures put in place by many governments to collect the windfall gains of producers for whom nothing had really changed. Wind power was one obvious winner of the crisis when production margins would have not changed (as wind was blowing as usual) but market spot price was remarkably higher for several months. EU, in fact, added a new Decree (EU 2022/1854) incentivising member states to add such legislation. In Finland legislation for temporary tax for profits over 10 % was approved in early 2023 (FINLEX 363/2023). One of the interesting documents relating to the new decree was the submission round from different organisations, one of which the leading opposition organisations of especially wind power, but renewable energy in general. In their submission the organisation opposed the clause to balance profits with selling losses (mainly utility companies with generation but also customers in low fixed rate contracts) because wind power is “the cheapest generation currently available” (Murto & Lindgren 2023) and hence needs to be taxed in full. While even the opposition organisations are aware of cheapness of the wind power generation costs – which generally is always seen as a desirable thing – the industry profits were seen as not acceptable by the opposers.

Space and enabling policies

As many commodities, renewable energy relies partly on 'fictious commodities' (Polanyi 2001 [1944]). In the case of wind power, especially land and in lesser amount, capital and labour, are facilitated by the state. Land needs state's active support to be available for renewable energy installations in the extent needed for energy transition by large-scale renewables. As in State of Victoria, most new renewable energy generation is proposed in rural locations, in a distance from consumption peaks of bigger cities.

In general, similar to the Victorian case, the framework of environmental permitting and land use planning is seen as less problematic in Finland. The state has same structure and environmental legislation for all major developments including statewide strategic planning mapping out regional needs and processes for land use planning and environmental permitting. All land has a title determined, and it can be privately, state or organisation owned (for example there is a separate legislation for forming larger forest entities from small single landowner parcels in which case the co-operative operates as any other landowner). And similar to State of Victoria, the Finnish state is very pro-developmentalist. The planning and environmental legislation is meant to curb environmental impacts but in general, allow development. The ownership arrangements and contract law are well-suited to enable binding contracts to give a development protection against e.g. change of land ownership. Renewable energy is not excluded from environmental impact assessment or other requirements but is treated favourable in planning policies within certain constrains and has clear national support.

Of course, not all parts of the state or all localities are equal for promoting renewable energy development. Defence forces is a notable exception to the state pro-developmentalist standpoint and have halted hundreds of projects from inception to planning phases:

> *"Defence forces has a total veto right. This is why I haven't mentioned the military before, because we all have it so inbuilt that if I start to think of a wind project, the first thing I do is to ask the military. If they say no, there's no point in continuing further."- Renewable energy advocate*

In Finland, the local municipality decides about the detailed land use. This principle, known as the planning monopoly, is discussed in more detail in procedural justice, but in practice, this means that there are stark regional differences in the sub-national uptake of renewable energy development. Some sub-national regions have enabled large projects within their strategic land use planning, and the local government / municipalities are interested in the tax income renewable energy attracts. Other regions and municipalities have either done a principle decision to not enable renewable energy development, mainly wind farms, in their area, or determined long minimum distances to nearest houses thus practically disabling any (new) development (Pantsu 2023). Some

of these have been enacted after large swatches of land has already been used for renewable energy development and the region has started to push back against what has been seen as too dense development encroaching other development needs (such as more housing).

Most renewable energy projects are incorporated as single entities and contracts and permits are made in the name of the project company. In other words, there are no obstacles or disadvantage in the land securing or permitting process to form companies which are easy to buy and sell. From community perspective changing owners, sometimes several times during the life cycle of a renewable energy installation, might appear unstable, when there is no guarantees which company comes and operates in the area. One of the developers talking about that:

> *"When we bought the project, we send info letters to all of the landowners, and they still mainly talk to the original developer which stayed in as a partner. There weren't really all that many questions, but that's probably because we are a company operating in Finland, in Finnish and our names are Finnish. If there were let's say a Swizz fund, there might have been more questions."*

Similar to the Victorian case, the state permitting, land use and land ownership models all are set up for certainty of investment (via regime enabling secure land lease contracting), development (permitting rules) and free movement of capital (ease of selling a project or installation to another investor at any time). Most developers I talked to, perceived the permitting process itself without any larger obstacles. Appeals about permits were another story, and every developer described that nowadays "*it is exceptional if don't get an appeal*", which will slow down the project for years.

> *"Appeals are devised straight from the conveyor belt, for every land use plan. There should be some sense brought in, that you wouldn't have to wait for two years to get a hearing and the first thing that comes up, that oops they are from a different municipality and don't even have the right to appeal. So there should be some kind of 'fast tracking' to some of these appeals."*

Another developer agrees that at the moment there is no big obstacles to gaining permits, rather the problem is that no new requirements should be set:

> *"As long as you don't change anything now, don't come up with something that will slow things down. We will do our part, there will be wind farms, as long as you don't add some tax, or new fee or something."*

A person working in a wind power industry association fears the same. She has seen the environmental impact assessment getting tighter over the years, which she sees as a potential threat if it in practice stops new building as it has happened in other jurisdictions. She uses an example

relating to a large bird of prey, golden eagles and white-tailed eagles, which are commonly considered in the Finnish context in wind power development and compares the similarities to a large kite in Germany. She believes that the recent drop around 2018 in Germany's onshore wind installations (see e.g. BWE 2023) is mainly due to permitting difficulties instead of lack of interest in investing. She sees a similar regulatory tightening dynamic (see e.g. Chester & Paton 2012) happening with eagles threatening the projects' ability to gain permits:

> *"There's a new guy in that department, he's done work before for Ramboll* [large environmental impact assessment consultancy*]. He is proposing ridiculous distances and demands that each eagle gets satellite monitored. I see that as a threat, as this has been the case in Germany, the slow creeping of growing demands on the length of surveying, and new analysis and then radars that can stop turbines if a bird is nearby. So now the situation is that only a fraction of new MW are getting built this year compared to earlier years. And it's not because of the auctions but because no one can get permits to build due to birds."*

Imagined futures in Finland

In addition to reducing carbon emissions, the energy transition represents a huge opportunity to reimagine how energy is produced and people's relationship to energy. Hence, I discussed imagined and desired visions for energy futures with every interviewee I talked to. The assumption is that imagined futures are important to understand motivations and choices made in policy as they give direction to the models pursued. Asking about imagined futures mostly led to long and fruitful discussions of what are the emerging trends and where should the focus go next. The solutions and visions varied from just a fuel type change (which I've interpreted via concept of ecological modernisation) and carbon trading to energy security, technological fantasies, sense of emergency and climate justice descriptions. The imagined futures follow the concepts from the literature.

The most common imagined future could only be described as weak or strong forms ecological modernisation (Spaargaren & Mol 1992, Mol 1995). Many of the developers, policy makers, town planners and residents settled for narrating different fuel mixes of renewables, perhaps some nuclear and either lots of wind (if one was a developer) or not much new wind (if one was an opponent to a wind farm development). These answers tended not to have any revolutionary rethinking of 'business-as-usual' large-scale generation model. Some people described the ideal future including heterogenic ownership and that some small-scale production should be part of the mix, but the main interest was describing just a fuel type change within the current market design.

"I wouldn't change that much, just small things that I've already mentioned… There could be many types of ownership, municipality owned, private developers… as long as the energy market works in a way that investments are done and profit can be made. I am a wind power developer, so obviously plenty of wind power, but that won't save the world alone but some kind of combination of technologies is needed" – Developer

"Nuclear could be the base power just fine, and we should dismantle all those tiny hydro plants and rehabilitate the rivers. And we should also support bioenergy at a farm scale." - Resident

The large-scale energy generation model is widely shared in the policy documents as well. European Union has energy efficiency regulation and goals, but they are more described as aspiration goals instead of binding targets such as renewable energy generation portion of electricity. Finland has also several other energy policy schemes and programs aiming to support for example domestic uptake of heat pumps, reducing obstacles for small-scale distributed generation, biofuels, farm scale energy efficiency and increasing the use of bioenergy as forestry industry biproduct (TEM 2016, p. 26-36). The main funding focus, however, goes by far to increasing large-scale generation.

Especially the policy makers with economist background present carbon trading as the ideal – and only needed – solution, loyal to their field. One describes how it is *"absurd to say carbon markets don't work"* and how the markets would be the best way to solve all energy policy issues:

"I think it would be better to leave all this for the market to decide. If we have an externality, such as climate change, we should let the market to solve that and not add single actions of limiting that or this. I am 100 % sure that if we have a good pricing for externalities, the market will solve itself…I don't think we can blame market mechanisms if we don't enable them. Like road charges, which were in the elections last round, if we move the taxation of cars to road charges, it would work for sure, but it feels politically impossible. This doesn't mean that road charges wouldn't work, but we have no political will to regulate them."

The belief in markets is very palpable in this quote, even when there is very little actual evidence of such market mechanisms working. The traffic related example here speaks in volumes: road charges have so far exclusively been implemented to reduce congestion or other air quality related issues (e.g. NOx) and while they have simulated to have reduced traffic in city centres on very specific times, it only has limited potential and only together with other strong public transportation policies to address traffic CO2 emissions (e.g. Cavallaro et al. 2018). Also, the same person talks how difficult it is to agree anything on an international level:

"*Often you hear that there are no solutions, but there are. Though not a single solution like ozone hole. But there is so much… procrastination. Not much has happened in the last ten years. I know since I've been in the international climate negotiations, and it is shockingly hard. Days fighting over little formalities, can't even get a principle resolution out... I'm not saying that international climate negotiations route is impossible but it looks very hard, I don't personally have very high hopes on that…"*

Yet, he is adamant that nothing besides global carbon trading shouldn't be needed in energy policy. He calls the global carbon market the 'first best option' but at the current state the ineffective carbon trading coupled with renewable energy targets and energy efficiency is perhaps "*7th or 8th best solution*". As he says, the reason why global carbon markets have not, and are unlikely to be, set up efficiently, is because it is politically so hard to agree upon. Hence it should seem likely that the market theory of carbon pricing can only work in a vacuum, not in real world. Yet the principle is so alluring to economists such as himself, that he still brings it up as the best solution.

While some criticise Finnish energy policy lacking ambition, since there is no talk of exporting energy, the export fantasies are much less defined and subdued compared to Australian 'energy super power' narrative. Some also mention technological fantasies and technologies that don't exist yet, such as modular nuclear plants, but these are not discussed as something to be seriously pursued. Few suggest solutions such as waste-to-energy, but mainly describe the future within ecological modernisation ethos: there are technological solutions that can help without having to impact consumption and current way of life per say.

Compared to State of Victoria, energy security is much more front of mind in the Finnish energy policy, and several of both energy professionals and lay people mention that the fuel mix and ownership structure are irrelevant compared to the need to be energy self-sufficient. One national energy policy maker describes how all fuels have good and bad parts – security and storage in coal, solar enabling all of us to be producers, wind is quick to build and is renewable. Markets should choose the technologies, in the guidance of the state, but the key thing is that the essential needs are available at all times:

"*Markets can decide where and what, but active policy, evidence-based, is needed to make sure it is going to the right direction. Demand can vary lots or there might a national crisis, and how we can secure basic needs in all circumstances, this is the number one thing for me." - Policymaker*

"No one solution, but it's a mix. Both some distributed energy would be good, and nuclear as good base power. But at the moment the problem in Finland is that third is imported, so we are not self-sufficient in energy generation… European electricity market, energy is freely moving and luckily there is no politics between countries on that at the moment. But

like that gas pipe, we might unfortunately go back to tighter times, so in that sense we need to keep investing in generation, like for example wind power in the past few years" - Town planner

A few years after this discussion, in 2022, Russian attack to Ukraine caused ripples in energy availability and prices globally. In Finland consumers have been told that they might not be able to warm up saunas if supply is tight in the winter – which to anyone knowing the culture means serious business. Solar and wind are much less vulnerable to geopolitics of cutting of gas, oil or coal from the buyers as Russia either cut the supply or the import partners did by themselves, which led to surge in international prices. While the availability of certain materials needed in solar and wind technologies might present future risks, the energy security has been seen increasingly important. This highlights the difference of RE, which is available everywhere compared to fossil fuels, but everyone in a market penetrated by fossil fuels is impacted of geopolitical implications (Bridge et al. 2015) because of how spot price works: the highest accepted bid determines the price for everyone. A grid running on wind, solar and water would on the other hand be vulnerable to wind, solar and water resources – which will be impacted unbeknown amount in the future by climate change – and possibly resources needed to build installations.

A minority of developers and policy makers described a much more ambitious world vision, that vary from strong ecological modernisation to green new deal kind of descriptions or even bordering a more energy democratic view.

"We need to get rid of fossil fuels, maybe not today, but 2030 should be doable. Heat pumps, demand response and getting people to participate, heat storage solutions, electric cars, and those sort of things. We need to ban new ICE cars, coal and peat, systematically drive them down. Period. If we just leave things like that to the market to naturally happen, what kind of politics is that? That's just a wish list. Guidance and control need to be consistent and strong."-Developer

What is common for the more visionary future descriptions, is the worry about climate change, sense of urgency and climate justice considerations.

