

***Report on the School of Business Symposium on
Sustainability and Business***

Held 3 March 2009,
The Open Polytechnic of New Zealand, Lower Hutt

Editor Jonathan Barrett

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Introduction

On 3 March 2009, the School of Business of the Open Polytechnic of New Zealand hosted a symposium on Business and Sustainability at the Open Polytechnic's Lower Hutt campus.

The principal purpose of the symposium was to generate interest in sustainability research at the Open Polytechnic, rather than to present completed research. Most presentations were, therefore, of an exploratory nature, but some will be developed into working papers.

The presentations were not subject to blind peer review and they do not necessarily reflect the views of the Open Polytechnic or its staff.

Since the symposium, a Moodle-based Sustainability Research Hub has been set up for online discussion and collation of relevant information. Furthermore, an informal sustainability Research Special Interest Group has been formed to provide a face-to-face discussion forum for staff interested in sustainability research.

Organising committee

Jonathan Barrett, Denis Bourke, Rick Fisher, Kathy Maguren, Jane Needham and Luke Strongman.

Chair

Ashish Malik.

Discussants

Ken Marshall, Beverley McNally and Gwyn Narraway.

Guest speaker

Andy Woodwark, Hyder Consultants.

Contents

New Zealand, Trade, and the Environment Dr Rick Fisher	1
Sustainability: Definitions, Values, Applications, Limitations Dr Luke Strongman	14
Sustainability, Human Rights, and Standing Dr Jonathan Barrett	27
Sustainability and Accounting Denis Bourke	34
Sustainability and Regulation Gordon Halsey	39
Sustainability and Management Dr Vasanthi Peter	45
Sustainability and Education Josephine Bourke	52
Sustainability and the Open Polytechnic Dr Peter Rutland	61
Useful Online Resources	68

New Zealand, Trade, and the Environment

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Abstract

This presentation provides a framework for analysing sustainability and trade. It covers contemporary sustainability issues in New Zealand's trade situation, and the extent to which environmental concerns are being addressed in current trade talks. The World Trade Organisation (WTO) is used as a case study to examine ways in which trade measures can be adopted to protect human health and the conservation of natural and physical resources. Research possibilities at the Open Polytechnic are discussed, including the impacts of the current economic crisis upon sustainability and trade, as well as trade-related opportunities associated with global approaches to climate change.

Objectives of the presentation

The objectives of the presentation are to:

- provide a rationale and framework for considering the special connection between sustainability and international trade
- outline contemporary sustainability issues in New Zealand's trade situation
- frame general research questions that could be amenable to collaborative research relevant to expertise within the School of Business and beyond.

Why an interest in trade?

Key connections between sustainability and trade include:

- all economic activity is based upon the environment in some way, including materials input, energy for processing, and waste products
- New Zealand has an extensive policy and domestic law lineage confirming a commitment to the environment, embracing the *Brundtland Report* (1987) values embedded in the currently accepted definition of 'sustainable development'
- New Zealand also seeks to position itself as an international leader in sustainability, and is a party to a number of international obligations in various multilateral environmental agreements (MEAs).

Key points

- The World Bank estimates that the economic costs of environmental degradation ranges from 6 to 10 per cent of gross domestic product (GDP) on an annual basis.
- Trade theory related to comparative advantage suggests that polluting activities in countries with less stringent environmental regulations may occur, but this can be halted if compositional changes to less environmentally harmful forms of economic activity also occur in the developing country.
- The environmental Kuznets curve suggests that as development takes place, environmental degradation increases, then decreases with increasing GDP per capita.
- As a result, there is an increasing focus on worldwide cooperation in reaching consensus on sustainable development, with trade a part of this road to sustainability.

International agreements that New Zealand has ratified include:

- Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer

These ban imports and exports of controlled substances between parties and non-parties, and provide for licensing of controversial substances, including methyl bromide.

- Convention on International Trade in Endangered Species of Wild Fauna and Flora

Prohibits trade in a number of endangered living animal and plant species, and body parts, unless an export permit is obtained.

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

Allows a country to ban the import of hazardous waste, and restricts trade in waste to a comprehensive control system of permissions.

- Stockholm Convention on Persistent Organic Pollutants

Eliminates trade in eight substances and severely restricts trade in others, including DDT.

- Convention on Biological Diversity

- United Nations Framework Convention on Climate Change and its Kyoto Protocol.

New Zealand's sustainability package includes:

- a national energy strategy
- an energy efficiency and conservation strategy
- a waste management strategy
- a transport strategy
- a climate change action plan, including
 - an emissions trading scheme (ETS)

- a permanent forest sinks initiative
- a sustainable land management plan.

(The push towards an ETS is based on the view that low-carbon economies may be encouraged that provide a real or implicit price for carbon, including standards, government funding, tax credits, and so on.)

Sustainability and trade: framework for analysis

This entails a three-step process:

- identify trade issues raised by a given environmental measure
- assess the consistency of the measure against a given trade agreement
- assess how steps might be made to make the measure consistent with the trade agreement.

‘Environmental measures’ are related to:

- international environmental obligations/international law
- domestic environmental policy
- domestic environmental law.

Trade impacts have been studied in two broad areas. One area examines how trade flow may be affected by abatement costs and regulation. The other looks at composition effects, being changes in production and trade in response to the pollution intensity of production.

The two key issues are how national legislation and policy related to local environmental protection can be extended to an international trade situation, and the pecking order of an MEA versus a trade agreement.

Do climate change measures impact on trade?

The measures are grouped by the World Bank as:

- regulatory (regulations, standards, directives, mandates)
- fiscal (carbon or energy taxes based on the carbon or energy content of products, plus subsidies, tax credits, and feed-in tariff)
- market-based instruments (emissions trading and tradeable energy certificates), and voluntary agreements.

As of 2000, only 18 out of 180 international environmental agreements included trade measures. Key treaties with trade measures include:

- Montreal Protocol on Substances that Deplete the Ozone Layer
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- Stockholm Convention on Persistent Organic Pollutants
- Convention on Biological Diversity.

