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Best Practice on Environmental Policy in Asia and the Pacific: Chapter 2

Policy Selection and Diffusion Theory

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This chapter discusses how and why environmental policies have changed over time, both internationally and in the developing world. It provides an overview of policy diffusion and policy integration. The main policy paradigms and principles, policy instruments, selection criteria and methods of making environmental policy choices, and factors influencing policy transfers are examined. It is a part of the series of papers in this special issue of the *International Review for Environmental Strategies* (*IRES*), which together constitute a report of a recent research project carried out by the Institute for Global Environmental Strategies (IGES) and several partner institutes to extract lessons for policymakers from the Good Practices database of IGES's Research on Innovative and Strategic Policy Optios (RISPO I).

Keywords: diffusion theory, environmental policy selection, policy selection, policy integration

1. Politics and paradigms

Selecting policies involves choices at two levels: policy paradigms and specific policy instruments. Policy paradigms reflect political ideology and underlying value systems. They tend to change very slowly, as they reflect a society's fundamental beliefs, weighted and balanced by political realities. Trickledown theory, which posits that poverty will be reduced by pursuing overall economic growth that predominantly benefits the rich, is an example of a policy paradigm. A government trying to implement trickledown economics would select policy instruments that fit this paradigm (reducing corporate taxes and so on); state expropriation of the means of production (a policy instrument that could plunge the economy into recession and chaos) and redistribution of the nation's wealth to the poor, while theoretically a solution to poverty, would be rejected.

The influence of political ideology over environmental policy paradigms is also illustrated by the case of the so-called environmental Kuznets curve (EKC). Prior to the emergence of global interest in the environment in the late 1960s and 1970s, a common policy paradigm was based on two fundamental beliefs: that polluting corporations motivated by profit would degrade the environment as long as they could get away with it, and that environmental degradation was an inevitable side-effect of economic development. This latter belief seemed to imply that environmental and economic interests were irreconcilable and developing countries should grow first and clean up later, as many Western countries have done. Unsurprisingly, the appearance of research that seemed to indicate that the environmental degradation caused by economic development actually followed a Kuznets curve (an inverted bell

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shape)—thus, environmental degradation per unit of economic output would rise, peak, and then fall quite rapidly—was enthusiastically welcomed (see Yandle, Bhattarai, and Vijayaraghavan 2004, for example). This credo is clearly expressed by Beckerman (1992): "there is clear evidence that, although economic growth usually leads to environmental degradation in the early stages of the process, in the end the best—and probably the only—way to attain a decent environment in most countries is to become rich."

Among others, the EKC provided further justification for developing countries that had been following a paradigm that implied because today's developed nations had intensively degraded their environments to achieve their current prosperity developing countries should be allowed to do the same.

The EKC remains a popular justification for putting a stronger emphasis on economic development than environmental protection. This is despite the fact that careful econometric studies have shown that the observed phenomena have other explanations and conclusively demonstrate that in most cases the environmental Kuznets curve does not exist:

> It seems that most indicators of environmental degradation are monotonically rising in income though the "income elasticity" is less than one and is not a simple function of income alone. Time related effects reduce environmental impacts in countries at all levels of income. However, in rapidly growing middle income countries the scale effect, which increases pollution and other degradation, overwhelms the time effect. In wealthy countries, growth is slower, and pollution reduction efforts can overcome the scale effect. This is the origin of the apparent EKC effect (Stern 2003).

As briefly touched on in chapter 1 of this series (King and Mori 2007), in the environmental domain there appears to have been a change in policy paradigm in industrialized countries between 1980 and 1990, leading to a sudden upsurge in new 'soft' environmental policy instruments—market-based mechanisms, voluntary agreements, and informational regulation (mandatory disclosure of information) in the early 1990s. Within this new paradigm of "the market knows best", a variety of policy instruments could achieve the same environmental objectives, as long as external environmental effects were internalized.

There is no clear best way to address the sometimes harmful influence of political ideology and underlying value systems on environmental policy. For most policymakers, ideology remains an exogenous factor, a given political system within which they must work. In democracies, the dominant ideology wins through the ballot box and many political parties identify themselves with specific ideologies. As there is no global government (or global democracy), difficulty emerges at the international level, where policy transfer or diffusion may be constrained by conflicting political ideologies. Manno, in a book review essay entitled "Political Ideology and Conflicting Environmental Paradigms", observes that people looking at the same set of environmental conditions often come to very different conclusions about the correct policy responses, depending on how they answer questions such as:

> Do the trends and current state of our air, water, soil, and energy resources call for radical change in how we organize society? Can we instead get by with just some moderate tweaking

> of our legal code? Do we need to rein in the profit-motive or do we need to unleash our entrepreneurial energies to seek new ways of conserving valuable resources, saving money and increasing profits? If we do need radical change, do we need more or less government, or none at all? Do people have inalienable rights to a clean environment, to a satisfying and secure livelihood? How should the costs and benefits of exploiting natural resources be distributed? Who gets to speak for the animals? Is democracy compatible with environmental protection? . . . What's just and how do we measure justice? Are we as human beings inherently good, smart and loving and need only to be freed from oppression, or are we innately destructive, needing harsh rules and strong rulers to keep our dark impulses in check? (Manno 2004)

