

Responsible Leadership in Megaprojects

1. Introduction

The demand of quality infrastructure across the world has been a never ending juggernaut across the world. In recent years, the megaprojects have becoming a popular vehicle for delivery of much needed infrastructure (Flyvbjerg 2014). Megaprojects have been broadly described as “large-scale, complex investments that typically cost a billion dollars and up, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people” (Flyvbjerg 2014). Although, there is a no single definition of megaproject, they are commonly characterized by the quantum of investment. The differentiation between what constitutes a megaproject, based on investment, highlighted by Flyvbjerg (2016). Infrastructure project costing more than US\$ 1 billion is mentioned as major infrastructure projects by the US Federal Highway Administration (Capka 2004). While in some countries on one hand projects costing substantially higher (around USD 20billion) or lower (USD 500 million) than this figure are called as megaprojects (Flyvbjerg 2016). Hu et al.(2015) et al attempted to streamline this dichotomy over what constitutes megaproject based on the cost figures by examining megaproject cost-GDP ratios of different countries and regions. Based on this analysis, they arrived at 0.01% as a reasonable criteria for characterizing a megaproject. There are various synonym for megaprojects like large engineering projects, complex projects and large infrastructure projects. Megaproject are conceived, nurtured, constructed and operated owing their symbolic roles (Warrack 1993), 1993) and driven by sublims (Flyvbjerg 2014). While referring to symbolism, Warrack (1993) mentions “megaprojects have powerful economic, social, and symbolic roles in the society”. In similar vein, Flyvbjerg (2014) explains four sublims that drive megaproject development namely technological, political, economic and aesthetics. This symbolism and sublims have been fueling the megaprojects development across many industries and sectors like airports, seaports, hospitals, health systems, information technology and communication, large scale signature architecture, dams, wind farms and logistics. Interestingly, Flyvbjerg (2014) has explained ‘megaproject paradox’, which is more and more megaprojects are being built despite cost and schedule overruns, and benefit shortfalls. This indicates megaproject will continue to lead the infrastructure development across the globe.

The characterization of megaprojects is an ever evolving process. Even though, the investment figures may be a reasonable attempt to provide a glimpse of what constitutes a megaprojects, other dimensions like social, economic, environmental and technological footprint of these projects could be more promising for defining megaprojects. The most common features discussed in the literature are size, referring to project physical size or its impact, cost mentioning quantum of investments, timeline or duration referring to contractual milestones or specific timelines for project completion (Love and Ahiaga-Dagbui 2018). Along with this, the feature of risk, complexity and uncertainty have been gaining attention in the recent past (Giezen 2013; Kardes et al. 2013; Sanderson 2012; Wang et al. 2020). These characteristics mostly captures the technical and managerial face of megaprojects. However, with the advent of sustainable development goals (SDGs), the sustainability sublime is expected to gain more attention in coming years (Sankaran et al. 2020). It includes focus on aspects like societal gains, protection of marginalized, environmental protection and ensuring the interests of future generations, societal governance, co-creation of shared value by all stakeholders, and community involvement and benefits (Bornstein 2010; Ma et al. 2017).

The diverse megaprojects characteristics mentioned in the earlier section has directed the attention of both academicians and practitioners towards planning, procurement, construction and operation of megaprojects more effectively. For a layman, the megaprojects often have drawn attention owing to various engineering, technological and political feats, mentioned by Flyvbjerg (2014) as sublimos. Along with these feats, often, the megaprojects grab the public attention owing to dismissal performance on parameters like time and cost overruns. There exist many research articles, prominently written by Flyvbjerg (Cantarelli et al. 2010; Flyvbjerg 2014; Flyvbjerg et al. 2018; Flyvbjerg et al. 2002), highlighting the failure to complete the megaprojects within time and budget. The poor performance of megaprojects has led to many inquires at the governmental level as well as research studies investigating causes or factors leading to this dismissal performance. In the recent years, the policy discourse and academic debates mentioning the need to revisit the traditional lens of project “success” and “failure” while investing the performance of megaproject. This is an important silver lining in the area of megaprojects because mostly megaproject implementation is mentioned in poor plight. Megaprojects in essence are crafted for meeting the goals and aspirations of present as well as future generations. There is no doubt that these megaprojects have contributed in this direction, but, the state of art still needs substantial improvement. Rather than branding megaprojects as either failure, which is more often, or success; it may be relevant to conduct a retrospective analysis for identifying “what has been good about the process so far” and “how specifically might we improve this process in the future” (Mossman 2021; Nanda et al. 2017). This analysis is a popular technique in the area of lean manufacturing, called as plus delta analysis.

The journey towards identification of “plus” in state of art of megaproject implementation directs attention to stream of literature which is gaining momentum very recently, is characteristics and drivers that make megaprojects successful, and redefining measures for megaprojects success. Turner and Xue (2018) developed a new model for success of megaprojects and applied this model on case studies of megaprojects. The analysis from this study is interesting, stating “Many of the projects that were finished late and/or overspent, and so would be considered a project management failure by traditional standards (Cooke-Davies, 2002) delivered an asset of value at a time and cost that made it valuable.” Also, the authors highlighted the case study examples wherein the megaprojects provides general public good but these benefits are not measurable financially. Along similar lines, Shenhar and Holzmann (2017) analyzed the success of 14 megaprojects on dimensions namely efficiency, customer, business / financial, and society. The analysis has indicated that each megaproject was successful in at least one dimension. As these studies indicate the megaprojects are indeed successful or effectively implemented, provided the performance of these projects is measured against a new set of parameters rather than comparing with traditional standards, the other research trajectory focused on secrets of megaprojects success. The project management literature is strewn with the studies focusing on success factors, success drivers for diverse set of projects implemented with contracting models like public private partnerships, engineering procurement and construction, and so on. The megaprojects literature have been making extensive strides in the identifying and conceptualizing the success factors, by analyzing successful, rare few from the traditional lens, megaprojects. Shenhar and Holzmann (2017) discussed three distinguishing elements of successful megaprojects namely strategic vision, total alignment and adapting to complexity. Although, more commonly the studies have analyzed the dataset of megaprojects from varied sectors, there exist studies focusing on megaprojects success in specific sectors as well like energy sector (Locatelli et al. 2014), events and exposition (Hu et al. 2015).