Historical overview: WTO and the environment

- 1973: Convention on International Trade in Endangered Species of Wild Fauna and Flora
- 1985: Montreal Protocol
- 1991: OECD and GATT working groups organise joint meetings on trade and the environment
- 1992: Basel Convention, various others: MEAs that include some kind of trade restriction related to the environment
- 1994: Uruguay round results in a Committee on Trade and the Environment under the new WTO

- 1994–present: Refinement of dispute resolution under the WTO for matters such as agriculture, sanitary and phytosanitary measures, technical barriers to trade, subsidies, and so on.

So far no WTO member has ever challenged another member for undertaking a trade measure in compliance with an MEA. For example, the Kyoto Protocol does not contain any explicit trade measures to enforce compliance, nor does it contain any specific methods to create policies to address climate change commitments.

Actions so far have dealt with domestic laws ostensibly directed to protecting the national environment. Notable examples follow (all of which failed in the attempt to protect environmental values):

- protecting the public health from the harmful effects of cigarettes under Thailand national legislation
- banning beef containing growth hormones under European Union regulations banning the use of growth hormones in beef
- banning reformulated gasoline under the United States Clean Air Act
- banning tuna caught with nets that also caught dolphins under the United States Marine Mammals Protection Act
- Banning shrimp caught with nets that also caught sea turtles under the United States Endangered Species Act

These all invoke Article XX exemptions under the WTO. The problem with Article XX exemptions is that most climate change measures don't target particular products. Consequently there may be more potential to look into process and production methods.

Production and process methods

Production and process methods (PPMs) distinguish products on anything other than perceptible characteristics. This is not currently allowed under WTO rules, but is in theory possible. It may be helpful to further distinguish PPMs into 'product-related' and 'non-product-related' PPMs. The former would refer to things that ensure the functionality of a traded good, or safeguard the consumer. Hormone-treated beef falls into this category. The latter refers to PPMs that relate to some social purpose, such as banning tuna caught with nets that also catch dolphins. The tuna itself has nothing to do with dolphins.

However, it is possible for such measures to be taken under, for example, the Montreal Protocol, where action could be taken against a country trading in a product that endangered an exhaustible natural resource in the context of Article XX(g), or endangered health under Article XX (b). It simply hasn't occurred yet. The future test case will involve a measure taken in pursuit and compliance with an MEA.

Trade solutions

Neumayer (in Gallagher & Werksman, 2002, pp. 137–165) identified the following trade solutions:

- wait and see
- change the WTO dispute rules to ensure that a trade issue is resolved under MEA rules first
- amend GATT to include a sustainability clause allowing polluter-pays principles and precautionary principles into trade disputes, or add another exception to Article XX for MEAs
- add trade-related environmental measures
- include a prevailing clause like Article 104 of the North American Free Trade Association, which says that in the event of any inconsistency the MEA prevails
- make trade-related aspects of intellectual property rights more consistent with the Convention of Biological Diversity.

Recent New Zealand involvement in the WTO

- WTO-related activity in association with the Doha round:
 - reduction or elimination of tariff and non-tariff barriers to environmental goods and services
 - improving WTO discipline in respect of fisheries subsidies
 - improving information exchange
- other non-Doha activity, including labelling issues, improving the intellectual property protection of traditional knowledge and indigenous communities, and seeking observer status on the WTO's Committee for Trade and Environment (CTE) in dealings with MEAs

The 2001 Doha ministerial declaration includes a WTO commitment to sustainable development. It calls on the CTE to assist in defining issues and scoping international dialogue.

New Zealand's interest in fisheries subsidies points out how difficult removing subsidies can be. In Canada, for example, the cod industry explicit and implicit subsidies included loan assistance with boats and equipment, various income tax breaks, income subsidisation during the off season, and potentially forgiving fines for fishing infractions. The result was the death of the cod fishery.

Key issues associated with liberalising trade in environmental goods and services include:

- dealing with single-use versus dual-use goods
- their relative environmental friendliness – in terms of how they are used, not how they are made, and also based on purely relative friendliness. For example, natural gas is cleaner than coal, but less clean than ethanol. Does a subsidy for ethanol therefore act as a de facto non-tariff barrier to natural gas? And if trade barriers to natural gas are removed, shouldn't subsidies to coal, which are a much greater threat to global warming, also be removed?
- out-of-date technologies
- domestic impacts, including impacts on domestic industries, jobs, and tariff revenues.

The key issue is whether to do it by list, or by project.

Labelling raises various north–south and race-to-the-bottom issues in regard to technical barriers to trade. It also raises issues about product life cycle analysis, which goes to PPM.

Other trade activity

Other trade activity includes integrating environmental issues into free trade agreements with China, Thailand, and the ‘Pacific Four’ agreement with Singapore, Chile and Brunei. Examples of the impact of environment and trade policy principles include the following:

Environmental impact	
Positive	Negative
Promoting cooperation between a given MEA and the institutions that serve it, in the context of impacts on trade.	Respecting the rights of trading partners to pollute their own environment.
Ensuring that New Zealand’s commitment to sustainable development is reflected in a trade agreement.	Opposing environmental standards if they can be viewed as a form of economic protectionism. General lack of support for enquiry into PPMs.

Foreign direct investment is often used by firms to avoid tariffs. Joint ventures for technology transfer may therefore be used, but care is necessary to balance the transfer with concomitant intellectual property rights, otherwise the technologies stall at the project phase without diffusing.

Risks

According to Georgieva and Mani's World Bank study findings (2006):

- reducing barriers to trade could reinforce the tendency for countries to export commodities that make use of resource-intensive production factors
- trade liberalisation could directly affect environmental standards
- 'environmental tariffs' could be employed against trading partners deemed to have inadequate environmental standards

In response to these risks, the WTO suggests that countries more open to trade are more likely to adopt cleaner technologies. It also encourages cleaner production, because protectionist countries tend to shelter polluting industries.

In terms of north-south issues, the share of developing countries in contributing to world GDP could reach 60 per cent by 2030, and their contribution to world trade almost 50 per cent. The global economic crisis is likely to have adverse effects on south-south trade. It will impact on such things as wind technology in China, and biofuels in Brazil.