Politicians are rarely all-powerful arbiters of public opinion but must respond to the dominant ideologies in the country, especially in the growing number of democracies around the world. They are subjected to a wide range of views, especially from lobbyists, and if they stray too far from general public opinion they risk political oblivion. In the domain of environmental policy, ideological differences are often extreme, reflecting not just left-right politics but profound philosophical divisions about the relationship between humankind and nature. Under most circumstances, democracy and the political process may be the best way of bridging these ideological gulfs. As politicians often point out, however, one can only be sure that the middle ground has been found when a politician is attacked equally vociferously by both sides for maintaining a policy position. If that position relates to issues with implications for global survival, such as global warming, then a drawn-out political process may not be the best way of finding optimal policy. Public opinion may come round too late to approve precautionary action that could prevent a crisis. Political leadership and an ability to bring the public to an understanding of the looming crisis may be crucial.

Manno concludes that "creative cross-pollination between apparently irreconcilable positions can only lead to a richer, more nuanced and practical approach" to an ecologically sustainable future. His call to integrate different paradigms (the class paradigm of Marx, the managerial paradigm of Weber, and the individualist paradigm of Durkheim) appears a tall enough order, especially given the struggles to integrate environmental policies into other sectoral policies. However, if we add the notion, put forward by some segments of the deep ecology movement, that modernization may not represent progress at all and we may need to revert to some sort of lost environmental Garden of Eden, then the chances of integration seem dismal.

2. Policy principles

Between the Stockholm Conference on the Human Environment in 1972 and the 1992 Earth Summit (United Nations Conference on Environment and Development, in Rio de Janeiro), the number of principles espoused to guide environmental policies exploded. The Rio Declaration (United Nations 1992) "proclaims" 27 such principles, thus making them international soft law (law that has no binding force). Many of these principles came from, or have since found their way into, international treaties and agreements, some of which have become binding (Caldwell 1996). While many countries in Asia and the Pacific have signed and ratified a wide range of multilateral environment agreements, there is

surprisingly little congruence regarding which agreements and treaties they have adopted (table 1), and even less congruence regarding the translation of the agreements into national legislation. Whether this represents differences in national environmental circumstances or in institutional capacities, or the varying emergence of more democratic forms of government, is unclear. It could, however, also mask real differences in acceptance of the underlying policy principles, although no specific pattern can be seen. Some of the more contentious of the environmental policy principles are discussed in the rest of this section.

Table 1. Signatories to multilateral environmental agreements in Asia and the Pacific and the world, 2005

Multilateral environment agreement	Year of ratification	Signatories in Asia-Pacific (n = 45)	All signatories (n = 195)
Convention on Biological Diversity	1993	45	186
Convention on the Conservation of Migratory Species of Wild Animals	1983	9	85
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1975	3	166
Convention Concerning the Protection of the World Cultural and Natural Heritage	1972	40	177
Kyoto Protocol to the UN Framework Convention on Climate Change	2006	33	125
Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer	1985 (Montreal Protocol 1987)	43	185
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)	1971	24	141
The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	1998	13	72
Stockholm Convention on Persistent Organic Pollutants	2004	18	81
UN Convention to Combat Desertification	1996	45	189
UN Convention on the Law of the Sea	1994	33	144
UN Framework Convention on Climate Change	1994	44	188
The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1989	33	159

Source: UN Environment Programme 2004.

2.1. The polluter-pays principle

In 1974, the Organisation for Economic Cooperation and Development (OECD) adopted the polluter-pays principle—that the cost of repairing damage caused by pollution should be borne by the polluter—calling on all OECD member countries to make it a "fundamental principle for allocating costs of

pollution prevention and control measures introduced by the public authorities in member countries" (OECD 1974). The same OECD document also stated that "as a general rule [member countries] should not assist the polluters in bearing the costs of pollution control whether by means of subsidies, tax advantages or other measures." This recommendation was based on an assumption that the penalties for environmental damage would be sufficient incentive for polluters to invest in pollution-control equipment and less polluting production processes. The polluter-pays principle was restated in the Rio Declaration (as principle 16) and was subsequently incorporated into numerous national and regional environmental action plans (McCormick 2001).

The European Union (EU) realized early on that the polluter-pays principle would not necessarily lead to investment in cleaner production. The main flaws in the argument were identified as (i) that costs could easily be passed on to consumers; (ii) that non-point sources of pollution could not be attributed to a single polluter, by definition; and (iii) that access to publicly funded wastewater treatment systems could not be denied to firms, meaning that taxpayers would pick up part of the cost (McCormick 2001). Another problem with the polluter-pays principle is that, historically, one of the largest polluters has been the state itself; and in many socialist developing countries, the state and state-owned enterprises were responsible for most of the serious pollution. Even if the state chose to make itself pay, it would simply be a case of public funds passing from one department to another, with the taxpayers ultimately footing the bill.

In any case, as long as it is possible for polluters to pass on the costs of pollution control to consumers, penalties have proved generally ineffective in preventing pollution. Once the companies have retrofitted their production facilities (end-of-pipe or top-of-smokestack solutions) or changed their production processes to bring their discharges below whatever standards are in force, polluter-pays policies alone do not provide enough incentive to make further improvements. With economic growth and increased industrial activity, total pollutant loads have inevitably risen. Governments have often decided that the only way to cap the growth in total pollutant loads is to impose ever more stringent standards. Improved science, more sensitive laboratory equipment, and increased evidence that there is no guaranteed safe level for many pollutants have also required strengthened standards. Thus reliance on the polluter-pays principle has too often shifted the cost burden from the polluter to the consumer in a non-transparent manner, after much of the damage has already been done.

