

INCREMENTAL CHANGE TOWARDS SUSTAINABILITY

Integrating Human and Ecological Factors for Efficiency

Suzanne Benn¹ and E. Jane Probert²

¹*School of Management, University of Technology, Sydney, Australia;*

²*European Business Management School, University of Wales Swansea, Swansea, UK*

Abstract: This chapter presents case studies of two companies, one based in South Wales, UK, and the other in New South Wales, Australia. Both companies have successfully carried out incremental changes that have integrated economic aims with environmental improvements and local social sensitivity. We argue that the competitiveness of these companies is facilitated by their proactive and co-operative environmental management philosophy. A key capability underpinning the environmental success of both organisations is networking with regulators and with local community. Another is the systematic approach to human resource functions. The chapter thus raises suggestions concerning the integration of the human and ecological sustainability of corporations.

1. INTRODUCTION

This chapter examines the relationship between human and ecological forms of corporate sustainability. We define corporate human sustainability as the contribution that the corporation makes to sustaining and developing a just and equitable workplace and society. Corporate ecological sustainability is the contribution the corporation makes to the support and renewal of the biosphere. We examine the sustainability of the management practices of two companies that are linked in that they share two key characteristics: their capacity to network with stakeholders and a system based approach to human resource management. In each company, these characteristics underpin eco-efficiency measures and are a common factor in maintaining their competitiveness.

INCO Europe Ltd is situated in South Wales, UK, and its core product is based on old technology—the manufacture of nickel. However, it is adapting its products and processes to meet new demands and to fulfil the requirements for economic success. The Panasonic TV Factory is a branch of Matsushita Electric Co. (Aust) Pty Ltd situated in New South Wales, Australia; it is part of the electronics sector and, as such, represents successful new technology.

These two organisations are both on the path towards sustainability and their progress towards ecological and human sustainability can be assessed according to the phase model developed by Dunphy *et al.* (2003). Using an integrated approach to human and ecological sustainability, this model, which is summarised in Table 1, defines key steps along the way to the sustainable organisation. It can be used as a tool to enable comparison between organisations in terms of their progress to sustainability. Unlike other eco-ordering models such as those proposed by Freeman *et al.* (2000), Hunt and Auster (1990) and Roome (1992), this model draws together the two forms of sustainability. It does not assume a linear progression nor does it intend to 'lump' companies together (Newton 2002:529), but to present a series of ideal types for comparison reasons only.

The following sections describe the companies, the management practices that have facilitated the shift to their current positions and the reasons why they have not progressed further in either human or ecological terms. In both cases, the link between their human and environmental sustainability practices and their competitiveness is emphasised.

Table 1. Phases in the development of corporate sustainability

	Human Sustainability	Ecological Sustainability
Level 1 Rejection	Employees and subcontractors exploited. Community concerns are rejected outright.	The environment is regarded as a free good to be exploited.
Level 2 Non-Responsiveness	Industrial Relations (IR) a major issue with the emphasis on cost of labour. Financial and technological factors exclude broader social concerns. Training agenda focuses on technical and supervisory training.	Environmental risks, costs, opportunities and imperatives are seen as irrelevant.
Level 3 Compliance	Human Resource (HR) functions such as IR, training, Total Quality Management (TQM) are instituted but with little integration between them.	Ecological issues likely to attract strong litigation or strong community action are addressed.

	Human Sustainability	Ecological Sustainability
Level 4 Efficiency	Technical and supervisory training augmented with interpersonal skills training. Teamwork encouraged for value-adding as well as cost-saving purposes. External stakeholder relations developed for business benefits.	ISO 14000 integrated with TQM and Occupational Health and Safety (OH&S) systems or other systematic approaches with the aim of achieving eco-efficiencies. Sales of by-products are encouraged.
Level 5 Strategic Pro-activity	Intellectual and social capitals are used to develop strategic advantage through innovation in products/processes/services.	Environmentally sustainable innovations such as product redesign are seen as a source of competitive advantage.
Level 6 The Sustaining Corporation	Key goals both inside and outside the company are the pursuit of equity and human welfare and potential.	The company works with society towards ecological renewal.