"We are not pissing into our own cereal, but the cereal of the future generations. We will be fine, we can even fly to Thailand every year, no problem. But the next generations, they will not be thanking at all." – Developer

"I would start with equality first, in my opinion this whole system is very, very unfair, how small portion of population uses how big portion of energy. It can't be like this. We need to cut consumption in Western countries, and give change for countries with no

consumption, and of course with clean technologies… I would love to see completely renewable system." – Renewable energy advocacy employee

Community energy, while touted in academia in contexts such as energy democracy, isn't seen as big enough 'solution' to fit the demand, speed needed for transition or particularly interesting for policy makers. Aiming towards energy democracy might, as Marshall (2018, p. 131) points out, have a paradox on the timeline of climate action: "*transformation may only work and gain legitimacy with community involvement, but community involvement may dangerously slow things down*". Several interviewees, when I prompt about community energy and distributed energy, settle for a fairly neoliberal view: there has been work to dismantle some of the institutional obstacles for small scale generation, part of energy generation is in fact partly municipality owned legacy utilities, and there is no reason why citizen co-ownership models couldn't be done (while they basically are not). Like one of the key auction design policy makers say:

"Finland is a free country, and few a few companies like Lumituuli and Suvituuli [crowd funding, co-ownership that do have a few small projects built under the revenue certainty of the FiT system]*, so you can if you want to… In Denmark and Germany this was more in the focus… there must be many reasons why it has never been anything too big in Finland… often there are municipalities, co-operatives or even Fortum* [half state owned corporatised utility] *behind the ownership, though people don't probably know about it." – Policymaker*

The ones that do talk about distributed citizen or farm size production, mention the administrative barriers and the lack of support from the state. The grid, spot market and market rules have been designed for centralised generation, and while some of the institutionalised barriers have been dismantled recently, it has been slow and not particularly actively facilitated or promoted by the state. One town planner attributed this slowness to the power of large generators and gentailers who do not wish to add another competitor or reduction of demand for the grid:

"Probably these big energy companies opposed for a long time that it [distributed generation] can't come and it shouldn't be remoted. And perhaps taxation thing, state wouldn't have gotten taxes from the reduced electricity retail sales either…"

And another resident, who has come across institutional barriers to set up a farm-scale bioenergy plant:

"I think it's the big energy companies behind this… would be competition!"

No one explicitly describes their ideal future as a model that does not rely on electricity markets. There is only one strong criticism against unending growth logic of capitalism, and call for radical cutting of energy usage. Otherwise the model of current market is taken for granted

In the light of the imagined futures, constructing renewable energy under capitalist society, model and commodification process mapped in the next section is an obvious 'path' for development (Brenner & Theodore 2002). The imagination of what energy transition could look like in the minds of energy professionals in the field in majority seems to include only a few truly radical criticism of the current system. Everything from regulation to imagination seems to fit the reverse auction hegemonic ethos: the markets can solve the energy policy issues, with a little help from the state.

3. Commodification process of renewable energy and reverse auctions

As discussed earlier, in order for renewable energy to be built, it needs to be carefully constructed by the State as a commodity. Renewable energy, while enjoying the "free gifts" of nature by abundant and non-exhausting solar and wind as 'fuel', needs land, capital and institutional frameworks to be able to be built. This chapter discusses more in detail the obstacles and enabling policies in the Finnish case. In the literature review, these were organised as firstly markets, then enabling policies and space, price security for capital and finally a price discovery mechanism. They are discussed in similar order here. Only difference is that grid considerations are discussed first, as they are equally important in determining where renewable energy installations are located, but the context is simpler compared to the Victorian case.

Power of the grid

Similar to Australia, a single wind farm would not justify the build of a new interconnection from one region to another. State or transmission providers have no obligation to offer a connection point, which makes the grid connection consideration one of the most important early considerations for any new generation plan. Unlike the Australian east coast grid, an existing connection point or an offer for connection guarantees a reasonable grid access for the life of the project. In other words, connection agreements are not made with new generation if there is no capacity in the transmission line to join. This means that some areas that would have good resources, do not have developer interest or active projects due to lack of existing capacity to connect, but also that a grid connection does not pose a threat to capital's revenue in the future.

> *"Fingrid does really good work to trying to enable new generation and keep whole of Finland as one price region, but locally accessibility to grid is a big issue."*

The strongest grid lines are traditionally between cities, large forestry factories and large centralised generation units (mostly fairly close to the population centres) with only one main connection between densely populated south and sparse North Finland and export/import lines to Russia to east and to Scandinavia to west. Most of this grid investment has been made when the electricity system was not yet privatised, and the location makes it difficult for a more spatially dispersed wind power to connect to strong parts of the grid, since wind power is mainly developed in rural and regional areas. This legacy of existing locations serves by definition the old centralised units, and presents a form of 'carbon lock in' in the Finnish grid. Unlike in Australia, the transmission company Fingrid is state-owned and can make decision to build a new transmission line based on assessed need. For example, the new 'Metsälinja' was partly planned and built to enable the interest of wind resources to connect to the national grid. On the other hand, Northern Finland would have potential but very few projects are actually build, because the lack of grid capacity.

As a general principle, the Electricity Transmission Act guides that the cost of transmission network should be paid "*about 50/50 by the consumers and the producers*". In practice this means that generators pay a fee on every MWh produced to participate to the cost of transmission infrastructure together with consumers. Generators also pay any new infrastructure solely needed for their project, such as a short transmission line to the nearest substation and the cost of adding necessary hardware within the substation.

While Fingrid as the national grid provider is supportive of new renewable energy, which has been mainly wind power in Finland, the grid was still originally designed and built for large turbines with huge rotating masses. At the moment, the stability of the grid relies on this legacy, similar to Australia's east coast. Inertia and system strength demands come up and delay, add costs and complexity to any new wind or solar installation that relies on different type of frequency control. Renewable energy generator can be asked to compensate the lack of rotating mass, build an expensive "synchronous condenser", add other hardware or have part of their generation discarded. This institutionalised nature of grid system designed for machines been spun around with steam or water (whether the fuel is nuclear, coal, gas or hydro) presents another visible form of 'carbon lock in' (Unruh 2000) in the Finnish grid.

> *"It relies on frequency control, but now for example Tuuliwatti is building for that a battery and equipment. And we have very strict grid codes of what kind generators can you connect and on which terms" – Renewable energy advocacy employee*

From energy transition perspective, this legacy of carbon lock in is problematic because the lack of large spinning masses tends to be *framed* as a problem (e.g. Lassila 2022). There are several options, solutions and technical alternatives how a grid could operate from consumer perspective

without or with less rotating mass machines. Some of these solutions are more or less 'mature' – ready to be commercially adopted immediately – but it is important to note that the reason they may not be completely mature, is because of the current 'lock in' (Unruh 2000). They are not better or worse, just different, and because of the current system is developed for large spinning machines, that particular grid configuration is mature while other technologies are not. Now, when wind power is competitive against fossil fuels on price basis, this has become one of the main criticism points why more renewable energy shouldn't be added to the grid:

> *"Earlier the talk was that renewables are so, so expensive, and if you give them support agreements they destroy the market price because they don't need to care about the spot market price. Well, now we are in a stage that new wind farms are built without state agreements, and they do lower the electricity prices for everyone, then now the counter forces try to claim that there is premium electricity and then worse electricity." – Renewable energy advocacy employee*

The large utilities with legacy hydro, nuclear, biomass or fossil fuel machinery are slow to facilitate on their part the uptake of wind and solar with their completely different technology. As one of the town planners puts it, it is obvious that:

> *"The change is a big step. The one that produces the money in the old way, it obviously does not want to invest in new since at that phase it kind of like loses out there."*

A spot price market, such as in Finland, is supposed to incentivise new investment by high price signals, but it does not provide any certainty or stability – which is crucial for non-utility developers. Large utilities, or as they are often referred 'gentailers', are both receiving and paying the electricity spot price as they are both selling and buying. Utilities can therefore build new generation much easier with project funding or sometimes even on balance sheet, meaning they have all or most of the capital already, while any loans are against the whole company instead of a single project's performance. Whereas renewable energy developers which are only building projects for generation but are not retailers themselves, are much more exposed to the uncertainty of the spot price for every single project which are mainly done as independent 'project companies' facilitating selling a single project easily. Hence there is only very little evidence of investments made solely on spot price signals in the Finnish grid. All but one nuclear power plant, and all of the hydro power were built before spot price market and mainly by state or municipality owned utility companies. The only nuclear power plant that is built after the 90s, Olkiluoto 3, is jointly owned by large forestry industry companies (which get the electricity produced for LCOE price and use it themselves) and utility companies. The wind farms which cover most of the new generation in the grid besides the one new nuclear power plant, were first done by the revenue certainty secured by FiT and now by contracting PPAs or by utility companies themselves. In other words, the spot price does not seem to be drawing private capital without another instrument for

revenue certainty. There is also very little appetite for long-standing high prices for consumers. The spot price market is therefore hardly an independent perfectly working market without any interventions or energy policy needed by the state.

> *"The electricity market has never been completely market-led despite its name. And on frequent intervals a completely free competition market is requested, without subsidies, but that has never existed. And now when we are heading to markets starting to control consumption so that we have a price spike of 1500 e/MWh, they start crying that market is broken... If we want ideologically a pure market economy, it means variable prices and that sometimes you need to think whether you can put the lights on or not. If, on the other hand, we wand affordable electricity, or affordable and clean, which seems possible at the moment, you need market intervention and controlling tools. You can't just say that we have this goal and let the market do its job. It needs guidance" - Developer*

As he points out, the "freely functioning" electricity market does not mean cheap electricity prices for the consumer. It does not necessarily even mean particularly reliable electricity for consumers, since matching generation completely with consumption by definition means overbuilding capacity or having spare generators outside the spot market in 'stand by'. This is a very common problem in all electricity markets due to the nature of electricity as a commodity – it needs to be produced simultaneously than it is consumed – and most grids have some kind of tools to combat the inherent reliability issue. Similar to AEMO in Australia, Fingrid has opted for a separate "reserve market" and infrastructure outside the spot market (Fingrid 2024).

The key point is that although the concept of a spot price market aligns with the principles of free market economy and most interviewees express support for a market-led energy market, a fully market-driven electricity market does not meet society's expectations for affordable and reliable electricity. The electricity as a commodity is also a necessity, and subjecting it completely to commodification process, would (and is) only end up in introducing social protections (see Polanyi 2001[1994]). Any energy policy needs to find a way to consolidate the contradiction between society's needs and the ethos of free markets.

Constructing renewable energy auctions – policy creation process in a neoliberal context

As with the Victorian case, the policy creation needs to cater for political election cycle goals within the neoliberal market ethos. The state's main goal is to improve how the market works, not to be seen to intervene or disrupt it. The policy creation process itself is remarkably similar even though the design details and goals were very context specific (Brenner et al. 2010) Since the process was similar, it clearly reflected how states in neoliberal context are used to regulate and impact the markets, when they don't want to supply the services on their own. Similar to Australia,

the evidence gathered limited the imagination and scope to existing models. Also, the documentation, templates and language used reinforced the model which was familiar for the policymakers, developers and financiers making it easy for the industry and capital to engage with the process.

The policy of the reverse auction started with a problem and action needed. This was framed fairly pragmatically via national climate goals and current trajectory within European union legislation. No particularly ambitious goals of climate change action, energy democracy or other drastically different mode of governance, energy democracy or reduction of consumption can be found in the original assignment (see TEM 2015):

> *"TEM formed the working group, where we went through different state aid options, also the 0 option, and analysed which would be the best. It came to the conclusion that reverse auction is best. And pretty much based on that report, the legislation was drafted." - Policymaker*

This shows that the starting point in achieving the policy goal, in this case renewable energy percentual target, could be done by incentivising the market to deliver the investment needed, preferably within the current (energy) regulatory system. Private capital-led building, competitive within the existing market design, was the starting point, no other options are discussed in detail in any of the background reports, materials or submission rounds published around the Finnish auction or the previous FiT scheme. State-owned large generator did have several wind projects, but that was subjected to normal business decisions and investment strategies and subsequently at some point many projects were developed.

Policy team set up working groups and searched through different options. The possibilities of the design of the auction, and the choice of a reverse auction as a policy tool in the first place, were discussed in a 'invitation only' -working group set by the Ministry of Economic Affairs and Employment in November 2015, when it became clear that FiT capacity will be filled. At the time there were no market-based announced for renewable energy made, and at least the renewable energy industry associations were calling for some sort of continuity in governmental support. It was also not clear, how the goals of over 50 % renewables during 2020s and over 55 % energy self-sufficiency would be met. The continuation of FiT, at least at the level of 83.5 EUR/MWh, was seen politically impossible, since the FiT had become so publicly unpopular – which all the interviewees also unanimously pointed out. A working group with policymakers, technical and legal experts and industry associations was founded, and a background memo was published in May 2016 (see TEM 2016) followed by a submission round. In the working group, a tender process was deemed not only the only 'legal' option, but also more acceptable to avoid subsidies over the minimum needed amount. This background memo mainly included explanatory memorandum of the legislative changes needed for organising the reverse auction, which was subsequently the

model chosen for the support mechanism. In other words, the working group and the subsequent report were very influential to the subsequent parliamentary legislative process. In terms of focus on just the cheapest option that produces most generation easily from state perspective, one industry advocate notes that:

> *"We tried to advocate some leniency towards small generators, since the EU directive would have enabled that for local producers under 6 MW.. like for example continuous rounds with an option to come in with the highest accepted price… we could have gotten local projects in like that, which would have increased the acceptability. How the auction is now, let alone competitive without state help, it is very difficult for small generators to operate or develop now…" – Renewable energy advocacy employee*

In terms of the legislated minimum project size to participate (basically only large-scale projects could put a bid in), the working group did discuss this idea of having an extra capacity for smaller than the yearly minimum production limit. This however did not get included in the auction design or the legislation. One policymaker justified leaving out of small projects with the still fairly high public ownership of energy projects via municipal energy companies. In the next sentence though it was pointed out that "*whether or not people are aware of the public ownership, is a different question*". The fact that only fairly large wind farms placed bids in the auction does not necessarily mean that there were no other interests in renewable energy. For example, biogas in a farm-scale has had interest in Finland for years but the entry requirements, high bid bonds and strict generation commitments meant it was not tested in this auction, whether smaller scale farm or joint projects could succeed in an auction. The possible underproduction penalisation, which is problematic to combined heat and electricity (CHP) technology, and the continuously falling costs of onshore wind with a massive, permitted wind project pipeline, probably also contributed to the fact that no one else besides onshore wind developers even placed bids in this 'technology neutral' auction.