Along with this side, there are studies which explore other side of the coin, which dismissal performance of megaprojects. In this domain, the most commonly discussed aspect is time and cost overrun of megaprojects. Similar to studies focusing on success of megaproject, the poor performance of megaproject is investigated from the perspective of either cross sector overview or sectoral focus. These studies do not stop merely by citing the reasons for poor performance of megaproject but gives the remedies and directions to avoid these pitfalls in future megaprojects. For example, the analysis of Nuclear power plant projects (NPPs) in France, Germany and Finland conducted by Locatelli (2018) revealed that a novel complex technology with a complex network of stakeholder results into late and over budget deliver of NPPs. Further to this, Locatelli 2018 advocated remedies like technical standardization and project delivery chain standardization. Among the sector specific studies, the mega transportation projects continues to be under the lens. One of interesting aspect of these studies is crafting of conceptual framework or hypothesis for deciphering the causes and suggesting areas of improvement. The relationship between project ownership and cost performance of transportation megaprojects is investigated by Cantarelli and Flyvbjerg (2015), indicating lack of evidence on private parties' involvement and better project performance. However, the analysis of case study project namely HSL- South, a high speed railway line in the Netherlands thrown light on contracting strategy and amount of private financing as better determinants for project performance. In similar vein, Cantarelli (2010) categorized the explanations for cost overruns in large transportation projects under technical, economic, psychological and political. They have proposed political explanations can be theorized with agency theory while nonpolitical explanations can be understood with a range of different theories like rational choice theory and prospect theory. These research investigations are very helpful for providing solutions to panacea of time and cost overruns faced by megaprojects. These issues are intertwined with other facets of megaproject management, which requires substantial improvement, namely stakeholder management, IT innovation, accountability, transparency and so on. Hu et al.(2015) have performed systematic review of megaprojects literature, indicating that the earlier mentioned facets have been gaining attention in the academic literature. Among these facets, the "leadership" which is not well researched and very recently gaining attention in both academic and practitioner literature. This chapter posits that this aspect will gain more attention in coming years and will be a prominent area of future megaproject research.

2. Megaprojects leadership - Improving state of art of megaproject implementation

Megaprojects leadership as an essential ingredient for delivering successful megaproject is highlighted by Hoover (2019). The paper mentions five leadership success ingredients namely: building trust and communication between stakeholders, cohesion and collaboration among team members, transparent and authentic leadership, creation of nimble and autonomous teams, and educated - experienced owner. A report authored by Nuno Gill and Colm Lundrigan titled "The Leadership and Governance of Megaprojects" is a culmination of insights gained from events organized by the Center for Infrastructure Development (CID) for bringing two communities management and organization scholars and industry on a common platform (Gil and Lundrigan 2012). This report states that "megaproject leadership function is fundamentally different from the megaproject management function". This statement directs attention towards a new research trajectory for megaproject researchers. Often, the leadership is deliberated from the viewpoint of project managers or project engineers, which is grounded more in the operational roles, while this report carves out "megaproject leadership" as a distinct area. The leadership traits mentioned in this report are sincerity, empathy, openness, effective

communication and ability of simplify. There exist other studies focusing on traits in megaproject leaders. Anderson Jr. and Polkinghorn (2008) examined the Woodrow Wilson Bridge and attributed to successful completion of this megaproject, despite risk and complexity associated, to following leadership traits: (1) awareness by project leadership of the immense public scrutiny a major infrastructure project can draw; (2) leadership that responds to political and public demands (both previously mentioned); and (3) leadership that employs conflict prevention and management philosophies, tools, and processes efficiently and effectively. There is a churning of reports and initiatives by in the practitioner community embracing the concept of “megaproject leaders”. The need for shifting the focus from technical to people leaders is highlighted in the report by Roth et al.(2016) , with mention of key differentiators of future megaproject leaders: strategic mindset, change leadership, communication in all its forms, business acumen, balanced decision making and political intelligence. McKinsey released a report titled “The art of project leadership: Delivering the world's largest projects” in the year 2018. As part of this report megaproject leaders across the globe have been interviewed and it led to synthetization of 4 mindsets that define the “art” of project leadership. The megaproject leader necessitate visualization of megaproject as a business and subsequently provide leadership of this level to deal with various organizational issues. The accountability for project delivery needs to be created with the project owner, by keeping them well informed across project lifecycle and in turn enable them to make tough decisions. Mutual trust and joint problem solving should be a laying foundation for contractor-owner relationship. Megaproject leader should trust and enforce appropriate processes, but, should step in resolve challenges faced in megaprojects. These mindsets give a glimpse to reinvention required in the traditional conceptualization of “leadership”. This reinvention is the focus of report by Australian Contractors Association titled “Changing the game: Australian new world of megaprojects” (ACA 2019). It mentions aptly that “changing the megaproject leaders” is the corner stone for achieving megaproject success in Australia. The required changes proposed in this report are: 1) creation of new leadership model to lead complex social solutions rather than managing complicated technological projects alone, 2) shift in the current form centralized project leader to enabling leadership, and 3) development of next generation of leaders by apprenticeship or other mechanism. A research study by Association of Project Management highlights the need for a new approach required for gender balance in major projects leadership.

This academic and professional work has brought the topic of “megaproject leadership” on the forefront. In terms of consolidation of narratives, life stories and practical insights on megaproject leadership, the recently published book on “Megaproject Leaders: Reflections on Personal Life Stories” is a torch bearer and has paved the way for future research work in this area (Drouin et al. 2021). There is no doubt that the existing works have created a fertile ground for further research trajectories. However, the direction to this existing discourse on megaproject leadership can be provided with an established overarching framework. The theme of “responsible leadership” can be a guiding light to take forward the discourse on leadership in megaprojects.

3. Responsible Leadership in the context of megaprojects

Marques et al. (2018), who carried out a bibliometric review of research in the area, confirm that ‘responsible leadership is becoming a hot topic both in academia and the business world’. They also point out that responsible leadership is distinct from other perspectives on leadership such as transactional or transformational or ethical leadership, as ‘it is anchored on the assumption that leaders must balance different (and potentially conflicting sets of interests’.

Their analysis of the reviewed articles shows that the interest in responsible leadership started between 2006 and 2020 and is increasing rapidly.