2.2. The precautionary principle

Advocates of the precautionary principle argue that those proposing any potentially risky course of action should have the burden of proving it safe before it is allowed to proceed. For example, some governments have decided that because genetically modified organisms may have major health and environmental impacts that are as yet unknown, their developers and promoters should prove that these organisms are safe before releasing them into the environment. This approach turns around the normal obligation on those wishing to forestall an environmentally damaging activity to prove that it is unsafe before the government will take any action to control it.

The precautionary principle has been proposed because many environmental problems have been uncovered decades after a product was introduced into general use—a few examples being asbestos used

in construction, lead in plumbing and paint, mercury in gold mining and felt manufacture, and carcinogenic pesticides and herbicides (Harremoës et al. 2001). Advocates of the precautionary principle argue that the many past mistakes demonstrate that producers cannot be trusted to release new chemicals or materials onto the market without exhaustive testing of all possible environmental impacts.

Opponents of the precautionary principle tend to argue that there are no guarantees in life and that every action involves some degree of risk. They point out that more people die in bed doing nothing than are killed or injured by chemicals or other materials. If the burden of proof becomes too great, then companies will not invest in the research to bring new products to the market, including some that might have environmental benefits. In criminal law in many jurisdictions, everyone is presumed innocent until proven guilty, meaning that the precautionary principle runs counter to a basic legal principle. Another question is what level of risk is acceptable—taken to extremes the precautionary principle could preclude any new technology from being introduced. Furthermore, there is no such thing as absolute scientific proof, as any accepted fact or theory may be falsified by later research.

Despite these reservations, the precautionary principle was incorporated into the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (UN Environment Programme 2000), the 1992 Rio Declaration (as principle 15), and the 2001 Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention 2001), and there is a growing body of case law. In 2000, the EU clarified its position on the precautionary principle, stating that it should not aim at zero risk; the costs and benefits should also be taken into account; and any application of the principle should be provisional pending additional scientific research (European Commission 2000). Perhaps reflecting the difficulties in implementation, the United Nations has tended to back away from wholehearted support of the precautionary principle and prefers to use the term *precautionary approach* (for example in the Rio Declaration).

2.3. Integration principle

The integration principle calls for the dimensions of the three pillars of sustainable development—environmental, economic, and social—to be given due consideration in any policy decision. For the EU, this principle is the "most important and far-reaching of all the basic principles" (McCormick 2001). There are only three other policy areas where the same principle applies: consumer protection, culture, and health. Although the integration principle implies that environmental policy has priority over other policy areas, experience shows that the principle can only succeed where there are adequate institutional mechanisms to promote environmental appraisal of policies from the earliest stages. The Rio Declaration and other global environmental treaties are weakened by a lack of specific guidance on how to integrate environmental policies into other policy areas. Recent reports show that environmental policy integration has not been systematically embedded within the management systems of EU member states (EEA 2005) and that attempts at integration at the regional level are contributing to significant delays in policy formulation (McCormick 2001).

At the 2005 World Summit, the world's leaders stated:

> We also reaffirm our commitment to undertake concrete actions and measures at all levels, including integrating sustainable development in national development strategies and enhancing

> international cooperation, taking into account the declaration of principles of the United Nations Conference on Environment and Development, including the principle of common but differentiated responsibilities (United Nations 2005).

Yet progress reports reveal the futility of maintaining this position. For example, in the Asia-Pacific report on the Millennium Development Goals for the 2005 World Summit, only 5 out of 55 countries had even prepared national sustainable development strategies (ADB/UNDP/ESCAP 2005), of which virtually none were fully integrated into national economic development plans.

As explained in chapter I of this series of papers (King and Mori 2007), integration founders on the naive belief that some idealized version of the Russian dolls approach to policy and planning will emerge from the chaos that currently separate approaches to economic development, environmental planning, and socio-cultural development represent. At best, the integration principle might be interpreted as requiring any new policy, plan, or program to pass through a sequential set of environmental, economic, and socio-cultural screenings, and be rejected if it does not pass any one of these.

2.4. Common but differentiated responsibilities principle

The common but differentiated responsibilities principle set out in principle 7 of the Rio Declaration has made its way into the preambles of many international environmental agreements and treaties, which include a paragraph similar to the following, from the Malmo Ministerial Declaration (Global Ministerial Environment Forum 2000):

> Convinced that urgent and renewed efforts are required to be undertaken by all countries in a spirit of international solidarity, and recognizing, inter alia, the principle of common but differentiated responsibility as contained in the Rio Principles to manage the environment so as to promote sustainable development for the benefit of present and future generations.

The common but differentiated responsibilities principle is based on the concept that the earth is a common heritage of humankind and on the general principles of equity in international law, combined with a recognition that different countries, essentially divided into developed and developing countries, have differing economic and technical capacities to contribute to the common stewardship responsibilities for the planet.

Principle 7 of the Rio Declaration states that:

> In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command (United Nations 1992).