After the working group had finished its report, and auction was officially proposed as the preferred model, a consultation round was opened. The main purpose was to seek feedback on the concept of reverse auction and how to detail it to attract private capital while keeping the cost down. The most influential groups involved and participating in the design of the auction was arguably the industry advocacy groups, similar to Australia. The final terms reflected who was listened to and what kind of technology would likely succeed:

> *"Based on the end result, the Wind Power Association has been listened to, and clearly the Energy Industry Association as well." – Renewable energy advocacy employee*

Unlike in the Australian reverse auction, there was no negotiable parts in the contract or any other part of the mechanism. There was also no 'best and final offer' which can be used in auctions. The bid itself was easy to put in and used an existing electronic platform. All the developers I talked to

mention the process itself fairly easy. The turnaround was also relatively quick compared to the Victorian auction: within 4 months of deadline for the bids, the results were published. One policymaker attributes this firstly to the very simple 'scoring' of just price and also the clear instructions and electronic platform.

The bid was easy enough to place, which did not present a barrier of entry for smaller projects, but there was a minimum 800 MWh/year to participate. In practice, the competitiveness of price only and the very minimal support for price certainty, winning of community energy project or a small developer (which is much more common) would have been very unlikely. In practice larger corporations or developers backed by large investors were much more able to respond to the conditions placed for the participants. The auction also included bonds which for accepted bid were a few million euros. A developer comments on what kind of generator the design favours:

> *"Of course big bonds favour big organsations, that can't be helped, and financing terms favour big organisations as well, and the turbine manufacturers give better deals for big organisations, that's just how it goes…"*

Energy industry professional in a farm-scale bioenergy had been expecting the auction when that was talked about after FiT ending, but was disappointed that it "*excluded straight away all the small players*". Another developer views that of the winners of the auction "*it is not maybe that relevant what size the developer is but what kind of contacts are backing you*". The key thing was not perhaps the size of the project company or the Finnish subsidiary or developer but the institutional investor or strong financing background.

While large capital is very averse to revenue risk, small producers are that as well. When Germany transitioned from a FiT model to reverse auctions, the revenue uncertainty and competitive aspect impacted the small community projects much more compared to larger corporations (Grashof 2019). Similarly in Finland, the model of a price based reverse auction fits poorly to the certainty needed by smaller developers with no utility backing. For a smaller generator a CfD model would likely fit better than the premium model, which means that within EU the trend of community ownership is likely to decrease after the state aid conditions were changed.

> *"If we had a cfd, and I had an offer of 45 euros, I always get the 45. And yes if the electricity price were 55, I would have to reluctantly pay back 10 years, but I got the 45 I calculated with always. Then it would be easier for a small producer to estimate income than in this system." – Renewable energy advocacy employee*

She continues on European trends:

"Now when PPAs are becoming more common, let's say Google that has recently done PPAs in Finland and in Europe, are they going to contract with a large corporation with extensive track record or with 'Father, Son and Cousin Pty Ltd' who has two turbines in the paddock? So the big generators have this benefit of getting other revenue certainty, and with the market-led building we are seeing now, it of course preferences the bigger corporations. Unless the spot price jumps sky high and stays there".

In theory, small producers could have joined together for a bid, but that was not supported or wanted (i.e. community ownership is not important to the state). As one policymaker comments on the size of developers who won the auction:

"This come down to what is the goal of this? Do we want that the support is aimed at certain size businesses? It's problematic when state interventions have unpublished goals, they are like between the lines." - Policymaker

Uncertainty of revenue and price discovery (?)

The term revenue certainty is often referred to in the industry and by the developers and financiers, is risk. Investing or developing always includes an inherent risk – what if you don't get the permits? What if your turbines break earlier than you calculated? What if civil engineering makes a mistake in construction and the foundations aren't right? There are a lot of ways to 'mitigate' these risks, and a good project is often a project that has been 'derisked'. But if everything else goes right, what if you don't get the enough revenue to make a profit, or in the worst case, break even? Hence derisking the revenue, is extremely appealing to capital and the previous FiT was unprecedently popular.

Government contract, won from reverse auction, tend to be highly desirable for the developer due to the revenue certainty (Bryant & Webber 2024). There are industrial users that might be able to do the type of corporate PPAs that would give sufficient revenue certainty, especially the longevity would be important for financing. However, as one of the developers points out, many users and especially households cannot make direct contracts with generators that would enable new investments, since that would usually mean price certainty for at least 10 years:

"The problem is the longitude of the contract needed, because in practice it needs to be until the bank loans have been paid off. The consumer doesn't necessarily think in that long term, especially a private household, they can't be making a 10 or 12 year contract, they might move out from the area in that time."

As the developer continues, the situation is different with some industrial users who can sometimes make a long agreement if they are "*savvy*", and follow electricity markets or need green power for competitive advantage. There are some agreements and private tenders available, but in a situation with many projects permitted and only few large and stable enough users, they can just "*pick the cherries from the cake*". Another developer points out that there are only a handful of organisations that are able to do a PPA for long enough time to get project financing: for example many state-owned corporations tend to have a company policy preventing 10+ year contracts. From developer point of view, there would be much more need for long-term contracts than there is appetite from the consumers to offer those. The state is then seen as the main opportunity for filling this gap – if new renewable energy investment (by private developers) is wanted:

> "*But the point is that the demand and supply meets, that electricity consumers were ready to commit for a long enough time, and hence secure that cheap electricity. These reverse auctions have the point that they offer long contracts, which makes the whole thing easier. Of course, if there are not enough private contracts, then the state should help and the most important question is whether we want the renewable energy or not"*

A government contract or a PPA is especially important for a developer who needs outside financing. A utility company or an institutional investor who has either enough other assets to guarantee financing or enough capital to realise new investments themselves, can make a decision to rely on electricity prices as an income stream, for which a "project financed" project is unlikely to get financing from a bank (see e.g Bryant & Webber 2024). At the time of discussion, there were a few corporate PPAs being announced but perhaps more utility company own projects were getting off the ground without any new government contracts or support mechanisms in the horizon:

> *"A PPA has its benefits, since then you can get money from the bank, but on the other hand, if the owner has enough money in the pocket, they can realise these projects with own capital and sell the electricity merchant basis, which is completely possible for such an owner. Of course everyone thinks how to get the best profit for their investment, and PPAs are interesting option there as well."*

While revenue certainty is extremely important for private capital looking to secure an income and a profit, the support premium in the Finnish reverse auctions scheme offered very low revenue security compared to the Victorian auction scheme or to the previous FiT scheme. Interestingly, this does not seem to have been the intent. There are two reasons for that conclusion. Firstly, there is a long WACC (weighted average cost of capital) discussion in the working group report, indicating that the state meant to provide support for debt funding. In general, in infrastructure investment, a capital invested tends to always have higher profit expectation compared to a bank loan. Calculation presented is about a project that is deemed with low risk and has majority of debt

funding, versus a project with 50 / 50 debt and own capital (p. 58). This change alone, in theory, means a whooping 20 euros/MWh difference to revenue needed. If the LCOE is currently between 40 and 55 euros /MWh, 20 euros/MWh represents a huge additional burden to the investment decision. Secondly, during the bill drafting phase, in a hearing for the state budget committee, the chair of the working group presented calculations of expected costs to the state from the reverse auction scheme. In these calculations the assumed premium was somewhere between 20–30 euros/MWh (picture 11). The real average of bids awarded was 2.52 euros/MWh as shown in the auction results event (picture 12). The assumed bids for premiums were10 fold compared to what was actually awarded. In other words, the support was so much lower than expected that it is unlikely it helped to achieve project funding.

Arvio preemiojärjestelmän kokonaiskustannuksista (v 2020–2035)

	Preemio (€/MWh)						
Sähkön keski-määräinen markkinahinta (€/MWh)	10	15	20	25	30	35	40
30	240	360	480	600	720	840	960
35	120	240	360	480	600	720	840
40	0	120	240	360	480	600	720
45	0	0	120	240	360	480	600
50	0	0	0	120	240	360	480
55	0	0	0	0	120	240	360
60	0	0	0	0	0	120	240

milj. EUR		Preemio (EUR/MWh) ja vuosituotanto TWh							
		2,52	10	15	20	25	30	35	40
		1,36	1,4	1,4	1,4	1,4	1,4	1,4	1,4
Sähkön keskimääräinen markkinahinta, EUR MWh	30	41	168	252	336	420	504	588	672
	35	0	84	168	252	336	420	504	588
	40	0	0	84	168	252	336	420	504
	45	0	0	0	84	168	252	336	420
	50	0	0	0	0	84	168	252	336
	55	0	0	0	0	0	84	168	252
	60	0	0	0	0	0	0	84	168

Pictures 11 and 12. Estimates on the state costs of the reverse auction on the left, and the actual winning bids calculation on the right (Finnish Parliament 2016, Finnish Energy Authority 2018).

No projects could rely on this scheme for revenue certainty. This does not mean that revenue security was not important anymore or that LCOE had dropped that radically. Instead, all the winning projects were realised either on balance sheet, private PPA or financing via the consumption itself. Since the revenue security for all the projects was acquired other ways, the *additionality* of the Finnish auction scheme is uncertain. The question(ing) of *additionality,* which is generally seen as desirable attribute for a support mechanisms (e.g. Greiner & Michaelowa 2003), of the whole policy is a key finding here. From a project developer's point of view the reverse auction design does not seem to offer much for the winning projects. It offers hardly any certainty for financing at the levels of accepted bids, since it is not tied to the spot prices of the production nor is it a fixed price, so it offers no guaranteed income flow. If the average electricity prices were under 30 EUR/MWh long periods of time "*a few euros per megawatt won't go very far*" as one of the interviewed project developers said. Government does not offer contract for purchasing the electricity, no land-rights, nor better position in permitting or grid connection. It still includes a set of responsibilities, a fixed deadline and possibility to have to pay the government underproduction compensation – even in the case no support had been received in the monitoring period. The amount of support per project is very modest even in the "best case scenario" when electricity price is low. This was the key criticism from the developer side towards the auction.

One describes that if any future auctions were organised they shouldn't have the same "pitfall" of when electricity prices go under 30 e/MWh, it creates a totally uncontrollable financial risk for the generator. The developer continues by describing how a two-way CfD might be the fairest option, since then the state could claw money back in case electricity prices are high. It would still leave the risk of generation to the operator who is better placed to handle that than spot price uncertainty.

Why did the winning projects then bid so little that it offered almost nothing? All of the winning projects in fact have either published making a separate PPA since the release of the auction results, or they are a utility company, or owned by one. In other words, from financing perspective the winning projects would have already had to make sense before and without the auction. One of the developers describes their (winning) project:

> *"For this project we had actually already made a principal decision earlier that it will be realised one way or the other. We just waited a little for the auction before signing any purchase orders so we could participate... No PPA was signed or official decision was made, but the owner of the company had resources to realise."*

Similarly:

> *"Our view of the auction is a little bit like it has no meaning for our investment decision"*

Another developer described how the winning bid was not even included in the internal financial model:

> *"The bid was so low, that when we last time checked the financing calculations, nothing of the premium was mentioned… I was like hey, what about the bid, have we calculated, and they said that in principle yes, but since our spot price estimates are over that, we don't need to add it in… I've seen the calculation so we can realise with the price we have said, but if interest rate jumps let's say to 5 %, then it's over"*

While the Finnish premium ended up offering no price certainty, the developers described a few ways the premium of the kind could be helpful. One developer describes the only way he could see the premium being helpful for the financing of a project:

> *"If the bank has calculated so called derisked electricity price which they have guessed from historical data, then this goes on top, and then it might creep over the bank excel sheet, that we might get funding. All little things can help if it's a close call."*

Another describes:

"And I assume since the bids were so small, that many had the idea that they can do the project without anything. But if you even get one euro, that's a good thing. You can also think that it's away from your competition. A big player could have cleaned the whole table with just one 0 bid."

There is a set of responsibilities, mainly aimed at securing the calculated amount of renewable energy production. The mechanism include a under production compensation in case of much lower electricity generation than indicated in the bid, a date by which the project needs to be generating power and deposits when accepted to the scheme. These are all fairly common in auctions around the world and are designed to stop bids with no intent to build or low likelihood of getting built even if they were to succeed in the auction.

"In the Energy Authority event we had the winners all in, and they congratulated the winners, and at some point, I though… wait a minute, are these winners or not? The vibe seemed a bit that there's hefty sanctions and responsibilities relating to the auction, including under protection compensations and such. But I'm sure everyone has thought carefully before placing their bids."

"My view is that not sure what the benefit for the auction for us is, many restrictions but no idea whether we'll get anything. If electricity price sinks, sure we get quickly something butt the couple euros per MWh will not save anything, perhaps just softens hitting the bottom a little bit."

In general, there might have been bigger expectations for the auction than actually occured. Projects in strong position were already thinking of different models. From the auction results itself, one can only determine that the strong projects are basically competitive in the market without support. It tells little about the actual LCOE of onshore wind or competitiveness with spot price alone. The press release of cheapness in that sense is not to make conclusions about the industry itself:

"Now some people have made the conclusion that the cost of onshore wind is completely competitive. This is a wrong conclusion. There is still that large volume of bids over 10 euros/MWh, that won't be realised without support. If we now see the low hanging fruits being built, it does not automatically mean that other capacity is cheap as well. This is a dangerous assumption that all onshore wind is now competitive, we might notice in 5 years that the new generation addition has been quite low" -Policymaker

It is important to highlight, that the timing of the auction was when corporate PPAs and other "market led" mechanisms were starting to take place. While before the auction, vast majority were only FiT supported (everything besides old small turbines built before 2005). In 2023 Finnish

Wind Power Association estimated that more than half of Finnish wind power capacity was already outside all subsidies (figure 9) built with variety of different financing models: 15 percent owned by so called Mankala companies (a model used to utilise an asset at cost and transferring any taxes to shareholder companies), 7 percent is owned by a large electricity user, 53 percent were under a some kind of corporate or private PPA arrangement and 26 percent operated merchant basis, (Mikkonen 2023).