Maak and Pless (2006), who have published extensively about the concept, explain that responsible leadership is concerned with ‘leadership dynamics in the stakeholder society and includes the ethical perspective – the norms, values and principles’ (Pless 2007: 438). They also propose some ways in which responsible leaders can engage with their stakeholders – both internal and external (Maak and Pless 2006).

Employees: Leaders can ensure that they have created working conditions that are ‘humane, safe, healthy and non-discriminatory’. They could also provide equal opportunity for employment and strive to enable a good work–life balance.

Clients and customers: In addition, to delivering products and services that customers want responsible leaders should ensure that these are ‘safe and not harmful’.

Business partners: Responsible leaders would treat their business partners ‘respectfully and fairly’. They would also ensure that their partners adopt the labour standards adhered to by the leader’s organization.

Social and natural environment: Responsible leaders will ‘assess the impact of their business decisions on the social and natural environment’. In addition, they will also arrange to ‘train their people in sustainable development’.

Shareholders: While taking care of other stakeholders, responsible leaders should also see that their shareholder’s interests are protected and ‘ensure an adequate return’ from their investment.

Pless (2007) suggests that while responsible leadership started as a social and moral phenomenon due to scandals such as Enron, Paramalat and World.com, there is also a positive side to it as it is realised that ‘multinational corporations and their leaders have an enormous potential for contributing to the betterment of the world’. Pless (2007) focuses on the essential behaviours of responsible leaders as intrapsychic drivers or motivational-led system and moral drivers.

The intrapsychic drivers include a need to explore or experiment, a need for attachment through connectedness, and being able to enjoy; whereas the moral and normative drivers consist of a need for justice – ‘fairness and a moral framework as a basis of human interaction’, a need for recognition and to create a motivating environment by recognizing others and demonstrating a sense of care by considering the needs of others, nature and living conditions when working in less developed locations as well as keeping future generations in mind.

Pless and Maak (2011), who guest-edited a special issue on responsible leadership in *The Journal of Business Ethics*, state that there is a growing need for current leadership theories to address the challenges, roles and responsibilities of leaders ‘in light of social and environmental crises such as the Exxon Valdez spill in Alaska, the Bhopal disaster for Union Carbide, Shell’s Brent Spar and Nigerian failures, and Nike’s sweat shops, to name a few’. Responsible leadership is also placing new demands on business contexts to meet stakeholder expectations ‘to take active roles in fostering responsible behaviour, within and outside the organization’ that includes creating responsible cultures and acting as good citizens.

A recent systematic literature review of research into the challenges, outcomes and practices of responsible leadership (Greige Frangieh and Khayr Yaacoub 2017) clarifies that it is not viewed in the same way by all. There could be a limited economic or shareholder view of responsibility based on the Friedman doctrine (1970) or Freeman, Wicks and Parmar (2004)'s views on stakeholder theory based on which Doh and Quigley (2014) clarify that a responsible leader should consider 'shareowners, employees, customers, communities and suppliers' as stakeholders, confirming the views expressed by Maak and Pless (2006).

Greige Frangieh and Khayr Yaacoub (2017) conclude from their systematic review that responsible leadership is still emerging as a leadership theory and needs more empirical evidence to establish it. Also, while the theory has led academic interest it has so far not offered any practical solutions to leaders on how to prioritize stakeholder interests when these are in conflict. They point out that there is a need to discuss 'the different kinds of organizational pressures that leaders face in organizations and the means to alleviate these pressures to allow for more responsible behaviour'. However, they add that the literature does provide evidence on positive financial outcomes from responsible leadership, but further research is required to confirm causality.

In summary, the idea of responsible leadership is gaining worldwide attention and is moving beyond just focusing on ethical and moral behaviour. Researchers are asking leaders to improve stakeholder relationships and suggest the development of metrics to evaluate the benefits of responsible leadership. It is expected that these metrics could help leaders to improve their responsible behaviour towards society while also delivering results expected from their business.

4. Responsible Leadership and Project Management

The idea of responsible project leadership is also beginning to get attention with recent research on governance, trust and ethics in projects (Müller et al. 2013) and the PMI sponsored study on responsible leadership (Clare et al 2018). However, the role of project management in sustainability and sustainable development which is linked to responsible leadership has been a topic of interest to project management researchers for almost a decade now. A brief review of this literature might be useful at this juncture.

Gauthier and Ika (2012) point out that in the postmodern social world, the way projects are managed may have to change to align closely with sustainable development. Morris (2013) urges us to reconstruct project management to consider sustainable development as a challenge to project, program and portfolio management. In fact, Morris suggested that project managers could play a lead role in advancing sustainability at the IRNOP 2015 conference held at University College London.

It is also interesting to see how project management's peak bodies view the field's responsibility towards sustainability. At the International Project Management Association's expert seminar held in Zurich in February 2016, Yvonne Schoper identified sustainability of projects as one of the important trends facing project managers. Schoper and Gemünden (2016) elaborated further at the seminar that environmental, social and lifecycle aspects of projects need to be taken into consideration. They suggested that 'The implication of the trend [sustainability] is that it will increase the accountability of organizations contracting a project beyond their own risks and benefits towards the risks and benefits of external stakeholders who

are affected by their project. It will transform the role of project management by challenging if they do the “right things right”. The specific reference to stakeholders aligns with the literature on responsible leadership.

The Project Management Institute’s Pulse of the Profession Report 2018 states that sustainable development, climate change and renewable energy are affecting businesses as a disruptive trend that needs to be dealt with by project management professionals. (Silvius and van den Brink (2014) reports the Association of Project Management’s Vice President Mary McKinlay (2008) stressed that ‘the further development of project management profession requires project managers to take responsibility for sustainability’ at the IPMA World Congress 2008. These excerpts from trends predicted by peak bodies of project management confirm that there is indeed a growing recognition in the profession that sustainable development is a challenge we can no longer ignore.