2. THE PANASONIC TV FACTORY: MELCOA PTY LTD

The Panasonic TV Factory is a branch of Matsushita Electric Co. (Aust) Pty Ltd Matsushita was rated in 1997 by *Fortune* magazine as one of 13th largest manufacturers in the world and one of the top three in the electrical appliances industry. It commenced operations in western Sydney in 1968 and now has 160 employees and produces 1,000 televisions per day. The company operates in a high labour cost environment—of the 13 companies manufacturing televisions from bare board to final product 20 years ago in Australia, only Panasonic remains. This area of Sydney is the third largest business area in Australia, with as many as 75,000 operating businesses.

2.1 Ecological Sustainability

The ecological sustainability initiatives at Panasonic have been driven by two employees—the personnel manager and the purchasing supervisor. They were prompted into action in 1992 by the high costs of landfilling waste. At first, they met informally to organise the sale of by-products, the purchasing manager using his informal purchasing networks to get recycling initiatives under way. Initial savings (such as 25% reduction of landfill costs in the first year) convinced management that being environmentally responsible could increase competitiveness. The bottom line in Panasonic's competitive business is economic survival and savings were obviously being made through reducing energy use, as well as reducing waste. By 1997, the informal

meetings had evolved into a planned and structured approach to pollution prevention through recycling, energy efficiency and supplier choice. An environmental management system (EMS) was implemented to assess, manage and minimise the impact of business operations on the environment. In 1998, the EMS was formalised by certification under ISO 14001 and, in 1999, targets for waste reduction were initiated.

Panasonic has also capitalised on the diverse networks of local business interests to decrease its waste outputs and avoid costs. Instead of paying for landfill, it now has ingenious arrangements with a range of local companies for either the sale or free removal of by-products. Pallets are sold to a fencing company and plastics of all types, dross from solder machines and scrap metal are recycled. Cabinets are removed by a local company and used as bases for worm farms. Cardboard cartons are resold; selling the cartons pays for waste disposal costs. Foam is a major waste, but 100% now goes to a building company to be incorporated into concrete slabs for road building.

All major suppliers have been contacted and informed of the importance of environmental considerations in purchasing decisions. For instance, a number of supply materials have been phased out due to their toxicity, detergents are selected according to environmental criteria and safety data sheets are kept on chemicals. Energy efficiency is also encouraged. Renovations have been selected that will have the spin-off of better insulation. A process of zoned lighting has commenced and notices above switches encourage employees to turn off lights. The credibility gained from these small wins for the concept of eco-efficiency has persuaded senior management to include major energy saving initiatives in new warehouse and building sites.

In 2000, the company gained 1st place in the Western Sydney Industry Awards category 'Integrating Environmental Systems, Products and Technology into Business Practices'. The company is now committed to contributing funds to support kerbside collection of household wastes and to support a pilot television collection and recycling initiative.

Panasonic has a proactive and collaborative relationship with regulators, reflected in the fact that it was the first electronics company in Australia to sign up for the National Packaging Covenant—a voluntary code for packaging initiated by the Australian Government.

2.2 Human Sustainability

The human resource policy is strongly paternalistic, couched in a business perspective largely driven by cost. For instance, the personnel officer's role has now expanded to include official environmental responsibilities on top of his original duties. However, while the setting of targets and planning is still done by the personnel manager and the purchasing supervisor, there is

now top-down support for the EMS. Expert consultants and external auditors are employed by the organisation to maintain and update the EMS and all staff are put through environmental training programmes. A pamphlet, *Employees Guide to the Environmental Management System*, has been printed and the staff canteen has an environmental notice-board.

According to the personnel manager, such management practices have given staff a sense of ownership of the company's environmental achievements. This is demonstrated by the fact the EMS is now on the agenda of every third monthly communication meeting. Staff have also become engaged as a result of the setting of realistic and quantitative targets and implementing practical everyday pollution prevention and energy saving measures. Annual and cumulative savings from reducing waste and energy use have been documented graphically and are available to staff. The meeting is led by the managing director and addressed by various speakers on issues such as attendance, internal sales and profitability.

Television manufacture requires the compiling of many different components and is dependent on a skilled assembly line. The company has a policy of continually upgrading skills through attendance at accredited courses, setting competency standards and awarding medals. Many employees have visited Matsushita training centres in Malaysia, Japan, and taken study tours to similar centres in Europe. Almost all employees see the company as a long-term employer and there is a low level of staff turnover.