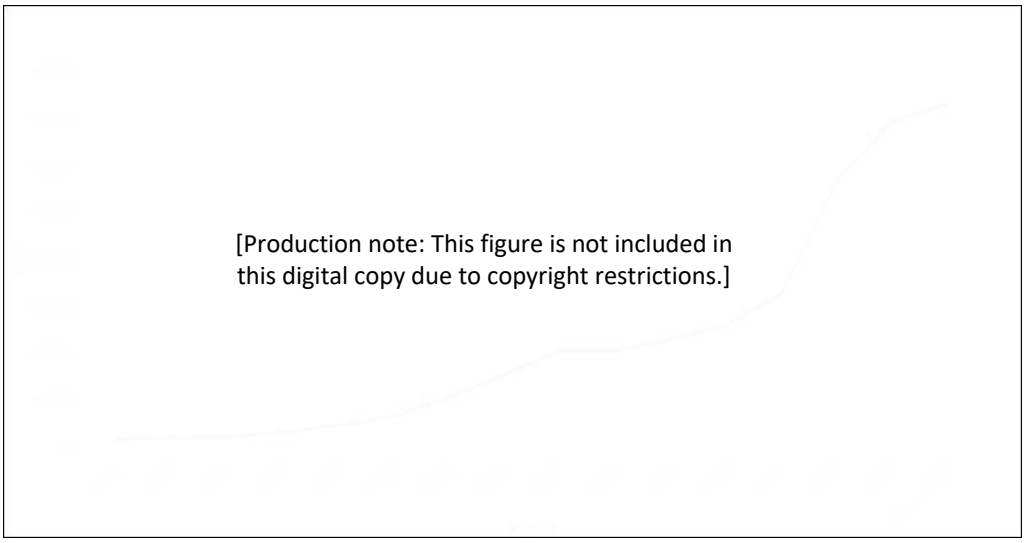


Figure 9. The cumulative build-up of wind power in Finland. The previous FiT started in 2011 and ended in 2016. The auction projects would be built between 2019 – 2021 and the rest is corporate PPAs or utilities (Mikkonen 2023).

The design of the reverse auction was to avoid the large spot price risk for the state. State also did not invest themselves or really even decide where new generation is best placed – this is left for the market and to the general planning assessment framework. The lure of avoiding over-support, like in the previous FiT where state set the support price, was the key motivation of choosing a reverse auction. The details of the auction as a premium were not clear to the developers at the time FiT ended and hence the trust of an auction coming – even if it didn't end up being the more common CfD model – had value. Corporate PPAs and maturing of the technology to be interesting for utilities as generation assets just happened to coincide with the auction in a market that also had plenty of interconnected capacity to absorb any variability or reliability concerns.

From state perspective, when the main goal was the cheapness of new renewable energy installations, the auction was a success. The 'price discovery' in this case was viewed as a positive surprise - even though it did not really reflect the generation cost level or revenue security needed in general. One policymaker describes the state perspective of the success of the auction:

> *"This is the core, why we have a reverse auction. The question is only about that, when we give out subsidies, that who does the decision how much to pay out. Before we had on*

average 49 euros/MWh, but now like 0.7-0.8 euros, that is an obscenely big change. We changed the dot place by two."

"Gaming" with prices and speculative bids are common in auctions in general – and can lead to low realization rates. In Finland, all the projects were built (as they did not rely on state for revenue certainty), but that is not always the case. As one of the developers point out:

"Like this Spanish example, pay as cleared, everyone gets the highest accepted bid. Then everyone had put in 0 or minus and thought that it'll be higher. Well it wasn't. It produced great headlines that no state support is needed, but it ended up that no one built anything."

4. Policy transfer and learning process

Renewable energy commodification process, models of development and supply chains are all freely transferred around the globe as a neoliberal policy 'template' (see Brenner et al. 2010). Similarly, details of support mechanisms and state policy tool are transferred and copied from other contexts to fit the current need and goals of the state. Reverse auctions are one example of how a policy tool has become more and more popular by learning from other jurisdictions (IRENA 2019).

In electricity space, policy transfer and researching perceived peers as evidence for models to introduce has been very common for several decades. The Finnish background document of the reverse auction Act has a whole section dedicated to different reverse auction designs used in Europe. Different support mechanisms were discussed in the working group but reverse auction was quickly chosen as the model of further exploration based on experiences from other contexts, which touted the superiority of competition to achieve low cost schemes for the state. I wasn't personally part of the Finnish scheme design but having worked myself in New South Wales (Australia) in a team creating an auction scheme, the experiences from other jurisdictions have immense value as evidence and every little design detail (e.g. indexing, premium vs sliding premium, bid bonds) is likely to be studied by using other contexts. Tendering is so common in privatised states preferring to 'steer not row' (Peters 2011) that there is no shortness of examples to draw from. This in turn guides the policy work towards models that have been done instead of imaging what could be done.

Several of the people who were involved in the reverse auction policy creation and background discussions describe examples from other countries and how the experiences were either something to copy or something to avoid. For example, the close neighbour Sweden was used as a cautionary example of why a certificate system should not be adopted to Finland:

"Sweden has bad examples of a certificate system, how it is not controlled how much gets built, and then the new capacity impacts the prices of old, which then drives them to bankruptcies."

A policy maker describes the working group and drafting of Bill as a time when she and the rest of her team would check several times on specific details from other contexts. They also looked into a European Union funded AURES (2016) project and interviewed some researchers there. AURES researched different designs and the political goal of keeping the price down but delivering renewables, which was the prioritised goal in the design. The danger for adding other criteria, the price starts to "*creep up again*", was one of the main reasons why nothing else was considered. The policy team had examples of every other detail of the design, besides the under and over production exclusion/sanctions, which were their own invention based on underperforming experiences from other areas. However, most of the design details were based on experiences from other contexts. For example, the bid bonds (a deposit the bidder pays to commit to building the project if chosen) were introduced to the policy based on other contexts:

"There was a guy whose whole job was to find out about other auctions and support mechanisms around the world, and he had all the horror stories of how there were cases of bid bonds of only a few thousand dollars. So then the auction was bided full of trash, just out of spite and preventing competitors getting support." – Member of the working group

Besides using the experiences and tactics from other jurisdictions in crafting the design of the Finnish reverse auction policy, the policy team is also presenting the Finnish reverse auction to other (European) countries which are considering a renewable energy auction. A policymaker from the Finnish Energy Authority describes how they had visitors and questions from different EU countries. Just recently before the interview they received a visit from Estonia, at an early stage of detailed design, but with a principle decision of an auction model to be used:

"We had a delegation from Estonia here, they were organising a reverse auction in two years. They were pretty in a daze when they left, we gave them all the little details [laughing]. *There were dozens of things they hadn't thought about yet. Since we don't have new rounds ahead, we thought we'll help them out and they can take our system and modify it how they want."*

Considerations of how the financing of renewable energy support systems should be handled also use international examples. While the FiT was largely criticized for being too expensive for the taxpayer, it was still a better option than visibly more expensive electricity bills for consumer, such as in Germany where subsidies are a line item in an electricity bill. Hence the end user is constantly

reminded visibly how much supporting renewable energy investment costs. Hence in Finland the policy costs are mainly financed from the state general budget, not passed through to the electricity bills. The same principle was used for the reverse auction as well as FiT. As one of the policy makers describes how they try to secure the general acceptability of energy policy:

> *"In Finland the electricity bill is quite reasonable compared to many other countries, because there is no subsidies or gabling in it, just the tax and reliability reserve fee, that's it."*

While there are no new reverse auction rounds planned at the moment, the policy team was still very interested in following what is happening in other countries, and new ideas that could work in their own context. For example, one policy maker describes a model that has not so far been discussed in Finland, but could potentially be interesting if the state would mainly want to provide underwriting instead of a direct support mechanism like a reverse auction:

> *"Norway gives out these PPA counterparty guarantees. It is very different instrument but very interesting idea. Usually, projects need external funding, and the bank will check who the buyer is. See, PPA has the problem that if the buyer is not reliable from the bank perspective, the PPA is worth nothing in financing. The bank will try to calculate what the electricity price would be in 12 years or 29 years, if the buyer would disappear. So in this case, the state comes in and offers a guarantee for the PPA, the state would then inherit the contract if the buyer goes bankrupt."*

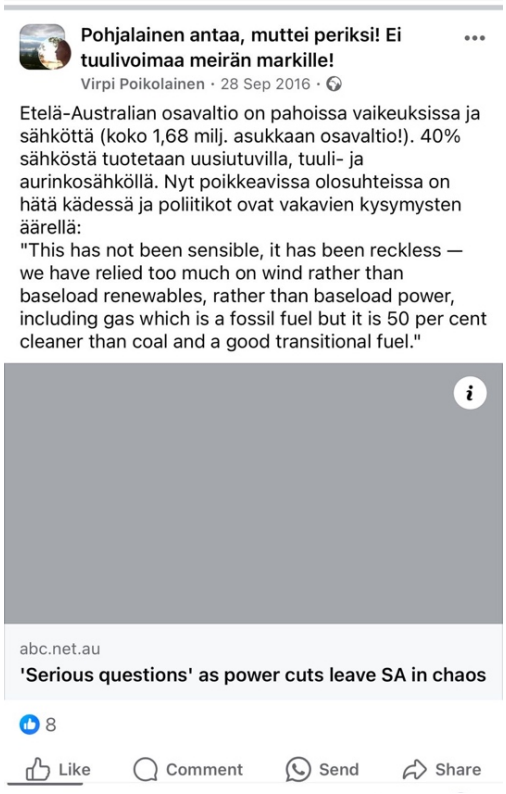
As Bryant and Webber (2024) say, state action is increasingly oriented towards leveraging and derisking climate investment. This in general is where the expectation of state schemes is shifting towards, and the state's job is increasingly try to finetune design details to achieve this with as little as possible state direct involvement.

Opposition networks

Not only does the reverse auction as a model and the details of the scheme represent transnational learning, also the opposition of renewable energy projects has some interesting tactics to present evidence of other projects or countries. Social media allows the connectiveness to be global (Munk 2014), and it is very common in the Finnish wind power opposition social media pages to link examples from other countries and projects. While I was doing my research I joined several open Facebook groups designed to oppose a single project, unify regional opposition or oppose all renewable energy. This is not a systematic social media study, so no firm conclusions should be made, but I observed the discussion from 2018 in addition of the years spent as a project developer which included being aware of what was written about my projects. One of the typical strategies in these opposition focused social media pages was to link publications from other context, usually

from sources that also oppose renewable energy to show how wind power was already banned in some other jurisdiction, how other areas have observed negative impacts or tips which tactics to use. An industry association representative describes the same phenomenon in her interview:

> *"All information spread so fast, that those who oppose wind farm use other places to argument. For example, in Australia wind farms have been banned because this and that. Or US has noticed something horrific. And it is awfully hard finding out what actually had happened, and usually it is that it wasn't quite true but skewed somehow."*



Pictures 13 and 14. Examples of Australia in Finnish social media opposing wind farms. First from StopTheseThings, which tends to spread fossil fuel funded content (Walker 2023) and second of Josh Frydenberg blaming renewables for SA blackout. First post claims that in Germany and Australia environmentalists are opposing renewable energy, and second that South Australian politicians have realised that 40 % is too high renewable energy portion. Neither of these linked "news" present accurate or balanced information.

One of the town planners in a municipality with several projects built in 2000s and still active new developments describes that social media discussions around wind power impacts is very common and comes across in his work constantly:

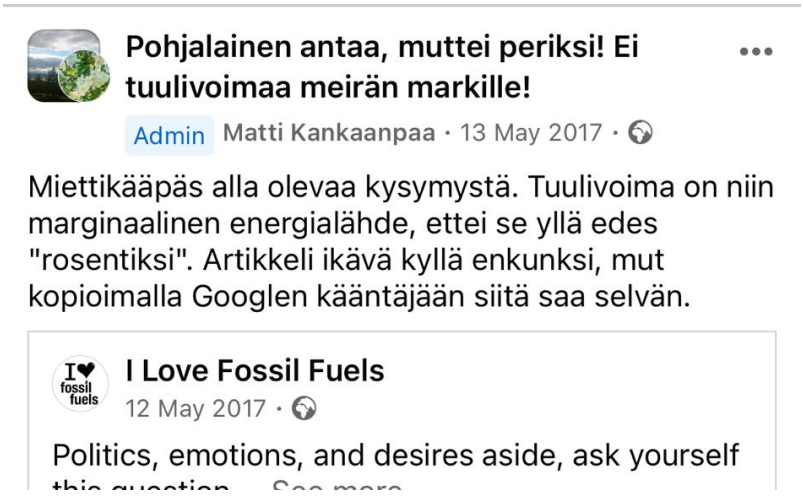
> *"Today social media is big and important channel for us, and for some so important that it dominates forming of opinions based on what's written here."*

He thinks the only way to balance the information on social media platforms is to have as much as possible opportunities for "low threshold questions, preferably in person".

In Finland the 'Wind power citizen association' [Tuulivoiman kansalaisyhdistys] is the leading body of opposing wind power development. Besides their own website and very active social media presence, the representatives of the association tend to travel to any public hearings relating to land use planning processes and environmental impact assessment. Two state planning officer described the dissemination of materials and an example of one environmental impact assessment public event aimed at local residents:

> *"Planning officer 1: "when the wind power citizen association was founded, they got their own website that has plenty of information for opponents, which they use. And we had a public hearing on a project in Vaala and there were someone all the way from Kurikka opposing.*
> *Planning officer 2: Yes, the association activists are all around Finland.*
> *Planning officer 1: They go around public events.*
> *Planning officer 2: And sometimes they organise their own events prior to the official public events organised by us or the local government."*

Unlike in Australia, where Stop These Things website is the leading opposition website and is very opaque about its content producers, financials and contact information, the Finnish opposition association at least has contact information on the webpage. While financing sources are not revealed, some of the content shared is from fossil fuel financed sources, more or less obviously:



Picture 15. A link from another opposition group labelled "I love fossil fuels", which is the Facebook page for fossil fuel funded think-tank called 'Center for Industrial Progress'. The person linking the article presents no source criticism on the anti-wind farm and climate denialist views.