Some researchers (Silvius et al. 2009) (Garies et al 2009; Silvius et al 2009) have also been investigating the role of project management in sustainable development. Marcelino-Sádaba et al. (2015) point out that sustainability has been recognized as a challenge in several sectors carrying out projects such as construction, infrastructure, mining, energy and new product development. Huemann and Silvius (2017) have recently suggested that sustainability could even gain more status by becoming a new school of thought in PM extending the nine schools proposed by Turner et al. (2010). In a guest editorial of papers published under the title ‘Projects to create the future: Managing projects meets sustainable development’, Huemann and Silvius (2017) emphasize that ‘project management has a vital role in contributing to sustainable development of organizations and society’, raising the societal responsibility of our profession.

However, despite the growing awareness of project management’s role in sustainable development there seems to be no clear guidance on how to go about it (Huemann and Silvius 2017). Martens and Carvalho (2016) add that ‘there is a gap between perception of importance and the actual use of Sustainability in Project Management (SPM) practice’. (Marcelino-Sádaba et al.(2015) propose that one way to deal with this is to develop ‘a set of sustainability competences that project managers must acquire’. However, just addressing environmental sustainability issues is insufficient to demonstrate responsible leadership in projects.

Labuschagne and Brent (2005) argue that, as a project management community, we need to address three goals of sustainable development: social equity, economic efficiency and environmental performance. They add that we need to establish ways to achieve sustainable life cycle management.

One of the issues facing project management regarding sustainable development is the temporary nature of projects. Projects are often bound by the constraints of time, cost, scope and quality and are often defined as temporary with a finite end (Jones and Lichtenstein 2009). This poses a conundrum as sustainability challenges are rarely time limited, nor can they be decoupled from the context, nor are they easily predictable. There is also limited research focusing on the wider organizational considerations to carry out sustainable projects by balancing social, environmental and economic issues as in both short and long-term orientation as well as in local and global contexts (Silvius and van den Brink 2014). This also makes it difficult to clearly set project goals.

In summary, it looks like project management is facing a knowing–doing gap in identifying practical ways in which it will have to change to deal with this increased awareness of its societal and environmental responsibilities. Aarseth et al. (2017), who carried out a systematic literature review of project sustainability strategies, highlight the importance of setting strategic sustainability goals and developing sustainability competencies. These can help to develop responsible leadership in projects. Next, we propose an initial framework for responsible leadership in projects based on the literature reviewed for this paper.

5. Framework for Responsible Leadership in Megaprojects

Based on the role model of responsible leadership proposed by Maak and Pless (2006), there are four levels to be considered for responsible leadership in megaprojects – Character, leadership role, operational role, and stakeholder connections as shown in Figure 1.

Stakeholder relations

- a. Customer (End user, Project owner or Sponsor)
- b. Governance bodies (Board, Steering committee, PMO)
- c. Project team members
- d. Peers (Functional managers, Other project managers in programs)
- e. Suppliers (Contractors, Suppliers of products and services, Labour)
- f. Community (If project causes displacement)
- g. Family (Work–life balance)
- h. Fellow Citizens (Social responsibility)
- i. Future generations (Environmental responsibility)

Operational Roles

- a. Change agent (Assist in delivering benefits)
- b. Coach (Developing team members)
- c. Meaning enabler (Work across cultures, Shared meaning of project and its goals)
- d. Project leader (Delivering project, ethical and moral decision making)

Leadership roles

- a. Visionary (Work towards common purpose or goals)
- b. Citizen (Environmental and social responsibility)
- c. Steward (Focus on community and society)
- d. Servant (Sharing power, Putting people first)

Character (Ethical and moral qualities)

Several of these roles are not new and are practiced in projects in various ways. But there are some that may be beyond the current scope and understanding of the role of a project leader. In the next section we discuss literature related to these roles where they already exist.

5.1. Stakeholder Relations

Relationships listed under Stakeholder Relations, from a to e, could be considered as expected of a project leader. Relations f to i are relatively new.

Megaproject delivery is often driven by parameters like time, cost, quality and so on, which are mentioned in the various binding contractual arrangements among supply chain partners. Owing to focus on these parameters, the primarily the construction supply chain or megaproject delivery supply chain partners comprising of governmental bodies, sponsoring organizations, approval agencies, subcontractors and project team members have been given preference in megaproject development. Firstly, the megaproject leader should to reinvent the relationships with these set of stakeholders. Secondly, there is a need to integrate and bring other stakeholders like community, family, fellow citizens and future generations at the center stage.

Megaproject leader has to understand the values and expectations of customer carefully. These customers can be end user, sponsor or project owner. Further to this, it is necessary to direct these values and expectations in the right direction during the megaproject lifecycle. For example, Theurillat and Crevoisier (2013) explained how involvement of financial actors and their interaction between other actors in the institutional, spatial and temporal context influences creation of sustainability in megaprojects. The governing structure of megaprojects has not attracted much attention in the megaproject literature. It is expected that the megaproject leader can understand the influencing role played by cultural practices on the governance of these megaproject. In similar vein, the analysis of intra-organization and inter-organization trust under the conditions of power asymmetry and power sharing in the megaproject governance has been conducted by Deng et al. (2021). These studies drawn attention towards increasingly important issue of megaproject governance, and megaproject leader should be akin to these developments.

Although the megaproject are conceived, developed, constructed and operated by the project owners and sponsors, one cannot deny the fact that these projects are created to serve the ultimate end user - a general public or tax payer or specific set of users. The embedment of megaproject within surrounding social cultural milieu is missed by the megaproject leaders, resulting into resistance and value erosion for facility users and surrounding community. In large infrastructure projects that cause displacements, community relations comes importance as communities are often affected adversely during and after projects are implemented. Stakeholder involvement tools have been proposed in project management literature on appropriate community engagement in megaprojects (El-Gohary et al. 2006). However, in the megaproject literature, the general public or users are often referred as “external” stakeholders (Di Maddaloni and Davis 2017; Ninan et al. 2019). Megaproject leader has to internalize these “external” stakeholders like the users, community and even future generations within the shaping and implementation of megaprojects (Di Maddaloni and Davis 2017). The neglect towards this is a recipe for community resistance (Jordhus-Lier 2015) and asymmetric legitimacy perception (Witz et al. 2021).

Supply chain management necessitates greater attention owing to uncertainty and complexity associated with megaprojects. Along with this, the greater emphasis on social responsibility and environmental protection, there is a call for embracing sustainability in supplier selection in megaprojects (Mahmoudi et al. 2021). The megaproject leader has to play a crucial role in green supply chain management with practices like green supplier selection (Liang and Chong 2019).