The notion of common concern (or the global commons) inherent in this principle covers shared resources, like transboundary rivers; resources not under the control of any state, such as space or the open seas; and resources under the control of a sovereign state but subject to common global concern, such as biodiversity or protected species.

The second element of the principle, differentiated responsibility, reduces the obligation on developing countries. If globally agreed standards or protection measures are considered too onerous for developing countries, or these countries have special needs such as for additional technical assistance, then they may be given exemptions or additional time to comply, or be compensated for the implicit burden imposed by developed countries. One wonders how many of the several hundred international environmental agreements would have been abandoned but for this principle being applied. The principle has paved the way for the seemingly endless negotiations on burden sharing and fragmentation typified by the UN Framework Convention on Climate Change and the Kyoto Protocol. On the other hand, these asymmetrical rights and responsibilities have ensured that international environmental agreements have not been reduced to the lowest common denominator and have provided the impetus for the establishment of international environment funds such as the Global Environment Facility (GEF).

2.5. Other principles

Some other principles, all of which appear in the Rio Declaration, are of interest from an environmental policy perspective (United Nations 1992):

The anthropocentric principle (Rio principle 1)

> 'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature' (Rio principle 1). The alternative, ecocentric, principle, in which humans are seen as just one part of nature, has not been incorporated into international policy domains, much to the chagrin of the adherents of deep ecology, among others (see below).

Do no harm to others (Rio principle 2)

> States have …. the sovereign right to exploit their own resources . . . and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

The intergenerational equity principle (Rio principle 3)

> The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

The right to information and participation (Rio principle 10)

> Sustainable development is best achieved when all citizens have access to information and the legal right of redress and remedy for environmental harm.

The market failure principle (Rio principle 16)

> Where there are externalities (unintended effects on others for which no payment or compensation is made), the environmental costs through the use of economic instruments should be internalized. Market failure occurs when market forces alone do not serve the public interest. Most

forms of environmental pollution can be externalities if there are no legal or economic mechanisms for penalizing polluters for their impacts on common goods or on private property

The good neighbors principle (Rio principles 18 and 19)

States shall immediately notify other states of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those states. …

States shall provide prior and timely notification and relevant information to potentially affected states on activities that may have a significant adverse transboundary environmental effect and shall consult with those states at an early stage and in good faith.

If there are natural disasters, environmental emergencies or transboundary environmental problems that will affect a neighboring state, then states should not only provide timely warnings but should also help them recover.

2.6. Controversies over the principles

Most of these principles are not much more than expressions of the principles of common courtesy between countries, but some remain deeply controversial and/or difficult to translate into national policy. In particular, there are the inherent contradictions between *ecocentric* (nature first) and *anthropocentric* (humans first) principles, which raise fundamental philosophical questions. A possible bridge between the two views is acceptance that humans cannot exist without healthy ecosystems, making it immaterial whether we protect ecosystems because we value biological diversity for its own sake or because we value our own lives. However, no ecological tipping point, beyond which ecological degradation will doom human life to oblivion, has been scientifically defined, so there is an understandable view that we still can and will find appropriate environmental solutions in time. To bring the two sides of the argument together, therefore, requires conclusive proof about the actual value of healthy ecosystems as well as definition of tipping points. Additional work along the lines of the Millennium Ecosystem Assessment is, therefore, crucial to reconciling these principles.

Many environmental philosophers, animal rights activists, and adherents of deep ecology are troubled by the notion that human beings are "at the centre of concerns for sustainable development" (de-Shalit 2000). They believe not only that humans should avoid treating animals cruelly as a matter of principle but also that animals have innate rights in the same way that humans have rights. As increasing evidence of the narrowness of differences between humans and animals emerges (for example, overlap of genes, use of tools, memory capabilities, ability to learn sign language, social organization, and the ability to register pain), the anthropocentric principle can be expected to come under increasing attack.

Economists, among others, have difficulty in accepting the *intergenerational equity principle*. The time preference of money shows that any cost or benefit more than about 30 years into the future can be effectively discounted to zero. Economists argue that all past generations have accepted the earth as they found it and transformed what they have inherited to meet their own needs, and that there is no special case for humanity to forgo current benefits or consumption of resources so that these benefits or resources are left for some undefined future generation. Logically, they ask, if a resource is so important

that it cannot be used by this generation, how could any future generation then decide that it was time to use it rather than pass it on to the next?

Three interlocking principles form the basis of intergenerational equity. First, each generation should conserve resource diversity so that it does not unduly restrict the options available to future generations. Second, each generation should maintain the quality of the planet's resources so that they are passed on in no worse condition than they were received. Third, each generation should have equitable rights of access to the legacy of past generations and conserve this access for future generations. Economists are still grappling with these concepts and have proposed various formulations that would make both economic and environmental sense, such as treating non-renewable resources as capital stocks and ensuring that any use of capital provides an equivalent investment in renewable resources. Others have suggested altering the discount rates for projects that will have benefits or costs far into the future. However, operational policies for such theoretical treatments are still generally missing at the national government level.