Even though the parent company is a multinational, Panasonic tries to concentrate on the Penrith community. For instance, there is a community welfare committee that makes shopfloor decisions about product gifts. Staff assist during paid time in the local 'meals-on-wheels' programme for the elderly and infirm. In 1998, Panasonic was one of only three companies in Australia identified by Volunteering Australia as being genuinely involved in projects that promote community well-being. According to the personnel manager, the community welfare programme at Panasonic is only a 'tiny initiative' involving less than 1% of total work time per week. He points out that, although the impact is small in terms of cost and the company donates only as much as it can afford, there is a big impact in terms of reputation.

The workplace culture at Panasonic has been inspired by the management philosophy of its founder, Konosuke Matsushita. While Matsushita saw management objectives as grounded in values that abide by the 'laws of nature and society', he was also committed to 'throwing himself into maximising the useful life of every available resource' (Sato 2000:40). According to this philosophy, human resources are to be used as productively as possible. The current preparations for the Matsushita 35th anniversary celebrations at Penrith reflect the paternalistic aspect of this culture. They include personal gifts and improvement of amenities for employees, gifts to

the community and employee involvement in a local species tree planting program in the nearby area.

3. INCO EUROPE LTD

The second study focuses on the INCO nickel refinery at Clydach near Swansea, in South Wales, UK. The refinery has been operating at the site since 1902 and uses the unique carbonyl process to produce nickel in a range of physical forms. The plant produces over 41,000 tonnes of nickel products per year. The main product is nickel pellet used in the stainless steel and high nickel alloy industries. Also produced are special forms of pellet for electroplating applications. The nickel powders produced at Clydach are used for powder metallurgy and in nickel battery applications. Newer higher value/lower volume products such as nickel foam and nickel fibre have specialist applications in the automotive, electronics and leisure industries (INCO 2002.) INCO's corporate policy, expressed in its values and principles, is to go beyond compliance to give long-term risk avoidance and stability.

The INCO Group is a global company. The turnover of the whole of the INCO Group is US\$ 2.2 billion. Approximately 10,000 people are employed by the company worldwide. At Clydach, 260 people are employed. The annual growth rate in the nickel industry is approximately 4%.

3.1 Environmental Initiatives

In 2000, the plant won the Wales Environment Award for companies with more than 250 employees. INCO also gained ISO 14001 certification in the same year. This certification proved very helpful when writing the site's application for an Integrated Pollution Prevention and Control (IPCC) permit. The Pollution Prevention and Control Regulations have been introduced as a result of the EU's IPPC Directive, which is designed to prevent, reduce and eliminate pollution at source through the prudent use of natural resources. These Regulations are a major driving force for environmental improvement and the Environment Agency is responsible for ensuring compliance with them in England and Wales.

The nickel industry is associated with major occupational health and safety (OH&S) issues. At Clydach, nickel carbonyl and carbon monoxide used in the production of nickel from a nickel oxide concentrate are highly toxic. INCO's integrated systems are designed with the aim of fully integrating quality, environment, health and safety management. INCO managers consider that these system give its products a competitive advantage over

cheaper products from other producers. The company is currently making its way towards an OH&S standard (ISO 18001).

The company also has a proactive and collaborative approach to regulators and is actively involved through the Nickel Development Institute with EU and US legislators on the development of health and safety regulations relating to nickel. INCO is currently looking at improving its stack emissions. Although these emissions are well within legal limits, work is now concentrating on this area and INCO is currently looking at new abatement measures. The company feels that it is better to be ahead of any possible changes in legislative limits and, perhaps, even influence the direction. The emphasis is on a transparent, working relationship with the regulator.

In moving towards better environmental performance, INCO follows the procedure of identifying significant aspects of the plant in terms of environmental management impact such as severity, quantity and legislation. Each is given a rating and high scores are emphasised in efficiency measures. The Business Unit then sets targets for the delivery of improvement schemes that focus on eco-efficiency measures such as reducing energy usage, recycling and improving operations. Participation in the voluntary 'waste busters' programme has resulted in the generation of a number of good ideas for energy savings.