The aspects like social and environmental responsibility are relatively new in the context of megaprojects. Hence, the direction and leadership by the top echelon of megaprojects is paramount. The relation between adoption of megaproject social responsibility and personal psychological traits of top managers, with a particular focus on chief executive officer (CEO) narcissism, is discussed in the study by Lin et al.(2018). This study has relevance for megaproject leaders and the requirements are mentioned aptly as “managers should be motivated to think modestly about the relationship of megaprojects with society from a sustainable perspective and be driven to improve their cognition of MSR to promote the megaproject’s social responsibility.”

Megaproject leaders have to play a transformative role to change the project participants perceptions towards megaproject environmental responsibility (MER) practices and their commitment towards the environment (Wang et al. 2017). The importance of leadership in this regard is mentioned by Wang et al (2017) as follows: “leadership has been recognized as one of the most critical factors influencing the emergence of organizational citizenship behaviors for the environment (OCBEs)”.

Relations with family would need more exploration on how project leaders can deal with these stakeholder demands. Although the general management literature has been advocating the need for work-life balance both for the manager and their subordinates, this is not investigated much in a project management situation even though managing a project can be a stressful experience. There are some papers written about the role of the project manager to improve working conditions in projects to manage stress (Gällstedt 2003) and the effect of transformational leaders in projects on stress management of their team members (Keegan and Den Hartog 2004).

5.2. Operational Roles

In the operational roles (Item 2 in our framework), the role of the project manager may not generally extend to benefits management. In some instances, the operational part of the project is included in the scope of the megaprojects when the project management organization may also be involved in benefit realization. However, there is an increased realization that project managers should be aware of benefit realization through change management after the project is delivered. Benefit management seems to fall under the responsibility of program management (Axelos 2014). So, to that extent project managers will be conscious of the need for benefit management when their project is overseen in a program. The role of project manager as a coach is becoming relevant in the leadership responsibilities (Müller et al. 2018; Pilkienė et al. 2018). van Marrewijk et al.(2016) have described the role of coach and mentor played by the agent, in this case the US-based CH2M Hill a global leader in programme management hired by the operator/principal, Autoridad del Canal de Panamá (ACP), for the temporary organization of the Panama Canal Expansion Program (PCEP). The term ‘meaning making’ is not commonly used in project management, but ‘sensemaking’ is becoming an important part of complex projects (Alderman et al. 2005). This could create a shared meaning across a project. Delivering the project is a basic operational responsibility of a project leader but doing it in an ethical and moral manner will be important for responsible leadership (Clarke et al. 2018).

5.3. Leadership Roles

In the leadership roles, the visionary role has been discussed in project management research on project managers' competencies for success (Müller and Turner 2010) and the role of a transformational leader (Keegan and Den Hartog 2004). The roles of citizen and steward are relatively new but will become important as increased importance is placed on the role of project management towards the United Nations' Sustainable Development Goals (Aarseth et al. 2017; UN 2018), even identifying indicators in developing sustainable infrastructure (Fernández-Sánchez and Rodríguez-López 2010), which is expected in megaprojects (Kwak et al. 2009). Ma et al (2020) investigated stewardship behavior in megaproject. Their analysis indicates that stewardship behavior existed in the case study project, which was South-to-North Water Diversion project, and it can be identified through psychological, situational, relational dimensions. Melé (2016) mentions the term - Humanistic Management as "people oriented management that seeks profits for human ends". Stewardship-sustainability is one among the seven propositions, put forth by Melé (2016), on what form a genuine humanism. Along with other propositions like wholeness, comprehensive knowledge, human dignity, development, common good, and transcendence, the stewardship-sustainability proposition which "recognizes the interconnection of the human being with the environment and all living things and promotes a sense of stewardship (Camargo and Vázquez-Maguirre 2021)" is well connected with megaprojects, owing to social and environmental footprint. Megaproject leaders being in the leadership position have to ingrain "humanistic / people oriented approach" in megaproject management. Servant leadership is often associated with a scrum master's role in projects using agile methodology (Yi 2011). In projects using conventional methods Avery (2015) has proposed servant leadership as a way of reducing risks when these projects become complex.

5.4. Character

In terms of character, ethical and moral judgement is discussed in the context of responsible leadership in projects (Clarke et al. 2018). These could also fall under the concept of authentic leadership which has found its way into project management literature of late (Lloyd-Walker and Walker 2011). From the preceding discussion we can see that several elements of our proposed framework have been discussed in various ways in the project management literature. However, a comprehensive discussion of responsible leadership is still needed to guide project leaders.

6. Conclusions

In conclusion, we believe that, by adopting the characteristic of responsible leadership megaproject leaders will deliver societal benefits while reducing ecological harm by taking a wider view of stakeholder interests over space and time. It does not mean that they should overlook economic benefits which megaprojects were conceived to achieve but do so in a more culturally and ecologically responsible ways. They will do this keeping in mind the five dimensions of critical to be a responsible leader – awareness, vision, imagination, responsibility and action (Bettignies 2014). Environmental, social and governance issues are becoming increasingly important to organizations for their long-term aspirations and they will become important to project organizations too. Megaprojects are no exception. The World Economic Forum points out that the investment in megaprojects by the G-20 countries is equivalent to

8% of the global GDP (Alexander 2015). While such investment may be necessary to meet demands it needs to be carefully managed to be sustainable. They forum felt that such rapid growth could cause irreparable social and environmental damage. Drouin et al.(2021) suggest that while megaprojects are essential to societies a great responsibility lies on the shoulders of modern day megaproject leaders.