An overarching principle that is gradually and controversially feeding through UN processes is that all people have a fundamental and equal *right to a quality environment*. This elevates environmental rights to the same status as other human rights such as freedom from oppression and fear, free speech, and freedom of association and assembly (Chapman and Sage 2002). Of course, the right to a quality environment implies a corresponding duty to protect the environment; failure to do so would, logically, be a violation of human rights. The impetus for this emerging recognition stems from a report of the special rapporteur to the Commission on Human Rights in 1994, which stated that most existing environmental and human rights principles "embody the right of everyone to a secure, healthy and ecologically sound environment" (Ksentini 1994). Her report included, as an annex, the first ever declaration of principles on human rights and the environment. This includes rights to freedom from pollution; protection of ecosystem services; safe food, water, and working environments; adequate housing, land tenure, and living conditions; information on the environment and participation in decision making; and effective remedies and redress in the courts. The notion of amending international law to embody these rights remains deeply controversial, but there has been some progress, as outlined below.

In 1988, the Commission on Environmental Law of the World Conservation Union (IUCN), in cooperation with the International Council on Environmental Law and the Environmental Law and Institutions Programme Activity Centre of the United Nations Environment Programme (UNEP), started work on drafting an International Covenant on Environment and Development, which is intended to become a set of fundamental principles and to consolidate into a single juridical framework all existing principles and soft law on environment and development (World Conservation Union 2004). They have taken as their model the progression from the soft law 1948 Universal Declaration of Human Rights to the legally binding 1966 Universal Declaration on Human Rights. Article 12 of the current draft, presented to the 59th session of the UN General Assembly in 2004, includes the following:

1. Parties undertake to achieve progressively the full realization of the right of everyone to an environment and a level of development adequate for their health, well-being and dignity.
2. The Parties shall ensure that all natural and juridical persons have a duty to protect and preserve the environment. (World Conservation Union 2004)

In 2002, the Center for Human Rights and the Environment (CEDHA) and the Center for International Environmental Law prepared a draft of international legislation on human rights and environment (Center for Human Rights and the Environment 2002). While the main intention was to have the legislation applied in the American hemisphere, a broader aim was to provide a basis for further international debate on the need for such legislation at the global level. In 2003, the UN Commission on Human Rights passed a resolution on Human Rights and the Environment, as Part of Sustainable Development, which reaffirmed that "peace, security, stability and respect for human rights and fundamental freedoms" were essential for achieving sustainable development. It also called on all states to "protect the legitimate exercise of everyone's human rights when promoting environmental protection and sustainable development" (UN Commission on Human Rights 2003).

Finally, the *market failure principle* has made considerable headway in recent years. Several examples are given later in this chapter regarding the treatment of market-based policy instruments. More problematic is the associated notion that ecosystems provide a wide range of services that have rarely entered markets (such as fresh air, forested watersheds, soil microbes, coral reefs, mangroves, and the ozone layer) (Murtough, Aretino, and Matysek 2002) but should have their true values recognized. The Millennium Ecosystem Assessment systematically examined these ecosystem services and found two-thirds of them to be in decline (Millennium Ecosystem Assessment Board 2005). A rough estimate made in the late 1990s of the total value of ecosystem services and natural capital—$16–54 trillion per year (Costanza et al. 1997), most of which was outside the market—possibly exceeded the global gross national product of about $18 trillion per year at that time. If two-thirds of the world's largest firms were in decline, then it would be an unprecedented global crisis, exceeding the depression of the 1930s, but somehow the enormity of the Millennium Ecosystem Assessment's findings has yet to sink into the public consciousness. To accept fully the idea that much of the real global economy is in permanent decline has such far-reaching implications that humanity is arguably in a state of denial (Gray 2006). As observed by Costanza and his co-writers, "As natural capital and ecosystem services become more stressed and more 'scarce' in the future, we can only expect their value to increase. If significant, irreversible thresholds are passed for irreplaceable ecosystem services, their value may quickly jump to infinity," (Costanza et al. 1997).

3. Policy instruments

The online General Multilingual Environmental Thesaurus maintained by the European Environment Information and Observation Network (http://www.eionet.europa.eu/GEMET) offers the following definition for *policy instrument*: "the method or mechanism used by government, political parties, business or individuals to achieve a desired effect, through legal or economic means." It also offers this definition for *environmental policy instrument*: "technological, economical and legislative measures employed to prevent or control pollution or damage of the environment." Based on these definitions, we

can view environmental policies as stating an intention, principle, or objective (drawn from some fundamental paradigms) and environmental policy instruments as the ways and means to realize those intentions, objectives, or principles. While they imply action, environmental policy instruments can be implemented by any actor or group of actors and are not confined to actions carried out by governments.

As can easily be imagined, if there is a huge range of environmental policies and several alternative ways to achieve any environmental objective, then there must logically be thousands of possible environmental policy instruments. To handle this complexity, there have been numerous attempts to classify environmental policy instruments, ranging from the simplistic—"sticks, carrots, and sermons"—to the more complex. One of the more useful attempts to do this is reproduced in table 2.

For the Research on Innovative and Strategic Policy Options (RISPO), a slightly simpler classification was used:

(a) *Regulatory instruments*, such as:

(i) Command and control: a regulatory regime where governments attempt to control those who would damage the environment in some way—typically employing rules, regulations, standards, policing, and compliance; and

(ii) Direct provision: governments use fiscal resources to invest directly in environmental infrastructure or other forms of environmental protection, often recouping the capital cost through user charges.