Fascinating research opportunities may occur here in the context of risk, the precautionary principle and trade (for example, New Zealand, Australia, and fire blight in apples).

Impact on New Zealand business

Environmental issues affect New Zealand business in terms of:

- marketing and labelling (for example, the food miles debate)
- emissions trading (impact on manufactured goods)
- genetic modification (impact on the technology sector)
- climate change, globalisation and disease (impact on trade in the primary sector).

‘Crystal ball’ questions

- Will the international economic crisis impact adversely on international sustainable development initiatives related to trade?
- Will President Obama’s stated commitment to an ETS and renewables result in greater opportunities for trade in environmental goods and services?
- Will future WTO decisions embrace or discard recent decisions that favour sustainable development in trade?

Research possibilities at the Open Polytechnic of New Zealand

Possible research topics include:

- Change in government:
 - changes to domestic management of the environment may interest both environmental and business practitioners
- Multilateral environmental agreements:
 - what will replace the Kyoto Protocol? Will the US position on an international ETS create environmental economics research opportunities?
- Climate change:
 - domestic responses to issues like water allocation and ‘virtual water’ (joint business/ real estate research)
- Education for sustainability
 - cross-disciplinary opportunities for examination of selected case studies.

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Sustainability: Definitions, Values, Applications, Limitations

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Abstract

Drawing on a variety of sustainability literature, this presentation outlines the main ways in which sustainability has been defined; explores the central debates within the emergent sustainability movement; traces the interdisciplinary connections between sustainability values and applications in indigenous models, ecopsychology, business and higher education; and synthesises the core principles of sustainable practices for individuals, business and educators.

Three cornerstones

- Socialisation, environment, economy.
- Following the Brundtland Report to the World Commission on Environment and Development (Brundtland, 1987) issues of sustainability in higher education have advanced into academic disciplines and professions.
- Only after the 1992 Rio Earth Summit did education for sustainable development enter the vocabulary of educational reformers (Calder & Clugston, 2003).

The post-fossil fuel era

- It takes energy to make energy.
- Decline in energy return for energy investment ('the gator effect').
- There is no planetary bank manager – if there is no net energy there is no net energy – net energy from fossil fuels in 2015 is predicted to be nil.

- According to the Global Footprint Network (n.d.), it would take 1.4 Earths to sustain the current lifestyle of humans.

Definitions

- 'Meeting the needs of the present without compromising the ability of future generations to meet their needs' (Brundtland, 1987, p. 1).
- The economic definition of sustainability holds that it is a measure of non-declining per capita utility between inputs of three resource forms: labour, capital and natural resources.
- Continuum between individual freedoms and governmental control/ natural needs of 'human nature' and planned development and organisation.

Post-Brundtland world

- Closer examination of societal structures and behaviours needed; new possibilities for demographical organisation.
- Geo-4 – no significant gains in 20 years.
- The systematisation of the relationship between reductionism and holism in respect to social, economic and environmental constraints (Hewston, 2009).
- Lovelock's Gaia hypothesis (2001) – the intentional fallacy? Or Earth-life system?
- *Stern Review* (Stern, 2005) – costs of no action equivalent to losing 5–20% of the world's GDP per year.

Introduction

- Interest in the sustainability movement comes about with the realisation that the world has finite resources and we may be consuming them more quickly than we can replace, discover, or invent them.
- Daly and Townsend's view (1993) is that sustainable growth is not possible, since the economy is an open system of the earth's ecosystem, which is finite and materially 'sealed off'. However, sustainable development may be possible through sustaining natural capital by maintaining the biotic economy.
- Strong sustainability requires developing human-made and natural capital separately.
- Engineering design aside, recognition of sustainability issues in New Zealand latterly given only in the Resource Management Act 1991 and in policy statements like the *Sustainable Development for New Zealand Programme of Action* (Ministry for the Environment, 2003).

Ecosystems

Characterised by:

- energy flow, interdependence, adaptation, cycles, diversity
- in any sustainable system there is a free flow in a network in which relationships are nurtured between constituent parts in a steady-state economy in which aggregate throughput of matter and energy over time is constant
- individuals and populations do not live apart from nature but in association with symbiotic and antibiotic organisations that use energy and biotic materials, forming an ecosystem.

Ecology

- According to Karl-Hendrik (2002), natural cycles surround society and comprise the parameters of life.
- Sustainability is dependent on natural flows from nature's production and biosphere and materials of the Earth's crust.
- The aim of sustainability is to treat natural flow as a form of 'interest rate' from nature, rather than a toll on its underlying capital.

Perspectives: Technological sustainability

- From an economist's perspective, natural and man-made capitals are substitutes and environmental problems can be overcome by the investment of financial capital in innovative forms of technology.
- Technological sustainability allows for development in the form of qualitative improvement – new technological solutions following on from new knowledge.

Objectivist science

- Others claim that objectivist science has been harnessed to meet vested interests of business groups.
- Lomborg (1994) throws doubt on the influence of human civilisation on climate change and whether science itself may be used for political ends.
- Gore (2006) argues that such debates distract and abstract attention away from inconvenient truths about the consequences of human societal impact on climate change.

Indigenous models

Drawing on native Canadian Indian custom, Sveiby (2009) points to at least 12 aboriginal principles for sustainable development. These may be divided under categories of ecology, socialisation and economy.

Ecology

- Keep all alive.
- Do not stay in one place.
- Do not deplete the breeding stock.

Socialisation

- Do not impose your views on others.
- Share the knowledge.
- With knowledge comes responsibility.
- Divide the roles.
- Behave with responsibility to other communities.
- Punish only your own.
- If you break the law you carry the shame.
- Build respect.
- Maintain equitable power structures.
- Everyone has a role.
- Build community.
- Do no harm.

Economy

- Knowledge is a primary resource.
- The economy has tangible and intangible parts.
- Respect diversity.
- Do not sell products of low value.

Principles of indigenous sustainability

- Respect for life forms.
- Don't playfully waste.
- Intergenerational knowledge, lifelong learning.
- Interconnectedness.