Recycling of timber used in packaging is an example of one of these eco-efficiency measures. Before the scheme started, timber used for packaging was nailed to the floor of the containers, which made it useless afterwards. Now the timber is cut to longer lengths and wedged into the containers, allowing for subsequent re-use. The company has also introduced a recycling process that enables the full recovery of the nickel oxide from the delivery packaging. This has eliminated the need for disposal of the delivery packaging as special waste and also saves the company £100,000 per year.

INCO collects all waste and segregates it at source. Fluorescent tubes, wood, pallets, scrap metal, metal drums, cardboard and general waste are all separated out so that very specific figures for each type of waste are available. When opportunities arise the waste is sold or taken off-site for recycling. Scrap metal (steel), cardboard, pallets and office paper are sold.

The environmental benefits of INCO's environmental management programme are numerous. All surface and process water streams at the refinery are collected in the effluent treatment plant where over 99% of the nickel present is recovered before the water is discharged to a local river. As a result of continually trying to measure and improve environmental performance, the plant has achieved 65% reduction in effluent discharges since 1995. The discharge of soluble nickel is well below the Environment Agency's specified limit. According to the environmental superintendent, the plant's performance is now as good as they can get it with available

technology. INCO is looking at the installation of a magnetic water treatment system to reduce lime deposition in the effluent plant. The next improvements will be water reduction and water recycling.

The benefits also include a 70% reduction in waste sent to landfill and a recovered material value of over £100,000 from shredding and segregating waste materials. The company always seeks to segregate its waste, but has to make sure there is a market for the materials. Over the past three years, it has reduced its emissions to air by over 40%. INCO participates in its sector's Climate Change Agreement (CCA) and has met the target set for the past two years. The company is now in a position to 'bank' (after verification by external auditors) the 10,000 tonnes of carbon dioxide it has saved. Nuisance to the general public in the form of noise from INCO activities has also been alleviated.

3.2 Human Sustainability

The change agent at INCO was a new production director who arrived from Canada and decided to introduce a number of initiatives including the aim to achieve ISO 14001 in line with corporate policy. Staff describe the director as being very decisive and giving strong leadership.

Employees are trained according to ISO 14001 requirements and some are trained as auditors for ISO 14001. Each business unit has an employee evaluation each year, when training needs are agreed for the following year. Business unit teams meet for half an hour each morning and there is good communication through managers to team leaders and process technicians.

A major influencing factor is that many of the employees live locally. The plant is one of the biggest employers in the area and many employees stay 30 years with the company. The Environmental Superintendent takes a proactive attitude to the community and has a loose network of community members that assists in identifying any areas of complaint. The operation at Swansea has a Community Liaison Committee, which consists of council members, community members, school governors, teachers and other community representatives. It meets every two months to discuss community issues in relation to INCO. INCO supports the local community development plan and the community development officer is based at the plant. In ten local schools, INCO supports an industry information programme that is integrated into the curriculum. Retired employees often bring parties of schoolchildren from local schools to visit the plant. The company organises open days when the public are encouraged to visit the site.

According to INCO managers, the social or community programme costs the company approximately £12,000 a year. They are not sure how much it benefits the company as they cannot quantify it.

4. OPERATIONAL CHANGES FOR SUSTAINABILITY

Incremental organisational change is ongoing, systematic and gradual. Unlike radical transformational change it is not spectacular, but yet can offer real benefits to organisations (Stace and Dunphy 2001). In the instance of the two corporations studied here, the enabling influence for sustainability is not a transformational 'green' culture or a crusading 'green' morality (Newton 2002), but incremental change in the day-to-day activities of the company.

The change agents in each case are middle managers with good networking skills with regulators, the community and other organisations. In these companies, these change agents develop adaptive relationships with regulators and reduce business risks associated with future legislative change. They network with other businesses to reduce waste or proactively search out community opinion in order to forestall complaints. Put simply, each company is prepared to invest in the development of social capital. While the motivation for this may be instrumental, this shared norm of 'I'll do this for you now if you do something for me later', allows communities to bind (Adler and Kwon 2002), as well as giving the company the 'right to grow' in the future (Elkington 1999).