Table 2. Examples of typical environmental policy instruments, in the areas of natural resource management and pollution control

	Environmental policy domain	
Policy instrument	Natural resource management *water, fisheries, agriculture, forestry, minerals, biodiversity*	Pollution control *air pollution, water pollution, solid waste, hazardous waste*
Direct provision	Provision of parks, public water supplies	Provision of landfill, wastewater treatment plants
Detailed regulation	Land use zoning Closed seasons and restrictions on equipment (fishing, hunting) Bans on trade in ivory, tiger bones, wildlife, etc.	Obligatory use of catalytic converters Traffic regulations and speed limits Bans on toxic chemicals
Flexible regulation	Water quality standards	Fuel quality standards
Tradable quotas and rights	Individually tradable fishing quotas Transferable use rights for land	Emission permits Carbon and sulfur trading
Taxes, fees and charges	Water tariffs Park entry fees Fishing licenses Stumpage fees	Waste fees Road congestion pricing Petrol taxes Industrial pollution charges
Subsidies and subsidy reduction	Fishing boat subsidy reductions Agriculture subsidy reductions Landscape protection subsidies	Renewable energy subsidies Reduction in non-renewable energy subsidies Seed funding for renewable energy technologies
Deposit-refund schemes	Reforestation deposits or performance bonds Mine rehabilitation reserve funds or bonds	Container deposits and refunds Vehicle inspections Construction bonds
Refunded emissions payments		Nitrogen oxides abatement
Creation of new markets and property rights	Eco-tourism Intellectual property rights for indigenous knowledge Privatized national parks Organic agriculture	Industrial ecology Recycling Environmental goods and services industry
Common property resource management	Community-based tourism Traditional resource management Fish sanctuaries	–
Legal liability and insurance schemes	Liability bonds for mining Disaster insurance	Liability bonds for hazardous wastes
Voluntary agreements	Sustainable forestry agreements Codes of practice	Phasing out toxic chemicals Industry codes of practice Life cycle analysis
Informational regulation	Eco-labelling Forest certification Organic agriculture certification	Energy rating of appliances Pollution performance rating of industries
International treaties and agreements	On forest principles On Law of the Sea On combating desertification	On ozone-depleting substances On persistent organic pollutants On climate change On transboundary movement of hazardous materials
Macroeconomic policies	Structural adjustment Population policies	Trade policy Industry policy

Source: based on Sterner 2003.

(b) *Economic instruments*, such as:

(iii) Market-based instruments: the power of the market is used to change the behavior of producers and consumers towards environmental protection—typically charges, taxes, tradable permits, and subsidies; and

(iv) Creation of new markets: governments attempt to overcome market flaws (or the absence of markets) by promoting new markets or property rights—typically financial incentives, assignment of property rights, quotas, green procurement, and seed funding.

(c) *Social instruments*, such as:

(v) Voluntary agreements: firms or industry associations enter into some form of voluntary agreement or code of practice designed to protect the environment; and

(vi) Informational regulation: information about environmental conditions or environmental performance is provided to the public so that they can take informed decisions on how to react.

These rather artificial divisions, however, tend to mask the need for different types of policies to work in concert, through an appropriate policy mix. For example, as discussed in chapter 1, voluntary agreements are rarely successful unless there is at least the threat of a regulatory response if the voluntary approach fails.

4. Policy transfer and diffusion

There appear to be three main avenues for selecting appropriate policy instruments: (i) innovation—finding completely new solutions; (ii) borrowing from, or emulating, existing policies in other sectors within the country; or (iii) transferring successful policies from other political jurisdictions or countries. There is ample evidence that many countries have followed this latter course and learned from each other in adopting new environmental policy instruments through a process of international policy transfer. In the literature, a distinction is made between policy diffusion and policy transfer.

Policy diffusion is "the process by which policy innovations are communicated in the international system and adopted voluntarily by an increasing number of countries over time," (Rogers 2003). One mode by which policy diffusion works is *policy transfer*, "the process by which actors borrow policies developed in one setting to develop programmes and policies within another," (Dolowitz and Marsh 1996). Policies, and policy instruments, are rarely original ideas and are usually borrowed or adapted from other settings or other sectors. In the fields of political science and international studies, *lesson-drawing*, and *policy convergence* are also described as part of policy diffusion. All of these concepts are concerned with "the process by which knowledge about policies, administrative arrangements, institutions and ideas in one political system (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political system," (Dolowitz and Marsh 2000). While Rose (1991) uses the term *lesson-drawing* to describe the overall process of transfer of policy and institutions, Dolowitz and Marsh (1996) and Stone (1999) do not agree on the interchangeability of *lesson-drawing* and *policy transfer*, suggesting that policy transfer is actually a

broader concept encompassing ideas of diffusion and coercion as well as voluntary lesson-drawing (Stone 1999).

Of particular interest in the environmental arena is the common practice of developing countries adopting environmental policies from developed countries. As noted in chapter 1, early command-and-control policies, where setting environmental standards was a crucial element, routinely saw developing countries borrowing excessively stringent standards that could not be implemented. Across the 48 OECD and Central and Eastern European countries there has been remarkable convergence of environmental policies: policy convergence has taken place in air, water, and soil protection laws, and waste management laws, with almost total convergence reached in each of these areas in 43, 43, 38, and 31 years respectively (Tews, Busch, and Jörgens 2001). This suggests that similar environmental policy convergence is likely to accompany emerging economic integration in Asia and the Pacific.