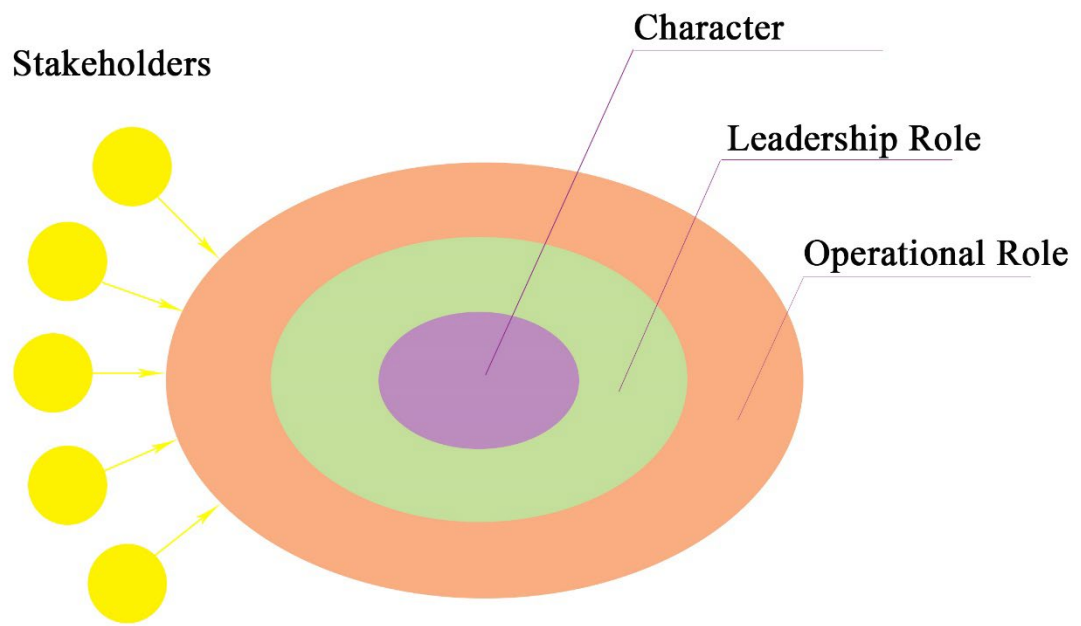


Figure 1. Proposed Responsible Leadership Framework for Project Leaders adapted for this paper from Mark and Pless (2006: 107)

References:

- Aarseth, W., Ahola, T., Aaltonen, K., Økland, A., and Andersen, B. (2017). "Project sustainability strategies: A systematic literature review." *International Journal of Project Management*, 35(6), 1071-1083.
- ACA (2019). "Changing the game: How Australia can achieve success in the new world of Mega-projects." Australian Constructors Association, Sydney, 1-35.
- Alderman, N., Ivory, C., McLoughlin, I., and Vaughan, R. (2005). "Sense-making as a process within complex service-led projects." *International Journal of Project Management*, 23(5), 380-385.
- Alexander, N. (2015). "Is the boom in megaprojects sustainable?" *World Economic Forum* Switzerland.
- Anderson Jr., L. L., and Polkinghorn, B. (2008). "Managing conflict in construction megaprojects: Leadership and third-party principles." *Conflict Resolution Quarterly*, 26(2), 167-198.
- Avery, G. (2015). "Neuroscience and the servant leader: reducing the risks of complex projects." *PMI® Global Congress 2015-EMEA, London, England*, Project Management Institute, Newtown Square, PA.
- Axelos (2014). *Managing Successful Programmes*, London.
- Bettignies, H.-C. d. (2014). "Five dimensions of responsible leadership." INSEAD, Fontainebleau, France, 1-3.
- Bornstein, L. (2010). "Mega-projects, city-building and community benefits." *City, Culture and Society*, 1(4), 199-206.
- Camargo, B. A., and Vázquez-Maguirre, M. (2021). "Humanism, dignity and indigenous justice: the Mayan Train megaproject, Mexico." *Journal of Sustainable Tourism*, 29(2-3), 372-391.
- Cantarelli, C. C., and Flyvbjerg, B. (2015). "Decision Making and Major Transport Infrastructure Projects: the Role of Project Ownership." *Handbook on Transport and Development*, R. Hickman, M. Givoni, D. Bonilla, and D. Banister, eds., Edward Elgar, Cheltenham, 380-393.
- Cantarelli, C. C., Flyvbjerg, B., Molin, E. J. E., and Wee, B. v. (2010). "Cost Overruns in Large-scale Transportation Infrastructure Projects: Explanations and Their Theoretical Embeddedness." *European Journal of Transport and Infrastructure Research*, 10(1).
- Capka, J. R. (2004). "Megaprojects - They Are A Different Breed." *Public Roads*, Federal Highway Administration, New Jersey.
- Clarke, N., D'Amato, A., Higgs, M., and Vahidi, R. (2018). *Responsible leadership in projects: Insights Into ethical decision making*, Project Management Institute.

Deng, B., Xie, W., Cheng, F., Deng, J., and Long, L. (2021). "Complexity Relationship between Power and Trust in Hybrid Megaproject Governance: The Structural Equation Modelling Approach." *Complexity*, 2021, 8814630.

Di Maddaloni, F., and Davis, K. (2017). "The influence of local community stakeholders in megaprojects: Rethinking their inclusiveness to improve project performance." *International Journal of Project Management*, 35(8), 1537-1556.

Doh, J. P., and Quigley, N. R. (2014). "Responsible leadership and stakeholder management: Influence pathways and organizational outcomes." *Academy of Management Perspectives*, 28(3), 255-274.

Drouin, N., Sankaran, S., Marrewijk, A. v., and Müller, R. (2021). "Megaproject Leaders: Reflections on Personal Life Stories." Edward Elgar Publishing, Cheltenham Glos, 338.

El-Gohary, N. M., Osman, H., and El-Diraby, T. E. (2006). "Stakeholder management for public private partnerships." *International Journal of Project Management*, 24(7), 595-604.

Fernández-Sánchez, G., and Rodríguez-López, F. (2010). "A methodology to identify sustainability indicators in construction project management - Application to infrastructure projects in Spain." *Ecological Indicators*, 10(6), 1193-1201.

Flyvbjerg, B. (2014). "Megaproject Planning and Management: Essential Readings." Edward Elgar Publishing, Cheltenham and Northampton.

Flyvbjerg, B. (2014). "What You Should Know About Megaprojects and Why: An Overview." *Project Management Journal*, 45(2), 6-19.

Flyvbjerg, B. (2016). "What is a Megaproject?". (December 1, 2016).

Flyvbjerg, B., Ansar, A., Budzier, A., Buhl, S., Cantarelli, C., Garbuio, M., Glenting, C., Holm, M. S., Lovallo, D., Lunn, D., Molin, E., Rønne, A., Stewart, A., and van Wee, B. (2018). "Five things you should know about cost overrun." *Transportation Research Part A: Policy and Practice*, 118, 174-190.

