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# Introduction to Ecology and Management

## Online student resources

### ■ Additional materials

#### ■ Natural capitalism

One overarching framework for analysing the progressive introduction of ecological principles into mainstream management is 'natural capitalism' (Hawken et al 1999). Formulated as a roadmap for companies' green conversion, this approach mobilises a few core ideas, generally revolving around efforts to increase the productivity of natural resources, adopt biologically-inspired production models and reinvest in natural capital. At an applied level, strategies of this sort can have a very strong impact on companies' operational or design activities.

The first question raised by the authors is why it has taken so long for companies and governments to recognise the ecological imperative and modify their industrial processes –and accounting systems – to represent it more accurately. Two separate sources - the British consulting firm Trucost and the Journal 'Nature' – have determined that the ecosphere provides human industry with something in the region of \$33 trillion a year in free services, or about the same order of magnitude as the world's gross domestic product. Actors are generally unaware of the dangers of losing this bounty, given most people's tendency to only react to catastrophes. In other words, there is no real signal indicating the need to change the way that modern civilisation exploits the natural world until it actually breaks down. One explanation for this myopia is that people use the environment for all sorts of fundamental physical operations without considering how they might achieve the same outcomes in its absence. A corollary observation is that the environment's underevaluation is all the more dramatic given the lack of any known substitutes for the ecosphere that sustains life on Earth.

In response, natural capitalism proposes a number of shifts in business paradigms:

- Much greater attention must be paid to raising the productivity of natural resources. To a large extent, this can be achieved by avoiding the traditional economic scheme where products are consumed (until depletion) before being wantonly thrown away (generating pollution). The call is for an in-depth modification of corporate production design and technology to derive much greater value from natural resources. The promise is both macro (avoiding overall depletion) and micro (cost savings should more than fund the initial investment required to implement a new, environmentally-friendly 'whole-system design').
- As far as possible, production models should draw inspiration from processes witnessed in the natural world, sparking in turn a raft of technological innovations. The ultimate goal might become the total elimination of waste, with all system outputs being seamlessly recycled as inputs for further operations (much in the same way as dead vegetable matter provides compost to grow future vegetables). It is especially incumbent upon economic actors to avoid toxic waste, since this keeps nature from performing the restorative processes upon which normal 'closed loop' cycles rely.
- Corporate missions should be recalculated and expressed in terms of solutions to needs rather than as physical goods. One example used by the authors of 'Natural Capitalism' is the distinction between providing illumination and selling light bulbs. In this new view, value is no longer associated with the ownership of a physical good but instead with the satisfaction of a need. By taking the physical good out of the value equation for customers, corporate incentives to use resources are diminished.
- Accounting systems should be modified to reflect the new value focus. One major step would be to convert environmental capital expenditures into tax deductible expenses. For the moment, spending on resources is booked as a charge on companies' profit and loss statements – thus as something that reduces taxable income – whereas investment in resource-saving equipment is itemised as a balance sheet asset and has less of a fiscal impact. This approach is not justified in natural capitalism and should be reversed. Similarly, it makes no sense remunerating upstream employees for what they spend on the big projects they manage. Quite the contrary, a better indicator of the value they provide is how much they save. This is particularly true given the concept of expanding returns, an empirical observation that companies engaged in wholesale efforts to save resources often spend less than those who are less ambitious. More broadly, it is in a company's interest to reinvest in nature capital to restore the ecosystem's capacity to provide the kind of services from which future business will benefit. Unfortunately, such investments are often deemed unprofitable because the payback horizon they require can appear long. Given the timescale on which ecological

processes operate, however, natural capitalism can also be construed as an argument for lengthening executives' decision-making horizons. The world is heading towards eons of resource scarcity and it makes little sense to focus excessively on immediate financial outcomes since this means that energy is presently being calculated in present cost terms alone instead of addressing the deeper issue of a company's very survival.

Lovins, A., Lovins, L. and Hawken, P. (May-June 1999), 'A Road Map for Natural Capitalism', *Harvard Business Review*, Reprint number 99303, pp. 145-158

## ■ Brief review of moral philosophy

Many environmentalists would claim to be driven by altruism, defined here in the sense of eschewing personal advantage in favour of an action whose benefits accrue as much if not more to the wider community. The conflict between the human capacity for selflessness and the just as ubiquitous focus on immediate self-interests has long been key to moral philosophers' characterisation of human nature. Note that whereas many philosophers have spoken of intrinsic human traits, there is an ancillary discussion to be had on the extent to which altruism and selfishness dominate to varying extents over time in the same culture, or at the same time in different cultures.