5. Impacts, local community concerns

As for local opposition groups and local resident, the experiences vary from no complaints to thinking the wind industry only has bad things to offer. Just the fact that a project had been selected to the reverse auction scheme, and hence did not represent the taxpayer a potentially high financial liability, did not lead to conflict-free situation. Project development is a lengthy process, especially in wind power, which was the only technology participating in the auction scheme, and the projects had been started much before the auction scheme was even talked about. The individual issues raised were largely recognisable from social acceptability literature: place attachment, landscape, trust, distributional and procedural justice issues, health concerns of themselves, their families and their communities and negative impacts to the local ecology. The power and resource imbalance between companies and residents was not lost upon people not happy with the projects (re-)industrialising their area for Helsinki. As a town planner points out, the industrialised farming and land clearing has happened long enough ago that no one remembers it anymore. Wind power projects instead:

> ”*For these kind of rural areas, it can be the first large land use change in living memory. It is only natural to protect the landscape they are used to.” – Town planner*

The importance of local acceptability was mentioned by several developers and industry associations:

> *“Local acceptability, how do you get the dialogue with locals into a level that it is actually accepted… we don’t expect anything else to be 100 % supported, so I don’t mean that, but that majority of people would feel that it has been planned and built fairly. So you can live with it. And because municipalities decide on their land use, you won’t get the project up, if the municipality doesn’t want it” – Renewable energy advocacy employee*

In some cases, there was deep distrust for the industry, the companies and their motives and the consultants preparing environmental assessments (see Howe 2019, p. 44). Much of the experiences and facts presented to me were either from social media groups (or shared there), from technology specific opposition websites but also from personal experience or people living in the area.

As in State of Victoria, very few people declare of being anti-renewables or climate denialist. It is much more common to comment on the intermittency of wind power, the expensiveness of the old FiT or stating that the project are in the wrong place and should be “somewhere else”. For example, when offshore wind was still being developed, many argued it should be onshore. And likewise for onshore projects that it should be offshore.

Similarly either further away from houses, or closer to Helsinki (=consumption, or perhaps, the culprits of needing wind power to start with), are common arguments. Especially anti-windfarm webpages and social media were inundated with health concerns, noise issues, or other negative experiences, which are often from networks of perceived peers (see previous aspect). Similar to State of Victoria, most installations are located in agricultural areas, near small rural towns. These sites of primitive accumulation are often contested as people push back against the commodification of their local ecology (McCarthy 2015) and call for social protection against the perceived threat to the area (Polanyi 2001 [1994]). None of the reverse auction projects were located within similar fiercely contested and divided community as in the town of Mortlake, but there were several examples where concentrated developments had people feeling that it was 'enough' already. The local council gives out the permits, gets the property tax and organises most of welfare services – and tend to be always struggling for enough money to provide for those services – so in that sense the dynamic of benefits and negative impacts is more nuanced than in State of Victoria.

Place attachment: Visual impacts and future opportunities

The rural areas, in which most of new renewable energy proposals are located, are often experiencing decline in population and aging population. There are a few exceptions, but the pinch of keeping the rural local governments viable is common in Finland. There are differences in practices of different developers and project impacts, but at the end of the day for a municipality struggling with decline or low hope of other industry growth aspects can easily prioritise the property tax of renewable energy projects:

> *"There is no difference from the municipality point of view, you get the same property tax regardless. Which is what interests the municipality the most. Municipalities need to be able to increase income since the expenses have been combed through so many times, all the icebergs have been cut ages ago, there's only small things left." – Town planner*

For many, the changing of the landscape with renewable energy installations, is seen as 'destruction', and it was common for the opposers to talk about 'ruining' the landscape. A state planning officer describes their experience, based on two decades of wind farm planning, how subjective the question of impacts to a landscape is:

> *"Very typical for these is that people see these visual things quite differently. For some it is very clear that can't be visible at all, and for others the landscape is viewed differently, and impact is not seen as disturbing."*

The landscape impacts and the lure of rural areas are often seen as opposing each other. People living in rural areas report that they live further away from services for the peace and quiet, rural

or forested landscapes and in general, attachment to the specific place. The view of the future can therefore be contested by the opportunities brought by a renewable energy development. On the other hand, the property tax income helps the local government to survive financially, keep schools open and contributing to health care. On the other hand wind farms with chaning landscapes have been blamed to drive away families with young children, which is the desperately valuable component for viable communities and the future. Holiday houses owners can also fiercely oppose any change to the beloved familiar landscape (Janhunen 2018). A developer recounted that in his experience, the visual impact is the biggest complain, but it may change with future generations:

> *"Turbine just is big and it is visible. But I think time will take care of that as they become more common, and next generations are more climate aware. For them what is important is not if there is something in the landscape but whether electricity is produced with a wind farm versus fossil fuels. The value conversation will be completely different to older generations."*

This highlights the framing of each side: opponents feel that they are preserving the local ecology and landscape for future generations, and the developers feel that the future generations will rather value seeing that energy is not produced by fossil fuels. These are very differing viewpoints but both sides see themselves fighting for the future.

The role of local government, trust and procedural justice & fairness

In other contexts it is often noted that legislation is "seemingly ineffectual" and "does not appropriately cover what rural towns need" (Sherval et al. 2018, p.101). Similarly, Askland et al. (2016, p.8) point out that in their Australian coal mining study that many policies adopted in metropolitan areas can have severe consequences for rural towns without sufficient testing or consultation.

In Finland the situation is somewhat different to State of Victoria. While the renewable energy targets are ultimately forged in even further than the capital of Finland, in the parliament for the European Union, the important difference is that the land use process is local government controlled. Hence the decision making is much more localised, and the procedural justice and fairness issues present somewhat differently compared to the State of Victoria. The city placed renewable energy targets and proposals in rural areas instead in cities may be often criticised, but ultimately in Finland, all detailed land use plans enabling building are decided by the local governments. It is often referred as "land use monopoly" and is one of the most significant independent authorities given to councils in Finland (Hovila 2013, p. 9)

Similar to State of Victoria, the mistrust and experienced neglect of the metropolitan decision-

makers were fairly common in all of the rural areas. This is more obvious in the guidelines and support policies for renewable energy than in the land use planning and permitting process. For example, one of the state planning officers describes the previous and speculates the future national guidelines and research on low frequency noise issues, which was constantly debated at the time of the interview:

> *"They'll* [citizens] *say that it is inadequate if the results don't line up with their own perceptions… Or they see it in a way that the metropolitan government wants that wind power projects are build, which is of course true, so the political will is clearly pro wind power and hence they* [rural residents*] believe that government will only release studies that support that."*

Just the fact that the national government in general supports new wind power, does not oblige the local councils to give permits to a specific project. The role of local government is strong which seems, to some extent, reduce the similar procedural justice arguments of dismissal of local views which were common in State of Victoria, where the State planning department and Minister grant permits. The local decision making process was seen, however, political by the local residents, project developers and town planners. While there are several checks and balances of fair treatment and adequate assessment, ultimately the municipality's democratically chosen representatives, often only a few and rarely land use professionals of any kind, have the right to approve or deny any land use plan. As one of the municipality employees, a town planner, points out: *"Political decisions are political, not objective."*

State planning officers are used to seeing sometimes somewhat inconsistent decision making from local governments.

> *"First municipality approved it, and then a few months later rejected by one vote. There is lot of local opposition about landscape and amenity, they are not easy decisions and there aren't necessarily objective measurement tools."*

This can give procedural opportunities and access to decisionmakers for the opposition. The more organised any local opposition is, the more systematic political lobbying tends to be as well, especially on a local level. In a small rural municipality, political capital can be gained by opposing large-scale renewable energy proposals.

> *"There were a lot of attempts to influence, and the local representatives are in a pickle. Some of the representatives are opposing as well and they can organise the opposition as well. There is one elected member in Vaala who at least profiles like that."*

Residents in general tend to be in favour of local decision making at least when it comes to big energy projects such as wind power. For example, one resident comments the land use decision making process from wind power perspective:

> *"The municipality is a good independent decision maker for what is wanted in that municipality. Some municipalities have decided that they don't want any wind power in their area. Then those who oppose can consider moving to those municipalities if they feel they must be away from all projects. Finland should have areas that there are no wind farms built."*

Many describes the local sentiment as shifting between pro and against wind development. When too much land given to the projects, the resistance tends to ramp up as local residents push back against the commodification of their local environment (Polanyi 2001 [1944]). One resident describes the situation:

> *"It has changed over time, in the beginning when it was coming, it felt like only a few are against. Then at some point, there were much more opposition, it felt like no one wants it, and even landowners with contracts would have liked to cancel them. I guess there was pressure from the area, like if neighbour was against it. And now again, when the project nearest to the village started, it has been much more positive."*

One of the municipalities with several built and planned projects describes the timely experience over 20 years as "wave movement".

> *"We had quite a few projects in 2010s, and critical voices were constantly growing. We had of course already finished the easier and better areas where houses are quite far. But it is also a wave movement, there were a few cases nearby and in the media, and it clearly sparked negative discussion for a while."*

An industry association professional describes that the developers have in general improved their practices, which has also increased the sense of procedural justice and opportunities for the locals to voice their concerns:

> *"It has cleaned up a lot, how the developers talk and behave. They say what they are planning and if there is no big issues, then maybe we could put that many turbines, but it is still under consideration. So there's a lot more humility and also they organise a lot of extra opportunities to discuss with people."*

Most projects still struggle with issues relating to trust, especially when it comes to noise impacts and visual impacts. All projects are required to do noise modelling, photo montages and visual assessments, and even though especially on noise there are strict regulations, the developers I

talked to reported that almost every project receives an appeal nowadays, often mentioning noise and visual impacts. While lodging an appeal is very cheap and easy in Finland, and basically open to any organisation and citizen, succeeding in overturning a land use plan after its been approved by the municipality is fairly unlikely. For example, between 2016 and 2021 only 18 % of appeals ended up in any kind of change to a wind farm land use plan, while over 80 % of appeals were overturned or left unexamined because the lodger of the appeal did not have the right to appeal on the decision in question, or the timing or appeal process were not followed (Pantsu 2021). The fact that almost all projects end up in the appeal process is revealing that while local level procedural justice is perceived relatively positively, adhering to national noise level regulations or visual impact assessment guidelines does not guarantee trust from the locals that the local negative impacts are on an 'acceptable' level.

Benefit sharing – distributional justice and changing expectations

The Finnish auction did not include any consideration of assessing benefit sharing or other distributional justice issues. Arguably the local government has to be in favour of the project given the auction entry requirements included legal force of all permits, of which many are granted by the local municipality. There is however a difference of the norm compared to State of Victoria. In State of Victoria a community yearly fund is expected at minimum on top of landowner payments and possible council rates, but in Finland the standard is much lower if there even is a community fund. Local benefits of a wind farm in general include property tax, landowner income and general activity (mainly indirect employment is advertised by the developers as a local benefit in addition to the property tax).

> *"I have a feeling, that especially during construction and civil works, there is an impact. The civil works are mainly local operators, maybe sometimes concreting as well. When it goes to turbines, then there is often no skilful labour in the municipality." -Town planner*

Especially for gaining permits – from municipality – the property tax is the main attractor and tangible benefit. The property tax legislation in Finland defines that the local government, municipality, collects the property tax and gets to use as it sees fit. Every house with a foundation attracts a yearly property tax, which is calculated by a small proportion of the value of the property minus age reduction. In a sparsely populated rural municipality such as Karijoki or Pyhäjoki (two of the locations of winning projects) a typical house might attract a yearly property tax of 20 to 100 euros, whereas each wind turbine is about 10,000 – 30,000 euros per year. The council income per turbine is in other words comparable to landowner rental income. All of the developers I talked to, mentioned the property tax as the main motivator for the municipalities to launch the land use planning for wind turbine areas:

"Especially the property tax, it does open doors. And the fact that it is not subsidised anymore, I have had people say that they used to oppose, but now when we get the property tax and there are no subsidies, I am very much for"

Property tax is very appealing for the local government, and forms the somewhat better basis of local legitimacy compared to the Australian case. It has nothing to do with the auction scheme itself, but it is a feature of all utility-scale energy development in Finland. This property tax has been used for several decades to get the (often struggling) rural councils on board with large energy installations, whether wind, hydro, nuclear or more recently, solar. The benefit of not having this income tied to the auction scheme, is that it is an established state regime and hence impacts the legitimacy on a broader level, not ad hoc. Also, very few residents in State of Victoria or Finland knew that much about the reverse auction, besides a vague idea of state having had a tender of some kind, and hence a benefit tied to an auction scheme itself, is perhaps less likely to be known to the wider public and therefore to have a positive impact on local legitimacy of installations.

The lack of subsidies is seen as more important than asking about local benefits or benefit sharing – which is not even an expectation in Finland. The perception that all wind power projects demand taxpayer money comes up in every project the developers told in 2019 and 2020 when I discussed with them. This was still the case in 2024 in the public events around wind power I went to observe. One developer mentions that he always has it pre-emptively in his presentation for public events, and he makes sure he says that they are not going to get nor want any government subsidy anymore before it is asked. All the developers mention that as impacting to the public feedback they get.

Unlike in State of Victoria, where the projects awarded were mainly described as better than peers, at least by the government officials and project developers, in Finland the awarded projects were no different to any other project in a simple benefit sharing metric for social licence purposes.