Kaupapa Māori

- Kaupapa Māori offers several principles for sustainability in Aotearoa.
- Mauri (a core essence or life force).
- The presence of atua (custodians).
- The concept of whanaungatanga (belong instead of owning).
- Whakapapa (the lineage that connects Māori to every aspect of the universe and each other).
- Mātauranga (knowledge and understanding, identity, history, customs, genealogy, mythology).
- Kaitiakitanga (conservation and protection).
- Tipene suggests kaupapa Māori emphasises the integration of a variety of cultural tools and practices, which may include te reo (language), knowledge, people and land.

Ecopsychology

- Underpinned by a belief in the reciprocity of human–Earth inhabitancy.
- Assumes it is psychologically damaging for humans to live in ways that are disconnected from their ecological context.
- Ecopsychology attempts to remedy the anthropocentric stance that controls and objectifies nature regardless of human needs.
- Primarily concerned with methods of healing the disconnection of people from their ecological context, through therapeutic techniques that involve practices such as mindfulness, daily ritual, heightened awareness, wilderness experience, sense of place – relieving symptoms of depression, stress, anxiety, longing and grief.
- Biophilia hypothesis (Wilson, 1984) holds that humans have an innate affinity for nature, stemming from an ancestral past in which humans arose from the natural environment

Economy

- Sustainability is at its most contentious in the business environment.
- Despite the presence of lobbying groups and the increasing concern of many Western governments regarding addressing issues of sustainability through national programmes of education and legislation, and the growing presence of green agriculture, green energy and green consumer culture, it is very difficult to ‘proof’ the consumer-driven, profit-motivated economy with sustainability issues.
- Political ruthlessness of neo-liberal industrialisation in which a growing awareness of green economy is encountered by profit-based patterns of supply and demand.
- In steering business towards a greener path, financial incentives and disincentives (including eco-taxes and tradable permits) that encourage or discourage certain kinds of economic behaviour may be preferable.
- Many sustainability advocates point to the fact that the economic system is often perceived as being independent of ecology and interventions are often perceived as anti-growth and therefore anti-business.

- However, the economy and the ecosystem and people within them cannot be separated.
- The common belief that protecting the world's climate would necessarily have to be costly is also undemonstrated (O'Sullivan & Painter, 2006, p. 16).

Daly's rule for sustainable economic resource activity

Input rule

- Harvest rates of renewable resource inputs should fall within the regenerative capacity of the natural system that generates them.
- Depletion rates of non-renewable resource inputs should be equal to the rate at which renewable substitutes are developed by human intervention. Any proceeds from non-renewables should include research in pursuit of sustainable substitutes.

Output rule

- Waste emissions should be within the assimilative capacity of the local environment to absorb, without degradation to its capacity to continue to do so (Daly, cited in O'Sullivan & Painter, 2006).
- Applicable and has measurable parameters.

Hawkins' six steps for ecological commerce

- Replace international products with local products.
- Take responsibility for the effects they have on the natural world.
- Do not seek exotic sources of capital in order to develop and grow.
- Engage in production processes that are human, worthy, dignified and intrinsically satisfying

- Create objects of durability and long-term utility whose ultimate use or disposition will not be harmful to future generations.
- Change consumers to customers through education.

Biomimicry

The Benyus biomimicry model (1997):

- points to ways in which sustainable technology in society can be redesigned and re-engineered from the implicated order of nature
- involves innovations based on patterns discovered in nature, adapted into designs which solve human problems – for example, solar cell inspired by leaves, suspension bridges by skeletal structures, Velcro by grappling hooks on seeds
- also involves nature as a measure of human endeavour, with the tacit knowledge that natural designs have evolved over 3.8 billion years and are to some extent, by inductive reasoning, therefore self-sustainable.

Education for sustainability

Education for sustainability is a term that denotes the change process which leads people and communities to live in sustainable ways.

Higher education has a critical role in analysing, synthesising, and disseminating the message of sustainability.

Main goals include:

- bringing about changes in behaviour and lifestyles
- disseminating knowledge and developing skills
- incorporating sustainability in pedagogy
- incorporating sustainability in management practices

- preventing the exhaustion of non-renewable resources.

Education for sustainability entails:

- learning transformation – interdisciplinary approach advising a mixture of process and procedural sustainable management practices, raising knowledge of sustainability through pedagogy:
- partnerships, cooperation, collaboration
- integrative, cross-sector learning
- future thinking, situation improvement, making judgements about quality gains
- critical enquiry, reflective thinking, contrasting, generating solutions
- cooperative learning, enquiry-based learning, experiential learning
- integration of social, economic and environmental concepts.

Talloires Declaration (10-point action plan)

This is an agreement signed in 1994 between a group of university leaders calling for urgent action on a sustainable future to address problems of 'unsustainable production and consumption patterns that aggravate poverty in many regions of the world'. The aim is to achieve 'stabilization of human population, adoption of environmentally sound industrial and agricultural technologies, reforestation, and ecological restoration' (Association of University Leaders for a Sustainable Future, 1994, p. 1).

Tahoe Center for a Sustainable Future

Teaching sustainability involves:

- strong core academics
- understanding relationships between disciplines
- systems thinking
- lifetime learning
- hands-on experiential learning
- community-based learning
- effective use of technology
- partnerships
- family involvement
- personal responsibility
- human development and Earth's natural system
- increased awareness of local, environmental, cultural and economic issues
- stewardship of environment
- personal connection to social and environmental aspects of their community
- increasing comprehension through work with positive adult role models
- develop critical thinking skills
- develop citizenship skills – manage diverse viewpoints
- systems thinking – connections, concepts, relationships to whole, material and intellectual processes, interactive consequences.

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Sustainability, Human Rights, and Standing

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Abstract

This presentation considers the extent to which a sustainable environment can be asserted as a human right. First, an overview of human rights is given. Second, consideration is given to the potential assertion of a sustainable environment as a human right. Third, issues of anthropocentrism and standing are considered. Finally, potential areas for research on sustainability, human rights and standing within the Open Polytechnic are identified.

Focus of investigation

- Is a sustainable environment a human right?
- If so, how could such a right be effectively realised?
- What research opportunities exist in this field for the Open Polytechnic?

Sustainability

- Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (Brundtland, 1987).
- Concerns for: poor, future generations and planetary ecosystem (Bosselmann, 2002).