It would be impossible in a brief review to broach all of the ethical debates underpinning human civilisation since the dawn of time (usually staged, at the very outset within frameworks defined by different world religions' seminal texts). A more finite starting point for discussion of this nature might be the Ancient Greeks, for instance, led by Aristotle who used to espouse the idea that virtue had its own value and who saw no contradiction between morality and self-interest. Part of this vision was the idea that leaders must act for the sake of the wider community. This fits in well with today's argument that ethical behaviour can coincide with profitability, i.e. that altruism and selfishness are not necessarily diametrically opposed. For further information, it is worth perusing Aristotle's 'Nicomachean Ethics', laying the ground rules for what the great philosopher construed as life of virtue and happiness.

Discussions of moral philosophy can also be subsumed into wider debates over regional cultural variations. A seminal thinker in Ancient Asia was Confucius, for instance, whose 'Golden Rule' did not blind him to the existence of self-interest – he simply felt that righteousness came first and that individuals should be guided by the search for harmony. This worldview still conditions what professional ethnologists tend to categorise as an ideal-type of cooperative interaction, often associated with the Asian model. It can be contrasted with the more cynical outlook epitomised, for instance, by the writings of Nicola Machiavelli, the great thinker of the Italian Renaissance who thousands of years after Confucius (and Aristotle) expressed in his masterpiece 'The Prince' the notion that the successful are in a position to impose their own morality on those whom they have crushed on their way to the top.

Similarly, it is also worth reading 'Leviathan' by Thomas Hobbes, the English Enlightenment figure who asserted that the members of a given population will only cooperate with one another if they work out a 'social contract' where a higher power is empowered to police social interactions and prevent some individuals' pursuit of self-interest from harming others. In certain respects, this paradigm can be aligned with the Western sense of competitiveness and individual freedom.

Adam Smith's 'The Wealth of Nations' (1776) was based on the idea that society is driven by the sum total of individual interests ( 'it is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest'). Paraphrased in recent years as 'greed is good', Smith was actually quite sceptical about materialism. Often forgotten is Smith's 'Theory of Moral Sentiments', which discussed the importance of ethical market arrangements to counteract the negative by-products of social interactions being solely determined by self-interest. Smith clearly hoped that profit-seeking and morality could co-exist, as long as certain safeguards were in place. In contrast, Karl Marx would later argue that capitalism itself is based on straightforward exploitation, and that greed necessarily destroys non-productive social structures. In this 'material determinist' view, an individual's outlook is determined by their economic circumstances. Morality is nothing more than a 'superstructure' that has been imposed on the exploited masses to distract them from gaining awareness of their condition and rebelling against the power elite (c.f. C. Wright Mills) whose members are at fault for tensions afflicting any society as a result of their relentless pursuit of self-interest.

On the other hand, Thomas Jefferson's analogous concept of the 'pursuit of happiness' is ingrained as a seminal principle in the Constitution of the United States, where such motivations are generally imbued with positive moral overtones. To some extent, this differential assessment of one and the same phenomenon covers the divide between those who consider it possible to optimise the well-being of a society as a whole by adding up the sum total of each individual member's personal well-being, and others who feel that a macro outcome is fundamentally different from simply adding up constituent elements' micro outcomes. From this perspective (akin to the notion of 'optimality' developed by the Italian economist Pareto around the turn of the 19th century), morality is not a question of ethics but more a mathematical problem of enhancing outcomes under constraint.

## ■ Revision tips

- In prehistoric times, the predominant attitude was to fear nature's power. With scientific discovery, such mysticism began to decline and there was growing confidence in humankind's ability and need to dominate nature: the anthropocentric paradigm
- One response to the devastations accompanying early industrialisation was the birth of 'ecology', an interdisciplinary approach inspired by Malthus (demography/politics) and Humboldt (botany/economics) and Darwin (biology).
- Early ecology focused on conservation (Muir, Potter, Leopold). The seminal text for a more holistic approach came in response to a pollution crisis (Minimata, DDT) - *Silent Spring* by Rachel Carson (1962).
- Starting in 1970s, rise of mass consciousness (seminal texts by Hardin, Ehrlich, Schumacher; image of fragile Earth taken from the moon, etc.). From the outset, there has been an aesthetic vs. utilitarian divide between deep and social ecology.
- The politicisation of the ecological movement began with NGOs such as Greenpeace; German Green Party; 1987 Brundtland Report on Sustainable Development. From the 1990s onwards, green awareness became entrenched, with the institutionalisation of scrutiny (UN conferences), rise of corporate responsibility and recurrent disasters.
- The premise of Ecology and Management is that business needs to understand that it operates in a physical world (ecosphere) that only survives due to systemic processes. Green managers should therefore appropriate certain principles from general sciences such as biology (e.g. biodiversity, food chains), chemistry (e.g. energy storage, dilution of pollutants) and physics (e.g. energy flows). They can also appropriate other earth science principles drawn from hydrology (e.g. erosion), geology (e.g. soil management) or meteorology (e.g. climate change).
- Re-integrating ecological perspectives into business decision-making means correctly pricing companies' currently externalised costs of using nature (resource depletion) and abusing it (pollution). One name for this approach is 'Natural Capitalism'.
- There are many reasons why many managers feel estranged from environmentalism. This perspective is often associated with anti-capitalist or utopian thinkers; numerous incentives exist not to go green (e.g. concern about costs and long-term payback); developing countries may have other priorities, etc.
- Similarly, many processes that are specific to international business ('regime arbitrage', 'race to the bottom', fragmentation of global value chains, etc.) also create disincentives for the greening of multinational enterprises (MNEs).