The lack of any community funds is perhaps because municipalities in Finland is in charge of much more fundamental services such as health care, dental care, schools and daycare rather than just road maintenance like in State of Victoria. The tax income to municipality is therefore much more directly benefiting everyone in the local government area. And perhaps even more importantly, offering payment before the permits have been granted, is seen much more as bribing than legitimate benefit sharing in the Finnish context. It is much more palatable to provide ad hoc support after construction has been finished to local sport clubs, kids groups and village organisations.

"There were these village development funds, and they were even recommended by the rural association, but then it was in MOT [TV show for discussing various societal issues] *and we have had some really difficult bias questions. We now try to avoid" -Developer*

A local town planner confirms the bribery narrative:

> *"It culminated to a few critical voices, and then there was a proposal of a community fund. But that was experienced as transactional, buying of consent."*

This is typical reaction if a community fund is proposed after a conflict has already started. A more 'built-in' support instead gets support from local town planner:

> *"a little bit like old times, when a mining company built the community hall, services and so forth. Company could express that it has a desire to invest in the area it operates in."*

This municipality, Pyhäjoki, which has a winning auction project and a lot of active and built wind power development in general, also had at the time the only active new nuclear power plant development in Finland. I of course asked how a nuclear power plant and wind farms development differ in the eyes of local residents. The locals told stories of the nuclear power plant attracting years of demonstrations and interest from activists' presence from outside the region. While not visible in the landscape but tucked away on a peninsula by the sea, the magnitude of the development was completely different compared to even a large wind farm. One resident defines the difference by describing the presence in the townscape:

> *"Much more visible than those wind farms, they are small operators compared to the nuclear power plant. They've had their own local office for several years already, they organise events, sponsor youth organisations and are involved in the life of the community. They have a lot of visitors and we've got some bike lanes and bridges fixed and uplift of the town centre. The wind farms have not brough much life or activity here after all."*

The nuclear power plant in other words behaves such as the old extractive industries, such as mines in previous described by the town planner. Pyhäjoki nuclear power plant, at the moment, is not going ahead. The development was riddled with design uncertainties, budget issues and the fact that the technology was rapidly being outpriced by onshore wind and other renewable energy. The attempt to make the LCOE cheaper, the supplier of the turbine was changed to Rosatom in 2013 (Fennovoima 2013), which is a Russian state-owned company. Little real progress in the project was made in the following decade, and when Russia invaded Ukraine, the project was officially terminated. The boom and bust, and uncertainty of energy projects is in other words well-known for the locals here. *"Hopes are high, but we'll see whether it realises"*

Transparency as a compulsory feature

Commercial confidentiality was not nearly as prominent in the Finnish auction than in the Victorian case. Not all the information of all the bids were published, but the winning bids and the exact prices were. As one the policymakers describes, the only ones that were not transparent were the bids from "8 to 10", so the first ones behind the 7th project, which was the last to get the government contract. This was referred to commercial confidentiality as everyone in the industry was aware of the competitive setting of several private PPAs being negotiated and tendered, while those processes were not public:

> *"After careful considerations we ended up to that, and while it would in the public benefit that we would release more information, it would skew the competition for those who might participate in other tenders, such as Ikea's."*

The fairly transparent publication of results was attributed to three main reasons. Firstly, tax payer money equals public interest, which was compelling for the policy makers to publish everything for public accountability. The second reason named by policymakers involved in the running of the auction as the legal protection from developer perspective.

> *"And it is very important that it is completely transparent, anyone can go and calculate whether we have paid too much support. Both for this and for the previous FiT, you can just go to the SaTu system and do your own Excel…"*

> *"I would assume that the process needs to be somehow transparent and the criteria as well, how is the legal protection of applicants otherwise… for us very important for many reasons, we use government money, there is the auditing office we need to be transparent to, but also outwards"*

The third reason has to do with European Union legislation. The core internalised belief of an open market providing the best outcome includes transparency in most EU legislation. One of the conditions for any state aid based on the Decree 651/2014 (articles 5 and 42) is that the contract received has to be completely transparent, and the criteria for applying and receiving state support, needs to be likewise completely transparent.

In Finland, similar to State of Victoria, there is a separate auditor office for public money usage, but in contrast to Victoria, the auditor office tends to be extremely transparent. As the policy maker states above, European Union legislation, which sits over the national legislation, mandates that in principle, all documentation needs to be transparent or released when asked. The principle itself is similar to Freedom of Information (FOI) request, but FOI requests can cost money, have everything even slightly brushing commercial confidence redacted and excludes many

organisations such as General Auditor's office. These kind of obstacles for transparency in government contracts are in general not allowed in EU, at least when talking about energy generation state aid (e.g. defence forces contracts can be much more opaque).

Unlike in State of Victoria, where developers did not necessarily understand why some bids were successful and others not, in Finland the policymakers prioritised this over preventing strategic behaviour, commercial confidence or possible preferences of successful bids:

> *"There are two opposing views, but in this case the more important one is that it might cause more strategic behaviour if these market participants know more about each other prices. But from legal perspective it is very important that the 8th can now see why he is the 8th* [7 projects won the support]."

> "*I would assume that everyone would have suspected this will be very transparent too. It's not just this auction or FiT, but many other subsidies. State cannot give some secret support. You need to have very good grounds that you wouldn't disclose who has gotten support and how much. These are wind farms after all, not national security."*

In other words, the transparency was a non-negotiable in the auction documentation and results itself. It was seen as taxpayer money, and there was no option to omit any information. While the details of the government contracts, the criteria and bid aspects which relate to public funding were published, it does not mean that all documents relating to the eligibility criteria were published. Only documents relevant to the state aid aspect were seen as needing to be transparent. As is common in the energy industry, details such as suppliers, drawings for building permits or contracts with landowners, are treated as commercially confidential.

The controversy in here is that the narrative of auction as the best tool, is heavily impacted by the published constantly lowering prices of global auctions. This then sets the expectation of lower prices – even when the low prices aren't 'real' (e.g. in case of external PPA contracts in addition to auction income, or low completion rate of some auctions). Arguably, the Finnish prices, while very transparent, were not the actual prices (generation cost plus profit) either.

In general PPA prices are not published, nor revenue or cost of generation of any single project. Similar to State of Victoria and Australia in general, the contract market is a large but fairly unregulated part of the electricity market and unknown in its details, under commercial confidence. The rise in PPAs as one of the key financing mechanisms (for wind power see Mikkonen 2023), which is currently one of the main large-scale renewable energy options to continued decarbonisation and adding self-reliance in Finland, means that the transparency around prices and cost is unlikely to increase in the future.

Summary of the Finnish case

The belief in competition was equally shared than in the Victorian case. Developers, policymakers and residents alike, along with the EU regulation and the policy documents, viewed and imagined the future of energy as spot market based and mainly operated as utility-scale corporation-owned generators.

This made the selection of reverse auction as the state support policy, together with EU regulation guiding towards auctions, very logical from state perspective. A background working group was set up, but that focused very early on reverse auctions and the evidence from other jurisdictions reinforced the view of an auction as the most cost-efficient option. The reverse auction followed a previous FiT which offered very good revenue certainty for private capital, but basically everyone (including developers) viewed it too lucrative, and it eroded the legitimacy of renewable energy in the public sphere. The goal of minimising state financial risk while still offering a support policy, was hence the only priority in the reverse auction policy.

The bids were all very low, which was a surprise to the state which had budgeted for higher bids. The results do not mean that revenue security was not important in the Finnish case or that LCOE had dropped that radically. Instead, all the winning projects have either published a corporate PPA since the release of the auction results, or they are a utility company, or owned by one. From revenue certainty perspective the winning projects would have already had to make sense before and without the auction, and hence I would argue there was little *additionality* in the Finnish auction scheme. The little support gained by the winning projects would have not been enough to realise a project, and hence likely did not go towards projects that would have really needed the support. Regardless, all the winning projects were built (as they did not rely on state for revenue certainty) reinforcing the state perspective of 'successful' auction. Despite the 'ultralow' bids, the auction did not suffer from low completion rate which can be a problem when auction results are very low.

Unlike in the Victorian auction, the Finnish policy had no other than price criteria. The auction was not seen as the appropriate policy tool for benefit sharing. The local council gives out the permits, gets the land rates and organises most of welfare services – and tend to be always struggling for enough money to provide for those – so in that sense the dynamic of benefits and negative impacts is more nuanced than in State of Victoria. The local residents feel the pressure and density of projects in strong grid locations equal to the Victorian case, but the benefits are debated more locally because the local municipality gets the property tax which can be relatively important for small rural budgets.

Chapter 7. Lessons learned from comparison and discussion

The state has a crucial role in enabling the renewable energy transition in a way that is amenable for capitalisation and commodification, but the process is context dependent (Brenner et al. 2010). Renewable energy has to be carefully constructed, by the state, to be amenable to capitalisation and commodification, and to be captured by utility-scale private capital. In chapters 5 and 6 research data was extensively discussed from different contexts and with individuals engaged with the reverse auction policy development and its roll-out in Finland and in the State of Victoria in Australia. Analysis of the two case studies highlighted a range of common themes from the initial deployment of reverse auctions in these jurisdictions, as a part of wider global trend of supporting renewable energy with competition-based models (IRENA 2019, Christophers 2024, Bryant & Webber 2024). The comparison offers many insights and data from the lived experiences in engaging with the state, the financing institutions, developers and community regarding the choices that will shape the (renewable) energy future in the coming decades.

The key driver for the comparison was to investigate the trend of increasingly common reverse auction as a tool to incentivise more renewable energy as a global phenomenon. These two cases provided examples of two very different approaches, designs and context while still utilising the same tool. The Finnish auction was a simple process with as little as possible revenue risk for the state while the Victorian auction aimed to create political capital via regional employment and supporting manufacturing in the state. In the Victorian case the state also took a large portion of the revenue risk. This illustrates how the context moulds the design and that a reverse auction can be a flexible tool for the politicians and policymakers also explaining its increasing popularity. There are some aspects which are common for both of these cases and auctions in general, such as focus on and belief in markets and competition, which in turn enforces the private-capital led large-scale project model for energy transition. Preferencing cheap energy pushes the focus towards lower unit costs which in practice preferences bigger projects, bigger suppliers with global (cheap) supply chains and established developers (Grashof et al. 2020, Matthäus 2020, Berkhout et al. 2024).

The impacts of the auction design, adoption of the auction model and the (limited) imagined energy futures are important because these all impact on the kind of present and future energy landscape which are unfolding. There are of course several possible energy futures when moving to low-carbon energy system (e.g. Bridge et al. 2005), and the decisions made now, including those around auctions, shift and define that future. Hence being aware and making visible the impacts of the two reverse auction processes gives valuable information for any future decisions.

The two jurisdictions have some notable similar experiences despite the different political structures, differences in how state permitting is organised, and existing energy infrastructures have developed. One common theme is the belief in competition and the superiority of markets. Neoliberalism is arguably the dominant contemporary ideology in both cases. Competition and the notion that markets know best was largely unquestioned in both cases. This is a paradox, as neoliberal free markets need constant state support. As Polanyi 2001 [1944], p. 146) critically notes, "*the road to the free market was opened and kept open by an enormous increase in continuous, centrally organized and controlled interventionism"*. The dominant market-centred utility-scale model, designed to capture the energy transition for private capital, was nothing short of hegemonic across the Finnish and Victorian energy landscapes,.

"*What is the best auction design?*" asked almost every policymaker I discussed my PhD topic with. There is no "right" or "wrong, or "good" or "bad" auction design, but being aware of the priorities can help to achieve the goals set for the auction. For example, in the Victorian auction, some of the goals were in clear contradiction to each other – namely putting simultaneously emphasis on local manufacturing, price and a strict timeline for completion. Imposing the same deadline for all projects, with no sequencing or continuity of auctions, meant that while local manufacturing capacity was created, it wasn't sustained particularly well after the auction and it lead to delays for projects. It also came with a price which was likely passed through to state but not revealed to the public. A common design for a government run reverse auction is to only set straightforward entry parameters to enhance likelihood of completion and have projects simply give monetary bids, the winners being the cheapest bids. This approach was adopted by the Finnish policy team since it seemed the easiest to score and was seen to interfere the least with the market. A cheap price was achieved, which was the goal, but arguably with very little revenue certainty and additionality, or contribution to other legitimacy issues relating to renewable energy. In Finland, the rural locality has a well-established model of benefiting from utility-scale energy installations in the form of a property tax, and hence policy makers did not want to intervene in bigger issues such as regional distribution, lack of meaningful profit share or persistent health concerns around wind turbine noise via the auction process. In the Victorian case, the reverse auction policy tried to address local legitimacy issues by introducing additional criteria (see comparison of some key details of the auction design in Table 3). State also tried to address the grid connection issues by scoring also the location at the grid, but unsuccessfully: one of the projects was not built at all and all the others were late from the original timetable (due to supply chain and grid connection issues).