Sources of human rights

- Ethics (religious belief, the Enlightenment and human dignity, political movements).
- The Universal Declaration of Human Rights (UDHR) is a code of moral principles, but we need laws for justiciability.
- UDHR – customary international law.
- UDHR + International Covenant on Civil and Political Rights (ICCPR) + International Covenant on Economic, Social and Cultural Rights = International Bill of Human Rights.

Generations of rights

- First: Civil and political rights – negative – for instance, right to be left alone, rule of law ('property rights') – Eurocentric individualism (ICCPR).
- Second: Economic, cultural and social – heterogeneous – for example, influence of ex-colonies (ICECSR).
- Third: Environmental – broad consensus, but different worldviews (no equivalent to ICCPR or ICESCR).

Is a sustainable environment a human right?

A right may be an explicit constitutional guarantee

- Some 90 countries have included some constitutional guarantee of a healthy environment.
- Section 24 of the South African Constitution Act 1996 provides that 'Everyone has the right . . . to have the environment protected, for the benefit of present and future generations'.

A right may be implied from other rights

- 1992 Vienna Declaration and Programme of Action – all rights ‘indivisible’ and ‘interrelated’.
- Effects of non-sustainable development on rights – for example, life, health, culture.
- German Constitutional Court has derived socio-economic rights from dignity – why not environmental rights?
- Potential for an entrenched constitution of a New Zealand republic including Treaty of Waitangi principles.

A right is necessary for long-term human rights

- ‘The wise man, so far as human finitude allows, endeavours to see the world as God sees it . . . under the aspect of eternity’ (Russell, 1996, p. 556).
- ‘Situated in the broad stream of human experience, human rights seek to maintain “an eye to the future”’: *Halpern v Attorney General of Canada* (2003) 65 OR (3d) 161.

How can a right to sustainable environment be effectively realised?

Issues of standing:

- justiciability and standing
- human rights and other persons
- animal rights
- should trees have standing?
- trustees and guardians.

Parliamentary Commissioner for the Environment

The Parliamentary Commissioner for the Environment (PCE) is an independent officer of Parliament established by the Environment Act 1986 with wide-ranging powers to investigate environmental concerns. The PCE reports to Parliament, not to a government minister. As an officer of Parliament, the PCE's job is to hold the government to account for its environmental policies and actions. The PCE is a policy reviewer standing outside the system of environmental management and reporting on it.

International Court for the Environment

Prominent jurists have proposed that the International Court for the Environment (ICE) should hear 'crimes' against the environment. The ICE would be modelled on the International Court of Justice in the Hague. The current prospects for the ICE appear to be remote.

Potential areas for research at the Open Polytechnic

- Third generation rights and normative systems – for example, accounting.
- Human rights and behaviour modification.
- Individual, community, environment.
- Environmental refugees.

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Sustainability and Accounting

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Abstract

This presentation outlines the growing relationship between accounting and sustainability, with reference to academic literature. First, the call for accounting to take the lead in social responsibility reporting is explained. Second, the evolution of sustainability reporting is demonstrated from the 1970s to the present. Some literature is presented to highlight main points (but not discussed). Third, an international model for sustainability reporting is introduced. Finally, some concepts upon which financial reporting standards currently rest are suggested as potential research areas.

Financial reports

- A financial report may show how profitable an entity is, and the wealth that it has created, but rarely will it show how the seemingly profitable company can also destroy wealth – for example, through negative environmental impacts.
- The cost of depleted natural resources and of increasing atmospheric pollution should, surely, be included in the price we pay for what we buy and consume.
- However, these costs and others like them, for which future generations will pay dearly, are generally not recorded in the accounts of entities or government departments. Yet they are real, and they are being incurred now.

Interested groups

- The Prince's Accounting for Sustainability Project.
- Accountants International Study Group.
- International Federation of Accountants.
- International Accounting Standards Board.
- International accounting regulation by the United Nations: a power perspective.
- Accounting practices in OECD member countries.
- EEC financial reporting – harmonising principles.
- ASEAN Federation of Accountants.
- American Accounting Association.
- New Zealand Institute of Chartered Accountants.

Key issues

- The business world – sooner rather than later it has to get a grip on the inescapable implications of sustainability.
- At the moment entities often lack internal processes making sustainability a natural part of strategy and day-to-day management.
- Entities often lack a reporting model to ensure sustainability takes its place alongside other important information that investors, employees and consumers want and need to see.

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Sustainability and Regulation

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Abstract

This presentation considers how sustainability goals may be influenced by state regulation. First, different methods of state regulation are outlined – for instance, social marketing, soft law, private and statutory torts, criminal sanctions, and taxation. The roles of legislative delegation and statutes that establish market structures are also considered. Second, the principles of proportionality and precaution are sketched. Third, an analysis of environmental regulation using classical economic theory is presented. Finally, potential areas of research into sustainability and regulation are identified.

Sustainability and regulation

New Zealand legal system

- Public law includes:
 - international law – for example, multilateral treaties
 - administrative law – for example, civil service decisions
 - constitutional law – for example, division of powers
 - criminal law – for example, fines for polluters.
- Private law includes
 - contract – for example, exchange of property
 - tort – for example, pollution of a neighbour's water
 - property law – for example, confiscation of contractual logging right.

Government intervention/regulation

- Sponsoring social marketing/influencing consumer demand – for example, TV adverts on energy consumption.
- Promoting soft law – for example, industry agreements on plastic bags.
- Statute – for example, Resource Management Act 1991.
- Court structures – for example, Environment Court.
- Crimes – for example, penalties for overfishing.
- Codification of torts – for example, prevention of ‘greenwashing’ under Fair Trading Act 1986.
- Taxation – for example, potential for a carbon tax.

The institutional structure and legal principles necessary to implement [sustainable development] in all spheres of decision-making are not yet in place. (Bosselmann, 2002, p. 161)

Legal principles for sustainability

- *Proportionality principle*: Government should use proportionate means of achieving legitimate goals – that is, rational connection between law and intended consequences.
- *Precautionary principle*: Where threats of serious or irreversible damage exist, in order to protect the environment, lack of full scientific certainty is not a reason for postponing cost-effective measures to prevent environmental degradation (United Nations, 1992, principle 15).