- In light of this, focusing on the obstacles that prevent companies from going green – and how to overcome them - is more instructive and realistic than over-stating the probability of success as many if not most other green business books do. The goal is to offer a realistic evaluation of the likelihood of corporate greening on a large scale.

## ■ Additional case study: Ecocide and mismanagement

In 2006, UCLA professor Jared Diamond published an ambitious work entitled 'Collapse: How Societies Choose to Fail or Succeed' that became a global bestseller within a year. Academic books rarely sell on such a mass scale, especially analytically complex ones focused on little known topics like 'ecocide', or the way past civilisations (Vikings in Greenland, Pacific Islanders) and even some modern ones (Rwanda, Haiti) have through their own negligence helped to destroy the ecosystem enabling their survival. The success of a book like 'Collapse' bears witness to the seriousness with which more and more citizens, from all walks of life, accept the ecological imperative today.

Diamond's innovative approach was to combine an anthropological study of past nations' economic and political structures with how they treated their resource base and, more broadly, physical environment. His first step was to list categories of ecological destruction associated with these civilisations' decline, ranging from deforestation or habitat destruction to soil and water management problems, over-hunting, population growth and, intriguingly enough, rising incomes. He then asked why the community in question had not changed its disastrous economic trajectory. The first reason he found for inaction was a failure to anticipate problems, due to people's short memory of similar crises from the past or inability to predict the future. The second reason was a failure to perceive problems once they arrived. Some factors at this level bear resemblance to today's world: 'landscape amnesia', or forgetting the identity and function of a natural environment before it had been used up for economic gain; and 'creeping normalcy', or people's slow response to long-term trends whose effects may only impact on future generations (the same kind of short-termism hampering current action on climate change). Most poignantly, Diamond saw that as once successful societies expanded their empires, managers would control increasingly vast territories. Distance meant that they either could not see - or else were less directly concerned by - the environmental damage caused by economic activities occurring in the regions under their control. The same applies in today's globalised trading system, where officers working out of remote corporate headquarters often makes decisions affecting distant foreign environments. It is, for instance, the kind of criticism that is often levied at oil companies that charter lower quality

tankers with a heightened risk of maritime accidents, leading to ecological disasters such as the Prestige oil spill that inundated the northwest coast of Spain in 2002.

The third and most frequent explanation that Diamond found for these civilisations' inability to stave off ecological disaster was their failure to solve even those crises that they understood. The main reason here lay in the perverse effects of rational decisions taken by some parties advance their own interests through actions harmful to other members of their communities. Thus, in the absence of strong laws or sanctions, a few (often concentrated) perpetrators will be highly motivated by the prospect of big gains to abuse common resources. Because the negative environmental side effects spread throughout the rest of society, resistance to such abuse would be weak or diffuse – meaning that it would continue until the society had destroyed its own resource base and/or environment.

There are many parallels between Diamond's history lesson and the modern world. The author himself outlined a few modern examples, such as the subsidies paid to US sugar processors or Australian cotton growers that - like similar payments made to European Union fishing interests - enable the continued over-exploitation of resources that are finite and/or being produced in unnatural environments. The sum total of these trends, when combined with the wide scale breakdown in the planet's natural systems (climate change, oceanic carbon transfers, etc.), sparked debate in some quarters as to whether it is already too late to save Earth from total collapse (Kingsnorth and Monbiot 2009). Thankfully, Diamond leaves readers some hope about how to overcome the ecological myopia that has affected many economies throughout history. One main proposal is to incentivise companies (including via privatisation) to assume stewardship over the different environments where they operate. Critics might reply that this leaves local populations exposed to the risk that the company will ransack the resources and then move on once nothing is left. This debate is one of the many crossovers found between Ecology and Management and International Business analysis.

Diamond, J. (2006), *Collapse: How Societies Choose to Fail or Survive*, London: Penguin  
 Kingsnorth, P. and Monbiot, G. (18 August 2009), Is there any point in fighting to stave off industrial apocalypse?, *The Guardian*, p. 30

## ■ Case study questions

**A. Why has the general public started to take a greater interest in the environment problems?**

**B. In Diamond's analysis, how has 'ecological myopia' driven the downfall of some past civilisations?**

**C. How does Diamond suggest that modern civilisation avoid the ecological pitfalls of the past?**

## ■ Other references

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