Table 3. Comparison of auction designs of the two cases

	State of Victoria	**Finland**
Support mechanism	15-year Contract for difference	12-year premium paid on top of average spot market price

Price guide (note that this does not reflect the LCOE or in Finnish case the revenue)	2 price aspects bid: overall "fixed price" per year including a total gap of payments and bid over or under the strike price defined in the tendering documentation, $53.06-56.85/MWh (slightly different strike price for each technology)	Auction assumed an average spot price of 30 €/MWh (50 $/MWh). Bid was a premium on top of this assumed price. Winning bids on average 2.52 €/MWh meaning the assumed sufficient 'revenue' for projects was 32.52 €/MWh (56 $/MWh)
Selection criteria	Financial capacity and commercial viability – 25% Technical capability and viability – 25% Economic development – 25% Community engagement and shared benefits – 15% Impact on existing network infrastructure – 10%	Price only, lowest bid wins
Revenue certainty	Very high revenue certainty, electricity price risk effectively taken by the State to an agreed max support amount. Projects could get financing with the state contract	Very low revenue certainty, all projects relied on other forms of revenue to build the project
Bidding	Pay-as-bid, blind bids	Pay-as-bid, blind bids
Timing	Bids in by 14.2.2018, laborious and expensive process Connected to grid by September 2020 (none of the projects succeeded full commission by then)	Bids in by 31.12.2018, easy online application Connected to grid within 3 years of support decision (4/7 on time, rest 8–17 months late)
Capacity	Capacity of 650 MW	Generation instead of capacity, 1.4 TWh/year (approx. 500 MW of capacity)
Project	New generation in NEM (not necessarily in Victoria), planning permit granted, connection application made	All permits in legal force, must be completely new project (no works started, no external PPA signed at the time of bid)
Reliabilities	Reporting on all the selection criteria during the contract period	Underproduction compensation for the state if the project does not generate at least 75/80 % of the bid annual generation
Winners	3 x wind farms, 3 x solar farms (of which one solar farm was not built, likely due to grid connection issues), corporate	7 x wind farms, corporate or utility backing

The fact that there is so little transparency and visibility in the energy market, supply chains and projects further increased the risk of unintended consequences. No one has the full picture of what is going on. In Finland, policy makers didn't know that wind power already had other revenue mechanisms and hence the state contract support didn't necessarily go to the projects that needed it. In the State of Victoria, the participants were forced to 'fudge' the local content requirements

and set up short-term manufacturing facilities to meet the job-creation policy goal, which was set on an uncertain basis and didn't really have visibility in the supply chain. The taxpayer, competitors and even the companies that won the contracts had little knowledge of why certain projects were deemed successful, negating the notion of market transparency or information provision. This illustrates that capitalism, paradoxically, often acts to distort or limit information in the markets as part of its processes of competition.

Crises and fixes – The importance of background in auction design

The two contrasting auction designs reflect the importance of existing socio-ecological relations in the area, the importance of the political background and the search for powerful narratives. One of the key methodological benefits of comparison for this research project is that the policy goals and selection criteria reflected local-level legitimacy challenges relevant to the context. The context defined what were desirable outcomes, and what kind of options could be imagined. For example, in Finland the often-repeated rationale for adopting the reverse auction model was the need to be compliant with EU legislation (Decree N:o 651/2014). The EU was encouraging all member states to use reverse auction if they wanted to implement a support mechanism for renewable energy, as it was least likely to violate EU competition rules (as stated in the reverse auction legislation explanatory memorandum of 2017). An auction was by no means the only option, but was seen as the most desirable. For example, a green certificate scheme which was implemented in Sweden was framed as "*impossible*" or "*obviously a bad solution*" by several interviewees. Since bioenergy was included in the eligible technologies, the worry was that prices of easily accessible wood material would rise impacting forestry industry – which has a strong political position as a major employment and export sector. In Australia, climate change has been an election question in the two-party system for almost two decades, and the subsequent 'climate wars' (Butler 2017) meant that renewable energy had to be framed around something else than climate change. Framing renewable energy policy via job creation and economic growth has also allowed the Victoria State Government to gloss over the obvious internal contradiction of supporting fossil fuels alongside with renewables.

Both states were highly risk-averse, and the reverse auction appeared to offer a way to limit financial support compared to other available mechanisms. One of the main goals in designing the auction mentioned by the interviewees and repeated in the background memos of both cases is to find ways how to limit the cost to the taxpayer. I attribute this to two background factors. Firstly, there was concern about support mechanisms costing more than anticipated, a desire to learn from those experiences and to try to protect public finances. The second is the legitimacy implications of what I might call the *perceived expensiveness* of subsidies or in the Victorian case, of electricity in general. The importance of proving and making sure the renewable energy policy is not expensive, seems to be very important in both contexts. What is "expensive" or

"cheap" is difficult to define, but it is very much accepted as a policy goal. Cheapness is assumed to equate to efficiency and effectiveness. This aligns with Jason Moore's (e.g. 2010a, 2010b, Patel & Moore 2017) argument that the appropriation of ecology is fundamental to capital, and that renewables presents a new frontier for this cheapness. The appropriation and commodification of the local ecology leads to 'double movement' of demanding social protection against this dynamic (Polanyi 2001 [1944]), eroding the legitimacy of energy transition and also undermining capital's capacity to accumulate (Moore & Patel 2017), which in turn slows down crucially climate action (Christophers 2024). The question missing from the search of cheapness is of course whether electricity really needs to be as cheap as possible.

In both auctions the design of the auction is linked to the wider legitimacy context especially from the perceived political aspect: in Finland this centres on the price and the need to minimise the use of "taxpayer money"; in Victoria the regional economic development aspect was central. The auction itself as a model prioritises 'cost-effectiveness', which in turn favours "business-as-usual" bidders with big projects, often with established financing channels and resources to participate in the auction. In the Victorian case the bidding itself was an expensive and laboursome process and in both cases minimum project size eligibility criteria was in place, excluding smaller projects. Paradoxically, while promoting competition, tendering tends to reduce the number of developers able to bid (e.g. Matthäus 2020, Grashof et al. 2020), leading to the domination of larger and larger players, which can further erode legitimacy.

It is also clear that we are not on track for the investment needed for energy transition despite of the 'cheapness' of renewables (see e.g. Christophers 2024, comparing energy investment to EIA 2021 'road map' to net zero by 2050). A common way to phrase the typical cycles of crisis and fixes in capitalism – besides appropriating and commodifying new frontiers – is addressing them as 'market failures' instead of systemic problems. The fixes tend to be (increasingly complicated) financial or economic tools to try to 'incorporate' the externalities into the markets so markets can address the crisis *within* the market (e.g. McCarthy 2015, Mirowski 2010, Moore 2015). In a way, reverse auctions fall to this category as well. They are created to increase renewable energy, but it does not stop state also supporting fossil fuels (in Victoria brown coal powered hydrogen exports and supporting extended lifecycle for existing coal power plants), especially if economic development or jobs is important driver for the policy besides emission reduction. While auctions have become more and more common, the proportion of renewable energy of total energy consumption (not just electricity but all energy) was only 14.5 % in 2023 (Energy Institute / Our world in data 2024). It is increasingly important to be at least seen to be meeting customers, employees and board members' expectations of sustainability. The adoption of PPAs tends to be followed by announcements by the offtakers such as Google (STY 2022) or IKEA (2022) but at the same time, even if global providers are announcing renewable contracts, the emissions keep going up (IEA 2024). The economic developmentalist narrative seems so strong, that the so far inefficient rate of transition does not shake the belief in the market system and mentality of 'keep

buying'. Here the market ideology of emissions reduction becomes irrational: the private PPAs and reverse auctions fit the ideology, but the global emissions have not started to reduce. I do not mean that this is the fault of reverse auction schemes, as they are power purchase agreements, nothing more, in their essence. They are arrangements to buy more not to produce less, and replacing older generation with renewable energy has arguably had a significant impact on the emissions of Finland and State of Victoria (Tilastokeskus 2024, State of Victoria 2023c). However, touting the economic benefits, job creation and cheap prices for reverse auction scheme winners is not enough by itself to address the actual problem of unchecked ever increasing global greenhouse emissions – especially if the state is simultaneously supporting fossil fuel industry as well.

Capturing or defending an income flow

Incentivising private investment in a privatised grid is, in fact, very hard. There is not much evidence that the privatised spot market-based energy system is going to support energy transition at the pace and volume needed as it is fundamentally lacking in revenue certainty, and hence cannot offer a guaranteed return on capital investment. Both cases have spot price-based market design which, by definition, offers a very volatile, and uncertain revenue environment for investment (e.g. Christophers 2024). While spot price in (economic) theory is a spot price to give price signals to the market, it does not seem to be a particularly agile or fast way to decarbonise or even secure enough timely generation. The result is high spikes in power prices when fossil fuel-based power is decommissioned (as occurred the closure of the Hazelbrook power station in Victoria) or in geopolitical constrains of supply (such as the 2022 Ukrainian war energy crisis). Most, if not all, new private capital-led investment tends to rely either on derivatives and contract markets or other long-term contracts. This is aimed at shielding the investment if the spot price market signals turn unfavourable especially during the first 10-15 years of the investment (when the investment has still not 'paid itself off' and has bank loans to service). Utilities can and are investing in renewable energy, but that is based solely on their own needs for profitability, not on any climate action goals. Consequently, anything that threatens the security of existing income flows, such as current fossil fuel assets, will put utility renewable energy investment in jeopardy, undermining emissions-reduction efforts.

Moreover, the bulk of legacy large-scale projects were not done in the spot market environment in State of Victoria or in Finland. Nuclear power plants, coal power plants, hydro and other large generation assets were built by the state and privatised later. In a neoliberal spot market, the state has given up control of when and how energy capacity is constructed. Hence the state can either hope that enough private contracts will become available (and risk not meeting international agreements, or periods of unreliability of supply or high prices) or offer revenue certainty in the form of a government contract. Allowing high price peaks does not tend to be politically

acceptable, as electricity is an essential service, and subjecting it completely to commodification process, would only and arguably already is leading to pressure for more effective social protections (see Polanyi 2001[1994]). Hence states tend to choose an active energy policy which aims to find a way to mediate the contradiction between society's needs and the ethos of the free market, such as by requiring retailers to meet reliability and/or emissions reduction standards (e.g. certificate schemes such as RET in Australia) or offer government contracts (in this case via reverse auction).

Transnational learning

The learning process from other contexts is a key factor in policy development once the neoliberal framework has been established (Brenner et al. 2010). Auctions are increasingly common policy tool in renewable energy (UNEP/BNEF 2020), and the transnational spread of this neoliberal 'policy template' seems to extend its legitimacy, through the repetition (Carroll 20007, Brenner et al. 2010), still further. The policy transfer and learning process were mentioned practically in every policymaker interview. In both cases policymakers used consultancies to draft recommendations to support the policy design, repeating lessons learned and warning tales from other contexts. The Finnish working group materials and legislation justification document used examples from other European countries, as well citing mandated competitiveness under EU regulations requiring all member countries to move towards tendering. The Victorian policy team directly drew lessons from the ACT auction process, and some of the same experts were employed by the State Government to design the Victorian auction. The prevalence of using evidence of other cases, usually via perceived peers, is very common in increasingly complex public policy. The 'common sense' expertise circulates within a the same group of management consultancies hired by governments and on the basis of tightly predefined assumptions. The key implication here is that, while gradual learning and development happens when the template is adopted to new contexts, this limits the policy design to *what has been done* instead of *imagining what could be done*. The prevalence of competitively awarded state contracts mainly for utility-scale renewable energy projects (also e.g. Grashof et al. 2020, Berkhout et al. 2024) reinforces the energy future cemented into the more centralised model, just with a different fuel, albeit renewable.

The importance of networks is not limited just to the policymaking space. Especially in the social media groups of opposition networks, the most common type of posting was a link to news article, blog or post from another group. Some of the issues discussed with me I recognised from the social media groups, especially from Facebook. As Marshall (2018) writes, renewable energy opposition groups, as well as political and industrial organisations aim to produce certainties in an uncertain situation. Finding neutral information is indeed hard, when each side is using the power of media to promote their agenda (González-Bailón and Wang 2016). There was plenty of evidence in both cases that especially residents' concerns of the local ecology can be influenced by social media

opposition groups – which in turn is worrisome because it can give fossil fuel funded propaganda a much stronger platform (e.g. Walker 2023).

Path dependency and imagined futures

In contrast to neoliberal ideology, in which market forces are assumed to deliver similar, unbiased results regardless where they are "unleashed", Brenner and Theodore (2002, p. 351), highlight the "contextual embeddedness" of neoliberal regulating projects and call attention to the fact that even policy templates (of which a reverse auction is an excellent example) are re-produced within their local contexts which have inherited political struggles and regulatory frameworks. Brenner and Theodore (2002) emphasise that understanding of 'as-built' neoliberalism should therefore "*explore the path-dependent, contextually specific interactions between inherited regulatory landscapes and emergent neoliberal, market-oriented restructuring projects at a broad range of geographical scales*" (Brenner & Theodore 2002, p. 349).

As Berkhout et al. (2024, p. 31) point out, while auctions are often portrayed as neutral or apolitical, where markets are left to determine the best or right outcomes, results of a reverse auction, in fact, merely reflect the policy design and regulations which are set by the policymakers. Besides understanding how the auction goals and design were impacted by the context, the choices made are also defined by how the future is envisaged. It is of course hard to imagine outside one's current system (Gramsci 2000), but at least for now, no real option is imagined by policymakers, developers or residents. Especially in Australia, rooftop solar is so popular that it already is having an impact on the profitability of utility-scale solar. Yet, almost no visionary futures were described with different ownership models or ways of engaging with energy. No one could imagine a future outside their current energy market design. Hence, it seems likely that the local battles will keep happening and possibly intensifying as re-imagining the underlying conditions of large-scale installations brought on by private capital with profit expectations seems impossible. On the other hand, within the market design, the auction offers an easy and quick way for the state to respond to expectations around community benefits, price or other aspects in exchange for the benefit of a state contract, revenue certainty or other benefits. It seems likely that the auctions will continue, and small fixes will continue to be added within the current system, as means of addressing the legitimacy issues.