The economy and the law

The economic imperative

- The economic imperative is the rational utilisation by humanity of scarce resources.
- All resources, for the benefit of sustainability, should be regarded as scarce and therefore all resources will have either a price or an allocated shadow price.

Economics and sustainability

- Sustainability in an economic context is to ensure that a country or economic macro-unit is able to continue and sustain its economic growth and that resources are available for – and efficiently utilised for – that growth.

The market system

- The pricing system is generally the most efficient way of ensuring the most efficient use of resources.
- Allocative efficiency aims to ensure that a condition of Pareto optimality is obtained – that is, a situation where outputs and incomes are allocated in such a way that no redistribution of these outcomes and incomes can leave one better or worse off.

The free market

- The free market is, however, no guarantee that the most efficient outcomes (allocative efficiency) can be obtained.
- The economist and Nobel Prize winner R. H. Coase argued that the alternatives to the free market price system are much worse.
- This notwithstanding, the government may feel that it has to intervene in the economy to prevent inequities from occurring.

The rational approach

- In accordance with this rational approach a government, through its legislature, will at times make law to ensure the efficient use of a resource to force the transaction into the market place.

An economic approach to the law

Private law must perform three functions:

- define property rights (property law)
- allow for the transfer of property (contract law)
- protect property rights (tort).

International law

- In reality this is not law at all, but a series of agreements or disagreements between states whereby an individual state may follow or ignore the precepts according to how it perceives how its national interests will be affected. (One only needs to look at the Doha round of the World Trade Organization to see how this occurs.)

Kyoto Protocol

- This is the international agreement that is most closely related with sustainability. It is noticeable that this 'law' contains no coercive principles and that countries such as the United States never ratified the treaty. China, India, and other developing countries were not included in any numerical limitation of the Kyoto Protocol because during the pre-treaty industrialisation period they were not the main contributors to the greenhouse gas emissions. Whereas other developed countries such as those in the European Union agreed to reduce their emissions by 10%, Russia's change was 0%.
- According to Mencken, the urge to save humanity is almost always only a false face for the urge to rule it (1956, p. 247).

Suitable areas for research

- Behaviour modifying measures such as taxation and environmental protection.
- Directors' duties/corporate governance and the environment.
- Fair Trading Act 1986 and 'greenwashing'.

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Sustainability and Management

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This presentation considers private sector management and sustainability issues in the light of the comprehensive and far-reaching reforms that have occurred in the public sector during recent decades.

There is a large and rapidly increasing body of literature, including case studies and comparative analyses, which examines different aspects of sustainability and management issues. Some of the literature and case studies will be discussed. In particular, consideration is given to whether a synthesis of management and sustainability exists and, if so, whether and how it can be evaluated.

The presenter's research into the management of photovoltaic technology projects and sustainability will also be outlined.

Management discipline

What are the functions of management?

Private business policy:

- corporate business efficiency and effectiveness
- strategy and private business – for example, urban housing business management and sustainability.

Public management:

- government or non-profit management that resembles private management with regard to organisational effectiveness
- public administration
- cultural and social drivers
- different from private sector.

Do the different goals (values) of sustainability fit into management discipline?

- Environmental sustainability.
- Cultural sustainability.
- Economic sustainability.
- Social sustainability.
- Management and sustainability – corporate social responsibility (Yam & Fredericks, 2009).

Management and sustainability: Issues

Interrelationship between:

- legal issues
- community values
- profit motive.

Sustainability: Theoretical model for business

Sustainability:

- discretionary
- mandatory
- social responsibility.

Global environmental concerns

- Broader diffusion of photovoltaic systems is advocated to protect the environment from the adverse effects of fossil fuel utilisation.
- Going green is essential for global environmental well-being.
- Renewable sources of energy have an important role to play in providing much-needed power in the context of growing global concern about sustainable energy supplies.

Management literature on sustainability issues

- Green processes and product development – to respond effectively and efficiently to the environmental sustainability.
- Are green products supported by the environmental strategic approaches adopted by sustainability-driven companies?
- What are the economic gains of producing green products?
- Dow Jones Sustainability World Index.

Business management and social responsibility

Management:

- hand of management
- hand of government
- (invisible) hand of the market.

Management literature evolved from different disciplines

- Early environmentalists' views.
- Quality management and strategic management.
- Management issues of sustainability in the international context: Kyoto Protocol.

A practical example: Adoption of photovoltaic power supply systems

Results of the empirical study

- This model coupled with the direct and indirect influences of the independent variables such as motivation, context, government initiatives and demonstration sites lends strong support to revise Rogers' (1995) innovation–decision model and Kaplan's (1999) new innovation–decision framework.
- The findings of the current research favours the inclusion of additional variables – government initiatives, demonstration sites and finance; the retention of Kaplan's (1999) variables – motivation, context and familiarity; and the modification of Rogers' (1995) innovation–decision model.

Sustainability and management: Selected sources

- Journals – around 500 of them (national and international, refereed and non-refereed) deal with management and sustainability.
- New Zealand management of carbon emission, control – tax.
- Schools of management and sustainability.
- Research schools – research papers in sustainability management. Management and sustainability for students – prospective students of sustainability management.

There is a synthesis: Sustainability and management discipline

Schools of thought on synthesis:

- Schools of thought on competition and management – not much synthesis, sustainability issues are different from profit as value.
- In practice, some companies and service sectors such as educational institutions have a sustainability management plan or strategy (for example, the Open Polytechnic). Profit is not the main motive for public institutions

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Sustainability and Education

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Sustainability in education can be looked at from three different viewpoints

These are:

- what we teach (our curriculum)
- how we teach (andragogy)
- method of delivery (open and distance learning (ODL)).

This presentation gives an overview of the literature, issues and business aspects of each of these areas, and then proceeds to suggest some relevant areas of research.

Definition

Sustainability is about meeting the needs of today, without adversely impacting on the needs of tomorrow. As a term it can be applied across a range of areas, such as the environment, society and the economy.