Policy transfer opportunities are increasing due to current trends in political and commercial globalization and technological advances, especially in information technology (Dolowitz and Marsh 2000). The value of policy transfer is emphasized by the emergence of "new" policy problems "that cannot be dealt with effectively through established domestic policy heuristics," (Stone 1999). Tews, Busch, and Jörgens (2001) investigated the transfer of several new environmental policy instruments, including eco-labelling, carbon taxes, free access to environmental information, and national strategies for sustainable development. They found that free access to information and national strategies suddenly took off in about 1990, and by the time of their study in the OECD and Central and Eastern Europe about 38 countries had such legislation and plans. Eco-labelling grew quickly between 1987 and 1992, but had leveled off at about 29 countries. The first national environmental plans were in Denmark (1988) and the Netherlands (1989), the first eco-label was the Blue Angel label in Germany (1978), and the first law on freedom of access to (environmental) information was in Sweden (1949).

It is interesting to contrast these instruments with energy/carbon taxes, which were first implemented in the Netherlands in 1988 but have so far only been adopted by about 13 countries. Tews, Busch, and Jörgens point out that demands for an energy tax on fossil fuels were first raised in the 1970s, but really only found a mild degree of support since the 1990s; "The introduction of effective economic instruments regularly fails where powerful, well organized economic interests are the potential losers of such a strategy," (Tews, Busch, and Jörgens 2001). In general terms, redistributive policies—where there are clearly defined winners and losers—are much more difficult to implement than non-redistributive policies, such as provision of information.

Policy transfer can occur at and between any of the following levels: international, transnational, national, regional, and local (Evans 2004b). One of the shortcomings of existing policy transfer literature is that it focuses on policy transfers between the developed North and and pays little attention to policy transfer in the developing South (Evans 2004a, 2004b; Nedley 2000; Rose 1991; Stone 1999).

There have been relatively few attempts to address the lack of a South perspective in the literature. Nedley (2000, 2004) examined the potential for policy transfer (in the form of lesson-drawing) from the South to the North through comparative analysis of two case studies in England and one in Tanzania, showing similarities in approach to health-sector reform. Lana and Evans (2004) applied a multilevel

approach for investigating processes of South–South transfer, taking as an example the transfer from the Federal District of Brasília to the Ecuadorean national government of the Bolsa-escola program, which provides monthly cash payments to mothers in low-income households on the condition that all children of school age are sent to school regularly. Still, there is a dearth of literature on the process of South–North and South–South policy transfer and there is a need to expand the policy transfer framework to adopt a more global perspective for analysis (Nedley 2000, 2004).

For Asia and the Pacific, the issue of South–South and South–North policy transfer is of particular interest (see chapter 6, Matsumoto, King, and Mori 2007).

4.1. Policy selection criteria and methods

As we have seen above, values and preferences, whether revealed or not, are important in making policy choices. According to de-Shalit (2000), where these values and preferences are revealed through market mechanisms, traditional cost-benefit analysis can be used to find optimum policy choices. More often than not, however, environmental policies fall outside strict market domains and must attempt to deal with cases of market failure. In this territory, "environmental policies should be made with reference to people's values, as expressed in political debates about the good, rather than by reference to their preferences, as expressed in market behavior" (de-Shalit 2000). The competing claims of shared values regarding consumption and shared values regarding nature and its protection cannot be resolved merely by putting a price on everything we value as ethical, future-oriented citizens. The aggregation of individualistic preferences revealed through "willingness to pay" or "willingness to accept compensation" does not capture the part of our collective will that looks beyond selfish needs and desires—indeed beyond our own lifetime to the needs of unborn generations. The environmental policy choices that relate to societal values, therefore, are the proper domain of politicians rather than of environmental economists.

How then can policy analysts assist the politicians who are faced with these difficult choices, who must attempt to balance widely divergent sets of values? Even more importantly, how can we avoid questions of environmental values being transformed into easier questions of resource allocation, which can be conveniently slotted into the most accommodating part of the political spectrum? For example, if biodiversity is valued for its intrinsic value—and not some quasi-use value—how can political decisions about biodiversity not be reduced to merely increasing the budget for protected area management? As de-Shalit argues, decisions such as these that are based on values—not just economic value—must evolve from the grassroots and be non-negotiable. "By critically scrutinizing each and every policy, citizens will not allow (political) parties to turn value-related, bottom–top issues such as the 'environment' into resource-related issues." (de-Shalit 2000). Policy choices are not merely trade-offs between economic growth and environmental protection, but rather choices that allow both to proceed.

At the 2005 World Summit, more than 150 heads of state reaffirmed their commitment to sustainable development.

> . . . to this end, we commit ourselves to undertaking concrete actions and measures at all levels . . . these efforts will also promote the integration of the three components of sustainable

development—economic development, social development and environmental protection—as interdependent and mutually reinforcing pillars.