In both cases, the auction was designed for large-scale projects only. Besides minimum project size participation limits, auctions have a well-documented tendency to favour large developers, to exclude new developers and lead to much deeper concentration of ownership in the renewable energy sector (e.g. IRENA 2019, Matthäus 2020, Grashof et al. 2020). Smaller-scale or community energy (ownership) came up in submissions rounds in both cases, but no inclusion efforts were made. All the winning project developers in both countries are for-profit companies, and no local or community projects were even included in the bids. It just wasn't seen *as important* in the policy

sphere. The perceived large-scale efficiency of producing large amounts of renewable energy and reaching the renewable energy goals faster by well-understood large-scale practices took priority. Mulvaney (2019, p. 4) asks how can the (solar) revolution be scaled up rapidly and still be kept *sustainable* and *just*? In both Finnish and Victorian cases, it seems that the urgency of climate action and the narrative of jobs and economic development overruns any desire for distributed or community ownership, or for greater energy democracy – which could not even be imagined. The apparent cheapness from competitive tendering makes legitimating the policies easier: it is competitive in the electricity market price, cheap, and fits the existing energy market design and centralised model. While one can see how this narrative is so appealing to policy makers, it does mean that the future is increasingly 'locked'. As Goodman et al. (forthcoming) point out, the renewable energy future is more and more preferred and facilitated by state as large-scale privately-owned installations over smaller scale community or household owned energy geographies. This arguably negates the distributed potential of renewable energy and makes energy transition hostage to private renewable investor returns.

In Chapter 3 the five conceptual aspects are described as a process and sequential steps leading to a specific kind of commodification process of renewable energy. This is step by step process, while messy and overlapping, is conceptually significant, as there is clear path dependency in prioritising competition and market based solutions, focusing on finding policy tools mainly within the current market design (which is created for fossil fuels), and searching for experiences from other contexts (which limits the innovation into what has already been done instead what could be done) which all reinforce and reproduce the private capital model of profit seeking. Namely the Polanyian ideas of inherent pushback from the local community against attempts to commodify as much as possible land, ecology, labour and money for renewable energy profits are contributing to the local battles against individual projects and proposals. Interestingly, while privatised model is actually relatively new in both cases – the corporate/corporatised ownership of generation assets really started to dominate only after 1980s – it has captured and stunned the imagination of any other option. Others have proposed alternatives from community energy to renationalising energy or called for much more emphasis on how much energy we use in the first place. While I have not recommended a specific alternative, as no such notion was supported by my data, I have attempted to focus on making the consequences and likely outcomes of the unfolding trends visible for more informed discussion.

Extending the frame beyond local-level renewable energy opposition to encompass responses to wider policy arrangements and assumptions, such as privatisation and marketisation, highlights the issues raised by the model of utility-scale large private corporation owned energy transition, which then constrain local possibilities or other possible futures. The future scenarios are of course uncertain. While reverse auctions reinforce and reproduce the corporate owned model of electricity generation, the future role of consumers or 'prosumers' (referring to the concept of residential households also producing instead of just consuming energy) is widely debated. For example,

Strengers et al. (2023) have challenged current assumptions of people's behavior and expectations around energy futures, and mapped several differing plausible scenarios with varying levels of household control over consumption and the ever increasing rooftop solar generation and home battery storage. The cumulative impact of household systems is indeed substantial, around 10 % in Australian east coast grid (Clean Energy Council 2023), and the question who will control those assets is debated. Perhaps the best that can be hoped for at least in the near future that the large-scale investment and household systems can coexist. There is no obvious trend from 10 % to majority share in distributed resources at the moment, especially in Finland where rooftop solar resources are much weaker compared to industrial-scale wind power installations.

Sense of emergency and legitimacy implications

The question of rural residents opposing the (re-)industrialisation of the rural landscape has provoked many explanations ranging from land-use questions to place attachment. For example Kiesecker (2017) states optimistically, that if planned right, *"there need never be a conflict between conservation and renewable energy development",* since renewable resources are physically not tied to a single place and there is enough degraded land to meet renewable energy targets of every country. Yet this does not seem to be happening. There is a growing clash of emergencies: the climate emergency and urgent need to decarbonise appears to be in collision with the demand for local participation and ownership and the desire to keep the rural landscape 'untouched'. In her book about Mexican wind farm development Howe (2019, p. 44) notes that "*each set of actors could claim moral propriety*". For the promoters, the large corporate wind farm in question held the potential "*not only to generate large quantities*" of green energy, but also "*develop the region economically and socially"* (Howe 2019, p. 44). Equally true, however, was that "*those who opposed the park believed themselves to stand on firm ethical ground in their rejection*" of the "*megaprojects*" and the industrialisation of their local environment (Howe 2019, p. 44). The issues most important to the local community – local impact minimisation, local benefits and local decision-making power – fit very poorly with the priorities (maximum profit seeking, cost minimisation) of utility-scale corporate renewable energy. This inherently leads to opposition against land grabbing and commodification (Polanyi 2001[1944]). The opposition creates pressure for further regulation (Chester and Paton 2012) or in the case of VRET1, a shift in the policy design with requirements for community consultation, benefit sharing and (regional) economic development.

In the Victorian case the phrasing of the auction to serve economic development and job creation priorities also allowed the state to keep the attention away from the powerful fossil fuel industry. While important, economic considerations and local benefits can allow the attention to move to

primarily creating jobs, regardless of the fuel. For both cases, focusing on price of 'cheap' or 'affordable' energy can ignore the monetary and human cost of climate catastrophe. Equally, the assumption that fuel-switching is sufficient, does not encourage reducing energy consumption, which is equally important especially in contexts such as Finland and State of Victoria with high per capita energy usage. The fixation on cheapness also encourages overly optimistic price speculation, leaving little room for unexpected price increases or other obstacles arising during construction. One Victorian project for instance completely disappeared from the scheme likely due to overly optimistic grid speculation.

Lastly, auctions might be 'played' in the future. Racing to the bottom with the price, or even paying for rights instead of getting support has happened already in German offshore wind auction. This can allow fossil fuel companies to prevent renewable energy developers accessing the support or land tendered by the state. Fossil fuel companies are more able to leverage profit and investment flow as they have most existing capital in the energy industry. State-run auctions don't have good protection against this as they focus on cheapness, are future (speculative) project focused and open for all seemingly 'credible' actors, without guarantees (besides bids and construction bonds) that the projects will get realised. Any delay or non-delivery won't be apparent for years nor is there any control over how the ready asset would be run.

Conclusions

The research question in this study inquires into the experience and impacts of introducing reverse auctions for renewable energy in the energy transition. It has compared two contexts: State of Victoria and Finland, asking whether tendering has positive impacts on the social legitimacy of renewable energy, what have the consequences of the designs been and explore how the pursuit of cheapness and other goals have manifested in profit-seeking environment. One of the core arguments of this thesis is that reverse auctions both reproduce and reinforce neoliberal market-based state dynamics in the context of the current, on the ground transition from fossil fuels to renewable energy. I have also attempted to emphasise how the specific local social context significantly shapes attempts at energy transition while simultaneously being influenced by global policy trends. The comparative aspect demonstrates how varieties of capitalism shape both form and content of energy transition under the influence of an enduring logic of neoliberalism. The research highlights how both cases, despite their varying institutional arrangements and political-economic contexts, share fundamental characteristics. These characteristics include the entrenched belief among policymakers in the superiority of market mechanisms to provide (state) services, a reliance on private capital, state role geared toward facilitating and creating markets, non-existing visions for alternative models of energy transition, and growing local resistance to the various ways in which energy transitions manifest on the ground.

The mindset of competition and markets as the superior mechanism is widely shared in both cases. Reverse auctions as a mechanism rely on competition and are hence appealing to the neoliberal state. In a privatised spot price system, revenue certainty is important for capital, and state contacts continue to be important source of revenue certainty (e.g. Bryant & Webber 2024). This context is crucially important, although the process may be organised differently. In Finland, there is strong local government, while in State of Victoria there is lower trust in planning regimes, especially at the local level. Hence the Victorian auction design aimed to address legitimacy issues and framed the scheme differently as in part serving regional development. The auction design illuminates the tensions the state has tried to solve between prioritising of markets and the local resistance provoked by societal expectations regarding impacts on rural ecologies and life chances mediated by capitalist social relations of production. There is no 'right' or 'wrong' auction design, but the two cases highlight the importance of being very aware what the goals are, whether cheapness, jobs or other goals – and how they can also contradict each other. In the Victorian auction the non-price factors clearly had an impact on price and delivery date. Projects experienced delays, the price of the initiatives impacted the price for the state and there is little evidence that the 'additional' jobs were permanent. In Finnish auction the cheapness and low risk appetite of the state led to the lack of additionality for the scheme.

The fundamental ignored issue impacting legitimacy is how the system is set up: by and for private capital utility-scale installations aiming to generate profit, rather than just clean(er) electrons, relying on the commodification of land and ecology (e.g. Moore 2015). Auctions favour large utilities and developers, and hence local opposition is likely to continue to intensify (which costs time) as installations become denser especially near good grid locations, and ignore ecological aesthetics and local consultation and as people push back against the commodification process of land important to them (Polanyi 2001 [1944]).

Conceptually, drawing particularly on Polanyi's notions of fictitious commodities and of the double movement, from embeddedness to disembeddedness of economy in society, provides an effective lens for analysing how renewable energy transition requires careful state action to facilitate commodification and is perceived by citizens. Certainly, tendering can have positive impacts on social legitimacy. Competition itself is often perceived as fair, and as minimising the need for government subsidies, and hence the mechanism is often accepted. In the Victorian case the inclusion of other-than-price criteria did mean that the projects were slightly better than they otherwise would have been. This is especially demonstrated in the success of the education funding, which was able to develop renewable energy related skills training. This might have happened eventually via state funding, but the auction managed to support this organic, existing idea at the right time. In the Finnish case, the scars of the previously too lucrative FiT scheme were substantial, leading to a price only reverse auction design, supplemented by corporate PPAs. The

Finnish auction did have a role in restoring investor confidence in the industry after it was obvious that the previous FiT would no longer accept new entrants, and it was announced that another support mechanism was being planned. Tendering as a concept is perceived by the state (and taxpayer) as cheap and competitive, and those are still perceived as desirable aspects in a society which has so well internalised the neoliberal ethos of market superiority. While subsidies are often criticised in both jurisdictions, and hence a reverse auction is probably better than a more lucrative model for private capital, there was very little data that I collected that indicates that reverse auctions can 'solve' local legitimacy issues related to the dynamic of commodification of land and landscapes.

Can you have fast, cheap and popular? The answer depends how fast is fast, what is seen as cheap and popular for who. There is a tension between seeking the lowest price for renewable energy whilst respecting local community and ecology, providing good quality jobs, and relying on private capital to invest rapidly in decarbonisation. The age-old dictum applies here: good, fast and cheap – you can't have all three. Based on these two cases, it can be concluded that achieving simultaneously the cheap*est*, fast*est* and *most* popular or 'good' (considering especially the socio-ecological relations at the installation location) does not come even from a good auction design. State inherently needs to prioritise specific needs and goals over others (Goodman et al. forthcoming) meaning that the promise of perfect auction design, similar to Polanyi's (2001 [1944]) notion of achieving the perfect market, cannot be achieved. Reverse auctions as a tool reinforce the private capital led model for energy transition which hinders the prevalence of other, more energy democratic, models from emerging. Smaller scale development, community energy, grassroot movements, skills training or co-ownership, would be inherently slow. And, compared to 'business-as-usual', all of these would cost money and have an impact on the cost of generation. If they are done under or side-by-side an utility-scale model, in a profit-seeking and cost-minimising environment, projects like that would likely not succeed in a reverse auction (as has happened in Germany, see Grashof 2019, Grashof et al. 2020, Berkhout et al. 2024). Aiming towards energy democracy might, as Marshall (2018, p. 131) *"set up a further paradox; transformation may only work and gain legitimacy with community involvement, but community involvement may dangerously slow things down".* The current market-based system prioritises cheap energy, and in an environment requiring profit, puts the two other goals, good and fast (which Polanyi might argue are more important) further at risk. In addition, if the fixation on cheapness impacts profitability, then private capital will not flow and the transition will stall (see Christophers 2024).

I see especially the fixation on chasing cheapness problematic for several reasons. If energy needs to be cheap, it only incentivises more consumption when emphasis should be on the opposite. All other problems of demand for vast swatches of land for renewable energy installations, fast, and sourcing the raw materials and labour for those are only exacerbated the more generation is needed to fulfil the consumption. The cheapness also presents another internal conflict typical for

capitalism – it erodes the very model of 'sufficient' profits compared to other investment, especially fossil fuels (Christophers 2024). Thirdly, pushing down prices incentivises worse wages and labour conditions for the workforce within renewable energy supply chains instead of emphasising the sustainability aspect, just transition or good quality jobs. And lastly, there is very little evidence that cheapness itself curbs emissions. Increasing renewable energy, when it pushes out fossil fuels, does decrease emissions as has happened in Finland (Tilastokeskus 2024) and in State of Victoria (Victoria State Government 2023c), but a lot remains to be done. We absolutely need to transition to renewable energy sources, and governments need to couple reverse auctions with re-imagining state role to enabling also other models of energy transition and clear phasing out fossil fuels policies. Reducing emissions cannot be left to markets to solve, no matter how well the ethos of market superiority has been internalised.

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Appendix 1. Interview discussion guide

1. Generally main issues at the moment, what is the talk of the town?

2. Community members / developers / town planners: Why was the project placed there? What are the arguments for this specific spot? Can you tell a good and a bad example of RE companies / projects in the area?

3. Problem definition: What are the main issues related to policy development in renewable energy? Are there any policies in place now to address the issues mentioned? Where and how can these issues be addressed?

4. Why do you think there was an auction?

5. For policymakers: Auction design process? Your role? Why was the criteria drafted the way it was and did the award process go?

6. For developers: How do you think the auction was organized from the state government level? Clear guidelines and criteria? Easy to bid? Do you know why you won / did not win?

7. How do you feel / think community feels about the auction process in general? Does it matter that the project was awarded in the government tender? Do people know about the auction? For town planners / community members: Is the awarded project better compared to other companies and proposal in any aspect?

8. How big role should the state have in energy infrastructure? Should it be privately owned or state owned? How strong should the state guidance be in e.g. where new generation is planned?

9. Does climate change come up for you / in your work? Will it disrupt your current life?

10. What would you like to see happen in the future of this region and nationally in energy issues? What would be your ideal future if you could decide? Which mix of generation, who would own it and how would it look like?