These findings support those made by Crane (2000), and Green *et al.* (2000) which suggest that it is not necessary to create radical cultural 'greening' or to espouse the tenets of deep ecology in order to develop environmental improvements. Our case study findings also support the work of Newton (2002), who argues for the importance of interdependency networks in organisational greening.

The research presented here indicates that it is not a 'green' culture that is needed for more radical change for sustainability, but a culture that fosters innovation. Both the organisations in our study are supported in their ability to move to the efficiency phase of sustainability by the paternalistic head office or parent company, but yet are denied the flexibility needed to innovate beyond to the strategic phase of sustainability (see Table 1). Both have loyal workforces (long-term employees) drawn from the local community. As a result of these factors, the two companies fall short of adopting the strategy of making a more comprehensive use of employee human potential, achieved through broader and interpersonal development schemes. INCO, furthermore, illustrates the pragmatic difficulties in moving to a fully strategic position in a competitive industry sector. The company has developed new products, which have reduced material throughput, but its main efforts remain focussed on the larger and more stable market for nickel pellet.

Despite these issues, considerable progress to sustainability has been made by both companies. Through a series of incremental changes, both

organisations have moved to the efficiency phase of human sustainability, enabling eco-efficiency measures to be successfully implemented. People in both organisations are seen as a source of increased productivity and their skills increased accordingly. Both organisations emphasise training and have good communication procedures in place. Workplace systems are installed to ensure high work efficiency. Better environmental performance is enabled through these TQM-based systems and is seen as a way of reducing operational costs. Systematic reviews have enabled ongoing reduction in resource use. Internal benchmarking and the implementation of management systems such as ISO 14001 built on the TQM base are key factors in reaching and remaining at this stage. As Dunphy *et al.* (2003:140) point out: 'the efficiency approach represents a natural move to sustainability because it builds on existing operational and technical capabilities and is a natural extension of installing compliance systems. But as Gratton (2000) observes, such an approach may be only give limited competitive advantage as it may be readily imitated by competitors. It does not offer the long-term strategic competitive advantage that a more innovative approach to change can provide.

5. CONCLUSION

These case studies demonstrate that human and ecological sustainability are integrated processes. In these organisations, the ecological capability has been built upon and developed through the building of human resource and stakeholder relationship-building capacities—what we term human sustainability.

REFERENCES

- Adler, P. and Kwon, S. (2002): 'Social Capital: Prospects for a New Concept', *Academy of Management Review* Vol. 27, No 1, 17-40.
- Crane, A. (2000): 'Corporate Greening as Amoralisation', *Organisation Studies* Vol. 21, 673-696.
- Dunphy, D., Griffiths, A. and Benn, S. (2003): *Organisational Change for Corporate Sustainability*. London: Routledge.
- Elkington, J. (1999): *Cannibals with Forks*. Oxford: Capstone Publishing.
- Freeman, R., Pierce, J. and Dodd, R. (2000): *Environment and the New Logic of Business*. Oxford: Oxford University Press.
- Green, K., Morton, B. and New, S. (2000): 'Greening Organisations: Purchasing, Consumption and Innovation', *Organisation and Environment* Vol. 13, 206-225.
- Hunt, C. and Auster, E. (1990): 'Proactive Environmental Management: Avoiding the Toxic Trap', *Sloan Management Review* Winter, 7-18.

- INCO (2002): *INCO Homepage* [online]. Available from Internet URL: <http://www.incoltd.com>.
- Newton, T. (2002): 'Creating the New Ecological Order? Elias and Actor-Network Theory', *Academy of Management Review* Vol. 27, No. 4, 523-540.
- Roome, N. (1992): 'Developing Environmental Management Strategies', *Business Strategy and the Environment* Vol. 1, No. 1, 11-24.
- Sato, T. (2000): 'Konosuke Matsushita: His Life and Legacy' (Industrialists of the 20th Century), *Asia 21* January 2000.
- Stace, D. and Dunphy, D. (2001): *Beyond the Boundaries*. Sydney: McGraw Hill.