Overview of issues

What we teach (the curriculum)

Our curriculum is important to the organisation, as it forms the basis of our product, and also indicates our direction

How we teach (the andragogy)

As we mainly teach adults, this is about andragogy (as opposed to pedagogy) we adopt.

Method we use for delivery (ODL)

ODL has various guises today, and there are a number of areas where the concept of sustainability is worth consideration

What we teach

Literature

There is lack of extensive literature on the subject, but government reports are relevant. These include

- *See Change: Learning and Education for Sustainability*
- *Tertiary Education Strategy 2007–12 (TES)*.

Contemporary issues

- Gaining an overall understanding of what sustainability means to the Open Polytechnic.
- Requirements of any relevant documents, including those of stakeholders and reporting entities.
- Keeping abreast of the requirements for delivery of relevant courses.
- Extending our research capacity to meet the TES requirements in terms of applied research and evidence-based technology development and transfer.

The future

Issues for the future include:

- adapting to a changing environment
- taking more personal responsibility for environmental sustainability
- gaining greater understanding of the impact the various aspects of sustainability will have on our business and our portfolio.

Business impact

The impact on our business could vary, depending on how much risk we wish to take. Do we become leaders in both defining and providing sustainability education, finding new ground and taking risks on provision, or do we follow other providers? However we approach sustainability, a major business impact will be on our portfolio (diversity, development and relevance) and also on our resourcing.

How we teach

Literature

- Pedagogy/ andragogy distinction.
- Aptness of problem-based or enquiry-based learning for adult learners.
- Adult learners' self-direction (use of own experience in their approach to learning, and showing a readiness to learn).
- Effect of learning support on successful outcomes.

Contemporary issues

- Lack of categorising of the literature or online repository.
- Variance between theory and practice (for example, adults may not be self-directing in practice or may resist group work despite theoretical preference).
- Training versus education (certification versus qualification)

The future

Potential developments include:

- further separation of training and development from education
- changes in understanding adult education best practice
- further applications in ODL.

Business impacts

The business impacts may include:

- more involvement in training initiatives
- a move to more modular courses, which could fit within the education or training areas as required
- improvements in assessments and student feedback
- use of sustainability in educational provision, including learning materials.

Delivery method

Literature

- Sustainability issues are not well understood – for example, e-learning may not be more sustainable than paper-based distance offerings.
- Opportunities for new technologies in ODL – for example, mobile technologies for ODL community development.
- Necessity of focusing on student needs, rather than the method of delivery we might favour.
- Effect of motivation to learn, as this can strongly affect outcomes, rather than simply the mode of delivery.
- Cognisance of completions and student satisfaction (significant completion issues pertaining to e-learning, as students in e-learning fail to complete at higher rates than on-campus learners, and their satisfaction with the online experience may have an impact on their decision to drop out).

Contemporary issues

- Difficulty of accessing research without really understanding how it should work.
- Even those who understand how it should work may not be ready to commit the required resources.

The future

Potential developments include:

- More use of technology.
- Potential growth in perception of ODL as most sustainable mode of delivery.
- Need to manage more demanding students.

Business impacts

Business impacts, which are influenced by resources available, include:

- increased competition in distance learning
- need for us to maintain a point of difference
- potential improvements in delivery
- need to gaining student buy-in for group work.

Research opportunities

Potential for:

- increasing our research output
- developing knowledge of sustainability
- collaborative research within and outside the Open Polytechnic
- understanding the requirements of stakeholders
- keeping our course offerings relevant.

What we teach

- Organisational core understanding of sustainability.
- Tertiary education self-assessment.
- Sustainability and the portfolio (best fit).
- Leadership in sustainable education.

How we teach

- Development of adult learning theory for distance learners.
- Self evaluation and evidence of meeting stakeholder and learner needs.
- Open enrolment: a method for success or failure.
- Are qualifications less important than relevant, on-job training?

Delivery method

- Sustainability of distance learning.
- Completion rates for distance students: a New Zealand experience.
- Sustainable education.

Where to next?

What we teach

- Group consideration of our processes for establishing what we teach from an academic point of view.
- Academic research on what we teach, with emphasis on the identified issues.

How we teach

- Amalgamation of all current relevant research, and drawing together current researchers, to find areas that might provide collaborative research topics.

Method of delivery

- Going beyond current research and researchers – for example, greater pragmatism about the place of e-learning and delivery methodologies that require significant student buy-in and capability.

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Sustainability and the Open Polytechnic

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How big is the problem?

- Six billion people are breeding exponentially.
- Every day the worldwide economy burns an amount of energy the planet requires 10,000 days to create, or 27 years' worth of stored solar energy is burned and released by utilities, cars, houses, factories and farms every 24 hours.
- Every natural system in the world today is in decline.

National and international governance

- Shifts in global power; emergence of other global powers (state and non-state).
- Changing nature (growing sophistication of crime; more use of new technologies, especially IT/communications and biotechnology, to both propagate and combat crime).
- Increasing pressure on developed world's health services and welfare due to ageing population.
- Increasing emphasis on domestic issues that concern the individual every day (transport, education, crime and so on).

Demographics

- Increasing global population.
- Decreasing percentage of global population living in developed world.
- Increasing percentage (and vast majority) of the population living in the developing world.
- East Asia and Africa becoming the most populous parts of the world.
- Increasing life expectancy, especially in the West.

New Zealand demographic trends

- The New Zealand population trend is expected to reach a peak of around 4.6–4.8 million around 2045–2050, and then start to decrease slightly. The number of households will increase 20,500 by 2016.
- Auckland will grow 46% by 2026, as opposed to New Zealand, which will grow 22% in the same period.
- An ageing New Zealand population.
- By 2052, the percentage of the total population over the age of 65 is expected to be close to 25%. This is double the current level of 13%.
- Māori and Pacific Islanders will be more than a quarter of our population in 2021, with the Asian population nearly doubling between 2001 and 2021, when they will be 15% of the total population, by which time Europeans will have dropped from 69% to 65% of the population.

Environmental change

- Global atmospheric temperature increases by 1–5 degrees Celsius over the next century.
- Increasing incidence of more extreme weather.
- Increasing global pollution, especially in the developing world, due to continuing massive reliance on fossil fuel energies.
- Increasing demand for water resources and greater variation in the quality of available water.