Flyvbjerg, B., Holm, M. S., and Buhl, S. (2002). "Underestimating Costs in Public Works Projects: Error or Lie?" *Journal of the American Planning Association*, 68(3), 279-295.

Freeman, R. E., Wicks, A. C., and Parmar, B. (2004). "Stakeholder theory and "The corporate objective revisited"." *Organization Science*, 15(3), 364-369.

Friedman, M. (1970). "The Social Responsibility of Business Is to Increase Its Profits BT - Corporate Ethics and Corporate Governance." *The New York Times Magazine*, 2-6.

Gällstedt, M. (2003). "Working conditions in projects: Perceptions of stress and motivation among project team members and project managers." *International Journal of Project Management*, 21(6), 449-455.

Gauthier, J.-B., and Ika, L. A. (2012). "Foundations of Project Management Research: An Explicit and Six-Facet Ontological Framework." *Project Management Journal*, 43(5), 5-23.

Giezen, M. (2013). "Adaptive and Strategic Capacity: Navigating Megaprojects through Uncertainty and Complexity." *Environment and Planning B: Planning and Design*, 40(4), 723-741.

Gil, N., and Lundrigan, C. (2012). "The Leadership and Governance of Megaprojects." *CID Technical Report No. 3/2012*, Centre for Infrastructure Development (CID), Manchester Business School, The University of Manchester, Manchester, 1-18.

Greige Frangieh, C., and Khayr Yaacoub, H. (2017). "A systematic literature review of responsible leadership." *Journal of Global Responsibility*, 8(2), 281-299.

Hoover, S. (2019). "Megaprojects: Five Leadership Success Ingredients." *FMI Quarterly*(3), 1-8.

Hu, Y., Chan, A. P. C., and Le, Y. (2015). "Understanding the Determinants of Program Organization for Construction Megaproject Success: Case Study of the Shanghai Expo Construction." *Journal of Management in Engineering*, 31(5), 05014019.

Hu, Y., Chan, A. P. C., Le, Y., and Jin, R.-z. (2015). "From Construction Megaproject Management to Complex Project Management: Bibliographic Analysis." *Journal of Management in Engineering*, 31(4), 04014052.

Huemann, M., and Silvius, G. (2017). "Projects to create the future: Managing projects meets sustainable development." *International Journal of Project Management*, 35(6), 1066-1070.

Jones, C., and Lichtenstein, B. B. (2009). "Temporary Inter-organizational Projects: How Temporal and Social Embeddedness Enhance Coordination and Manage Uncertainty." *The Oxford Handbook of Inter-Organizational Relations*(March 2019), 1-27.

Jordhus-Lier, D. (2015). "Community resistance to megaprojects: The case of the N2 Gateway project in Joe Slovo informal settlement, Cape Town." *Habitat International*, 45, 169-176.

Kardes, I., Ozturk, A., Cavusgil, S. T., and Cavusgil, E. (2013). "Managing global megaprojects: Complexity and risk management." *International Business Review*, 22(6), 905-917.

Keegan, A. E., and Den Hartog, D. N. (2004). "Transformational leadership in a project-based environment: A comparative study of the leadership styles of project managers and line managers." *International Journal of Project Management*, 22(8), 609-617.

Kwak, Y. H., Chih, Y., and Ibbs, C. W. (2009). "Towards a comprehensive understanding of public private partnerships for infrastructure development." *California Management Review*, 51(2), 51-78.

Labuschagne, C., and Brent, A. C. (2005). "Sustainable Project Life Cycle Management: The need to integrate life cycles in the manufacturing sector." *International Journal of Project Management*, 23(2), 159-168.

Liang, R., and Chong, H.-Y. (2019). "A hybrid group decision model for green supplier selection: a case study of megaprojects." *Engineering, Construction and Architectural Management*, 26(8), 1712-1734.

- Lin, H., Sui, Y., Ma, H., Wang, L., and Zeng, S. (2018). "CEO Narcissism, Public Concern, and Megaproject Social Responsibility: Moderated Mediating Examination." *Journal of Management in Engineering*, 34(4), 04018018.
- Lloyd-Walker, B., and Walker, D. (2011). "Authentic leadership for 21st century project delivery." *International Journal of Project Management*, 29(4), 383-395.
- Locatelli, G. (2018). "Why are Megaprojects, Including Nuclear Power Plants, Delivered Overbudget and Late? Reasons and Remedies." *Report MIT-ANP-TR-172*, Center for Advanced Nuclear Energy Systems (CANES), Massachusetts Institute of Technology, Cambridge, 1-28.
- Locatelli, G., Littau, P., Brookes, N. J., and Mancini, M. (2014). "Project Characteristics Enabling the Success of Megaprojects: An Empirical Investigation in the Energy Sector." *Procedia - Social and Behavioral Sciences*, 119, 625-634.
- Love, P. E. D., and Ahiaga-Dagbui, D. D. (2018). "Debunking fake news in a post-truth era: The plausible untruths of cost underestimation in transport infrastructure projects." *Transportation Research Part A: Policy and Practice*, 113, 357-368.
- Ma, H., Zeng, S., Lin, H., Chen, H., and Shi, J. J. (2017). "The societal governance of megaproject social responsibility." *International Journal of Project Management*, 35(7), 1365-1377.
- Ma, T., Wang, Z., Skibniewski, M. J., Ding, J., Wang, G., and He, Q. (2020). "Investigating stewardship behavior in megaprojects: An exploratory analysis." *Engineering, Construction and Architectural Management*, ahead-of-print(ahead-of-print).
- Maak, T., and Pless, N. M. (2006). "Responsible leadership in a stakeholder society - A relational perspective." *Journal of Business Ethics*, 66(1), 99-115.
- Maak, T., and Pless, N. M. (2006). "Responsible Leadership in a Stakeholder Society – A Relational Perspective." *Journal of Business Ethics*, 66(1), 99-115.
- Mahmoudi, A., Deng, X., Javed, S. A., and Zhang, N. (2021). "Sustainable Supplier Selection in Megaprojects: Grey Ordinal Priority Approach." *Business Strategy and the Environment*, 30(1), 318-339.
- Marcelino-Sádaba, S., González-Jaen, L. F., and Pérez-Ezcurdia, A. (2015). "Using project management as a way to sustainability. from a comprehensive review to a framework definition." *Journal of Cleaner Production*, 99, 1-16.
- Marques, T., Reis, N., and Gomes, J. F. S. (2018). "Responsible leadership research: A bibliometric review." *BAR - Brazilian Administration Review*, 15(1), 1-25.
- Martens, M. L., and Carvalho, M. M. (2016). "Sustainability and Success Variables in the Project Management Context: An Expert Panel." *Project Management Journal*, 47(6), 24-43.
- Melé, D. (2016). "Understanding Humanistic Management." *Humanistic Management Journal*, 1(1), 33-55.
- Morris, P. W. G. (2013). *Reconstructing project management*, John Wiley & Sons.