The concept of sustainable development, therefore, is bound up with the notion of integrating social, economic, and environmental dimensions of development, at the levels of policies, plans, and programs. While this notion makes for easy sound bites, it has proved more difficult to operationalize. Perhaps the EU has tried harder than most to integrate environmental policies into other sectoral policies. Environmental integration was accepted as a basic EU principle in the 1986 Single European Act and further strengthened by the 1992 Maastricht Treaty. However, by 1994 a European Commission review of implementation of the Fifth Environmental Action Program found that there was a "lack of willingness to adequately integrate environmental and sustainable development considerations into the development of other policy actions." (European Commission 2004). The Cardiff Process, launched at the June 1998 meeting of the European Council in Cardiff, UK, aims to integrate environmental considerations into the policies and activities of the various Council formations. A stocktaking of the Cardiff Process almost 10 years later found that the profile of environmental integration had been raised but "environmental integration commitments are still largely to be translated into further concrete results for the environment" and the Cardiff Process had failed to deliver fully on expectations (European Commission 2004; European Environment Agency 2005).

The EU stocktaking also found that the Cardiff Process was hampered by a general lack of consistency; weak political commitment; poor delivery, implementation, and review mechanisms; a need for clearer priorities and focus; and a need to adopt a strategic, forward-looking approach. However, there was no lack of tools available to undertake the task. If over a period of 20 years the EU has failed to integrate environmental policies into other sectors, then one can only imagine how little progress has been made in developing countries.

4.2. Multi-criteria analysis

As part of the EU Sustainable Development Strategy, a system of extended impact assessment has been in place since 2003 for all major policy proposals (European Commission 2002, 2005). The objective of extended impact assessment is to "improve the quality and coherence of the policy development process," (European Commission 2002). It identifies the impacts (positive and negative) of proposed policy actions presented in the Annual Policy Strategy or the work program of the European Commission. A common set of basic questions, minimum analytical standards, and a common reporting format are specified in the recently released Impact Assessment Guidelines (European Commission 2005).

Critically scrutinizing policies, however, should not be an ad hoc, unguided process, dictated by the loudest or most insistent voice. The standard process of policy scrutiny is to set environmental goals, formulate a set of alternative environmental policies to achieve those goals, and then select and implement the optimal policy solution, according to a list of (weighted or unweighted) decision criteria. Some typical criteria used for policy evaluation are economic efficiency, cost-effectiveness, incentives for entrepreneurship, enforceability or ease of implementation, fairness/equity, compatibility with other

policies, political acceptance, sustainability, replicability, and impact or relevance in relation to the goals (IGES 2005; Latacz-Lohmann 2001).

If social and ecological perspectives are not to be squeezed into the cheapest option based on monetization of these decision criteria, what other filters or screens might be used? In the past few decades, various forms of multi-criteria analysis and participatory decision models (such as value trees or Delphi methods) have been proposed to ensure that multiple-preference rankings and relative priorities can be considered, but these generally also search for the optimal solution from among a predetermined set of options. Stahl, Cimorelli, and Chow (2002) note that all optimization processes currently used tend to downplay the importance of learning as a stage in the policy process. They propose instead a multi-criteria integrated resource-assessment approach that allows stakeholders to shape criteria, ranking, and options according to their knowledge and perspectives, as well as learning from the scientific data. In this approach, all decision criteria are indexed to a common scale using social value judgements and the criteria are then weighted through pair-wise comparisons. By combining the indexed criteria and the relative weighting, the overall preferences among the decision criteria are ranked. Instead of a single best choice, the analytic hierarchic process produces an array of outcomes or options, dependent on the stakeholder-determined weighting, which also provides further opportunities for learning by the participants. They claim that conflict resolution and consensus building are facilitated by this learning environment.

Selecting policies or policy options for one issue at a time is probably the norm for most policymakers. However, where one set of policies interacts with another in a different sector—whether in a conflicting or reinforcing manner—the policy selection process becomes much more difficult. For example, energy policymakers promoting renewable energy may choose wind energy as the most cost-effective, efficient, and politically acceptable option (an outcome common in Europe). Environmental policymakers may, however, raise objections on the basis of concerns over noise pollution, landscape blight, and bird kills. Carbon dioxide geo-sequestration as an industrial policy response to global warming may not be the most cost-effective option for reducing the release of greenhouse gases to the atmosphere, but such a policy could be selected if it were demonstrated that geo-sequestration was also the best environmental policy response.

Given the potential for conflict between energy and environmental policies, Greening and Bernow (2004) note that a consensus needs to be

> . . . identified by balancing short- and long-term objectives (e.g., provision of reliable sources of low-cost energy, reductions in levels of emissions, adaptation to an altered economic, social, or physical environment, the collection of additional information, the absence of action etc.), the timing of those actions, the geographic location of those actions, burden-sharing or equity, and the relationship of policies and actions to other important social and environmental goals.

They propose a multi-criteria decision-making method as the best way of describing and evaluating a problem, formulating and considering different aspects of the problem, assessing the importance and relevance of these aspects in a consistent way (without reducing them to a dollar value), and including values of multiple stakeholders.

However, to "design environmental and energy policies which achieve multiple objectives and are coordinated in their results, a new class of models must be used," (Greening and Bernow 2004). Generally referred to as "integrated assessment" models, when combined with more than one multi-criteria decision-making method, this new class of models could help to develop integrated sectoral and environmental policies.

5. Conclusion

The evidence indicates that many developing countries have looked to other more developed (and occasionally other developing) countries as sources of inspiration for their own environmental policies. This suggests that research on defining best practice environmental policy and policy instruments will provide useful input to policymakers and will hasten global convergence of environmental policy. However, if the underlying social and cultural values do not also converge, there may be a mismatch between the adopted policies and the commitment to enforcement and compliance.

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