Economic change

- Continuing de-integration and outsourcing within companies.
- Ageing workforce in the developed world.
- More educated workforce.
- Shifting management structures within companies and decline of 'low-skilled' jobs due to growth of IT in the workplace.
- Increasing emphasis on brand and image.

New Zealand economic trends

- Growth areas in the New Zealand economy are seen as:
 - trade with Asia, which is expected to increase
 - Māori economic performance, which is expected to grow as returned assets are put to productive use
 - service sector exports, which are expected to outgrow agricultural sector exports (currently agriculture is 4.3% of the economy, industry 27.3%, and services 68.4%)
 - tourism expected to grow from \$6.1 billion (2002) to \$10.1 billion (2012).

- Ongoing issues with the New Zealand economy include:
 - continued underperformance relative to Australia. New Zealand is seen as being at risk of becoming a 'branch' economy
 - Lack of growth in New Zealand's export market share. Currently New Zealand exports around 29% of GDP and this has remained unchanged for two decades.

Leadership for sustainability

- UNESCO (1997) notes that 'education, in short, is humanity's best hope and most effective means to meet the quest to achieve sustainable development', and there are increasing calls for both the formal and informal education sectors to take a leading role in education for sustainability.

Education in general

- A 2026 vision for education that is more student focused and individually customised. The range of drivers that will influence the education sector over the next 20–35 years are:
 - rising demand for education
 - rising student expectations of student-centred learning
 - increased competition for skilled, educated professionals.

Tertiary education strategy

- Increasing educational success for young New Zealanders – more achieving qualifications at L4 and above on the Framework by age 25.
- Increasing literacy, numeracy and language levels for the workforce.

- Increasing the achievement of advanced trade, technical and professional qualifications to meet regional and national industry needs.
- Improving research connections and linkages to create economic opportunities.

Institutes of technology and polytechnics at a glance:

- 20 institutes of technology and polytechnics (ITPs).
- 207,000 students in 2007.
- 72,000 equivalent full-time students in 2007.
- A baseline of \$596 million (GST exclusive) to invest in 2009.
- All ITPs have investment plans through which most of the sector's funding is approved.

Open Polytechnic investment plan 3-year outlook

- Transform the organisation in three areas:
 - optimise the organisations alignment with Tertiary Education Strategy / Statement of Tertiary Education Priorities
 - create a learner-led, sustainable entity able to support the network of provision
 - develop a capability within the organisation's own distinctive contribution to the network, to be shared with other ITPs to build overall network capability.

Sustainability and the Open Polytechnic

- Financial.
- Environmental.
- Human resources.
- Teaching and learning.
- Environmental policy.
- PolyGreen.

Achieving energy conservation – corporate culture

Using corporate culture to develop an effective eco-focused organisation:

- develop an eco-vision and policy, distribute and support it widely, and build into the culture
- focus on culture of growth of the good
- continuously question and search for improvements
- recognise failures may occur, but do not give up
- see beyond the current lifespan of the organisation
- create a culture of caring per se
- create a knowledge culture whereby everyone knows the result of poor energy-saving levels
- reward those who lead the way in energy saving – build it into the organisation merit system.

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Useful Online Resources

Biological diversity

Convention on Biological Diversity
<http://www.cbd.int/>

Climate change

Kyoto Protocol
http://unfccc.int/kyoto_protocol/items/2830.php

Stern Review on the Economics of Climate Change
<http://www.occ.gov.uk/activities/stern.htm>

UN Framework Convention on Climate Change
<http://unfccc.int/2860.php>

Education for sustainability

Tahoe Center for a Sustainable Future
<http://ceres.ca.gov/tcsf/>

Talloires Declaration (10-point action plan)
http://www.ulsf.org/talloires_declaration.html

Endangered species

Convention on International Trade in Endangered Species of Wild Fauna and Flora
<http://www.cites.org>

Hazardous waste

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

<http://www.basel.int/>

Human rights and the environment

UNHCHR (meeting of experts on human rights and the environment)

<http://www.unhcr.ch/environment/conclusions.html>

International trade

General Agreement on Tariffs and Trade 1994 (GATT Uruguay Round)

http://www.wto.org/english/docs_e/legal_e/06-gatt_e.htm

World Bank (international trade and climate change: Economic, legal, and institutional perspectives)

<http://books.google.co.nz/books?id=IMgTpxrrGCwC>

New Zealand agencies

Energy Efficiency and Conservation Authority

<http://www.eeca.govt.nz>

Ministry for the Environment (Environment New Zealand 2007)

<http://www.mfe.govt.nz/publications/ser/enz07-dec07/index.html>

Ministry for the Environment (general)

www.mfe.govt.nz

Ministry for the Environment (Sustainable Development for New Zealand Programme of Action 2006)

<http://www.mfe.govt.nz/publications/sus-dev/sus-dev-programme-of-action-jan03.html>

Treasury (foreign relations and external trade)
<http://www.treasury.govt.nz/economy/overview/2007/03.htm>

Ozone

Vienna Convention for the Protection of the Ozone Layer
Montreal Protocol on Substances that Deplete the Ozone Layer
<http://ozone.unep.org/>

Pollutants

Stockholm Convention on Persistent Organic Pollutants
<http://chm.pops.int/>

UNEP (International Declaration on Cleaner Production)
<http://www.unep.org/OurPlanet/imgversn/104/declare.html>

Sustainable development

Environment Protection Agency (United States)
<http://www.epa.gov/innovation/international/urban.htm>

OECD
http://www.oecd.org/topic/0,3373,en_2649_37425_1_1_1_1_37425,00.html

Report of the World Commission on Environment and Development: Our
Common Future ('the Brundtland Report')
<http://www.un-documents.net/wced-ocf.htm>

Sustainable Development Commission (United Kingdom)
<http://www.sd-commission.org.uk/>

United Nations Agenda 21 (1992 United Nations Conference on Environment
and Development)
<http://www.un.org/esa/sustdev/documents/agenda21/index.htm>

United Nations Rio Declaration on Environment and Development
<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>