Mossman, A. (2021). "Using Plus/Delta for Feedback and Improving Social Processes ", <<https://leanconstructionblog.com/Using-Plus-Delta-for-Feedback-and-Improving-Social-Processes.html>>. (July 16, 2021).

Müller, R., Andersen, E. S., Kvalnes, Ø., Shao, J., Sankaran, S., Turner, J. R., Biesenthal, C., Walker, D., and Gudergan, S. (2013). "The Interrelationship of Governance, Trust, and Ethics in Temporary Organizations." *Project Management Journal*, 44(4), 26-44.

Müller, R., Sankaran, S., Drouin, N., Vaagaasar, A. L., Bekker, M. C., and Jain, K. (2018). "A theory framework for balancing vertical and horizontal leadership in projects." *International Journal of Project Management*, 36(1), 83-94.

Müller, R., and Turner, R. (2010). "Leadership competency profiles of successful project managers." *International Journal of Project Management*, 28(5), 437-448.

Nanda, U., K. Rybkowski, Z., Pati, S., and Nejati, A. (2017). "A Value Analysis of Lean Processes in Target Value Design and Integrated Project Delivery:Stakeholder Perception." *HERD: Health Environments Research & Design Journal*, 10(3), 99-115.

Ninan, J., Mahalingam, A., and Clegg, S. (2019). "External Stakeholder Management Strategies and Resources in Megaprojects: An Organizational Power Perspective." *Project Management Journal*, 50(6), 625-640.

Pilkienė, M., Alonderienė, R., Chmieliauskas, A., Šimkonis, S., and Müller, R. (2018). "The governance of horizontal leadership in projects." *International Journal of Project Management*, 36(7), 913-924.

Pless, N. M. (2007). "Understanding responsible leadership: Role identity and motivational drivers : tame anita roddick, founder of the body shop." *Journal of Business Ethics*, 74(4), 437-456.

Pless, N. M., and Maak, T. (2011). "Responsible leadership: Pathways to the future." *Responsible Leadership*(November), 3-13.

Roth, H., Macaulay, N., Suhonen, S., and Ho, R. (2016). "Megaproject leaders: Shifting the focus from technical to people leaders." Russell Reynolds Associates, Houston.

Sanderson, J. (2012). "Risk, uncertainty and governance in megaprojects: A critical discussion of alternative explanations." *International Journal of Project Management*, 30(4), 432-443.

Sankaran, S., Müller, R., and Drouin, N. (2020). "Creating a 'sustainability sublime' to enable megaprojects to meet the United Nations sustainable development goals." *Systems Research and Behavioral Science*, 37(5), 813-826.

Schoper, Y., Gemünden, H. G., and Nguyen, N. N. (2016). "Fifteen future trends for Project Management in 2025." *Future Trends in Project, Programme and Portfolio Management*.

Shenhar, A., and Holzmann, V. (2017). "The Three Secrets of Megaproject Success: Clear Strategic Vision, Total Alignment, and Adapting to Complexity." *Project Management Journal*, 48(6), 29-46.

Silvius, A. J. G., Brink, J., and Köhler, A. (2009). "Views on sustainable project management." *Human Side of Projects in Modern Business. Helsinki, Finland: IPMA Scientific Research Paper Series*, 545-556.

Silvius, A. J. G., and van den Brink, J. (2014). "Taking responsibility: the integration of sustainability and project management." *Advances in Project Management: Narrated Journeys in Uncharted Territory*, 137-137.

Theurillat, T., and Crevoisier, O. (2013). "The Sustainability of a Financialized Urban Megaproject: The Case of Sihlcity in Zurich." *International Journal of Urban and Regional Research*, 37(6), 2052-2073.

Turner, J. R., and Xue, Y. (2018). "On the success of megaprojects." *International Journal of Managing Projects in Business*, 11(3), 783-805.

Turner, R. J., Huemann, M., Anbari, F. T., and Bredillet, C. N. (2010). *Perspectives on projects*, Routledge, London.

UN (2018). "The Sustainable Development Goals Report 2018." *New York United Nations Publications*, 1-36.

van Marrewijk, A., Ybema, S., Smits, K., Clegg, S., and Pitsis, T. (2016). "Clash of the Titans: Temporal Organizing and Collaborative Dynamics in the Panama Canal Megaproject." *Organization Studies*, 37(12), 1745-1769.

Wang, D., Wang, Y., and Lu, Y. (2020). "Impact of Regulatory Focus on Uncertainty in Megaprojects: Mediating Role of Trust and Control." *Journal of Construction Engineering and Management*, 146(12), 04020142.

Wang, G., He, Q., Meng, X., Locatelli, G., Yu, T., and Yan, X. (2017). "Exploring the impact of megaproject environmental responsibility on organizational citizenship behaviors for the environment: A social identity perspective." *International Journal of Project Management*, 35(7), 1402-1414.

Warrack, A. (1993). "Megaproject decision making: Lessons and strategies." *Western Centre for Economic Research Information Bulletin*, 16, 1-15.

Witz, P., Stingl, V., Wied, M., and Oehmen, J. (2021). "Asymmetric legitimacy perception across megaproject stakeholders: The case of the Fehmarnbelt Fixed Link." *International Journal of Project Management*, 39(4), 377-393.

Yi, L. (2011). "Manager as scrum master." *Proceedings - 2011 Agile Conference, Agile 2011*, 151-153.