Chapter 9

Environmental Management Systems and Competitiveness

Ball, Robert, Prof. Dr, Dean of the Faculty of Management, University of Stirling, Stirling, Scotland (UK), email: rob.ball@stir.ac.uk

Batenburg, Ronald, Dr, Department of Information and Computing Sciences, Utrecht University, PO Box 80089, NL 3508 TB The Netherlands, email: r.s.batenburg@cs.uu.nl

Benn, Suzanne, School of Management, University of Technology, Sydney (Australia), email: suzanne.benn@uts.edu.au

Bönning, Matthias, Oekom Research AG, Goethestr. 28, 80336 Munich (Germany), email: boenning@oekom-research.com

Braun, Boris, Prof. Dr, Department of Geography, Otto-Friedrich-University Bamberg, Am Kranen 12, 96045 Bamberg (Germany), email: boris.braun@ggeo.uni-bamberg.de

Clausen, Jens, Dr, Borderstep Institut für Innovation und Nachhaltigkeit gGmbH, Hausmannstr. 9-10, 30159 Hannover (Germany), email: clausen@borderstep.de

Cheng, Deborah, Global Footprint Network, 1050 Warfield Ave, Oakland, CA 94610 (USA), Phone: +1 510 839-8879, email: info@footprintnetwork.org, homepage: <http://www.footprintnetwork.org>

Dyllick, Thomas, Professor of Environmental Management, Managing Director, Institute for Economy and the Environment (IWOE-HSG), University of St Gallen, St Gallen (Switzerland), email: Thomas.Dyllick@unisg.ch

Farrell, Frank, Environment Agency, Rivers House, Bridgwater, Somerset TA6 4YS (UK), email: frank.farrell@environment-agency.gov.uk

Figge, Frank, Dr rer. pol., Lecturer, School of the Environment, University of Leeds, Leeds LS2 9JT (UK), email: frank@env.leeds.ac.uk

Goddard, Trevor, Lecturer, School of Occupational Therapy, Curtin University of Technology, GPO Box U1987, Perth WA 6845 (Australia) and Deakin University, Corporate Citizenship Research Unit (Australia), email: t.goddard@curtin.edu.au

Goldbach, Mark, Dr, Research Center for Business Administration, Faculty of Business, Economics and Law, Carl von Ossietzky Universität Oldenburg, 26111 Oldenburg (Germany).

Goldfinger, Steve, Global Footprint Network, 1050 Warfield Ave, Oakland, CA 94610 (USA), email: info@footprintnetwork.org, homepage: <http://footprintnetwork.org>

Hahn, Tobias, Dr rer. pol., Institute for Futures Studies and Technology Assessment (IZT), Schopenhauerstr. 26, 14129 Berlin (Germany), email: t.hahn@izt.de

Hamschmidt, Jost, research associate, Institute for Economy and the Environment (IWOE-HSG), University of St Gallen, St Gallen (Switzerland), email: Jost.Hamschmidt@unisg.ch

Hitchens, David, Professor of Applied Economics, School of Management and Economics, 25 University Square, Queen's University Belfast, Belfast BT7 1NN (UK), email: d.hitchens@qub.ac.uk

Keil, Michael, IÖW (Institute for Ecological Economy Research), Hausmannstr. 9-10, 30159 Hannover (Germany), email: michael.keil@hannover.ioew.de

Kitzes, Justin, National Accounts Program, Global Footprint Network, 1050 Warfield Ave, Oakland, CA 94610 (USA), phone: +1 510 839-8879, email: justin@footprintnetwork.org, homepage: <http://www.footprintnetwork.org>

Koehler, Dinah A., Sc.D., Economics and Decision Sciences Research National Center for Environmental Research 8722F, 1200 Pennsylvania Avenue, NW, Washington, DC 20460 (USA), email: Koehler.Dinah@epamail.epa.gov

Knörzer, Andreas, Bank Sarasin & Co. Ltd, Elisabethenstr. 62, 4002 Basel (Switzerland), email: andreas.knoerzer@sarasin.ch

Lankoski, Leena, Visiting Researcher, INSEAD Business in Society (IBiS) Research Centre, INSEAD, Boulevard de Constance, 77305 Fontainebleau (France), email: leena.lankoski@insead.edu

Lee, Ki-Hoon, Prof. Dr, Environmental Management Centre, POSCO Research Institute (POSRI), PORSI Bldg.147, Samsung-dong, Kangnam-gu, Seoul 135-090 (Korea), email: euroben@dreamwiz.com