



Initiative for **Policy Dialogue**

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Overview

Sustainable Development: Towards a Broader Policy Agenda

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Over the last few decades, economic growth in developing countries has been, with some exceptions, slow; social equity has either not improved or worsened; and environmental degradation in many places has been significant. In numerous countries, economic development has not been environmentally sustainable.¹

A central message of this volume is that the failure to achieve environmental sustainability has been the result of a systematic underinvestment in public goods by governments. Since in many respects the environment is a public good, the low priority assigned by governments to supplying public goods implies a tendency to waste natural resources. This volume consistently identifies poorly functioning environmental institutions as well as other inadequate environmental regulation and enforcements such as ill-defined property rights. The failure to implement high yield environmental protection investments is a key source of environmental degradation. Complementary, cross-cutting problems such as weaknesses in legal systems, underinvestment in human capital, weak financial capital markets, corruption, and rent-seeking often exacerbate the failure of environmental institutions.

Most developing country governments attach low priority to spending public resources on developing or enforcing property rights for natural

¹ A renewed commitment to attacking these interlocking problems of economic progress, social development, and environmental sustainability by the world community as affirmed in the 2000 United Nations Millennium Declaration and the subsequent Millennium Development Goals (MDGs) in 2002 (see UNDP 2003) is in place (see Appendix). Though the means and policies that will be used to achieve these goals are not mentioned in the documents, the goals have merit because they incorporate not just environmental objectives and targets (Goal 7, Targets 9–11) but also a variety of other intertwined economic and social-development objectives. The environmental objectives are not just important in their own right (i.e. as a source of direct value added), but they also contribute to the achievement of other goals (e.g. improved health and productivity). Similarly, achievement of other MDGs (e.g. poverty reduction) may contribute to environmental protection.

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resources. The chapters in this volume report consistent government failures to impose environmental regulation and to effectively prevent encroachment and wasteful illegal exploitation of ecosystems that are nominally protected. Even countries that have sophisticated institutions and highly effective property rights regimes often fail to define and enforce property rights for the poor. Such countries are also reluctant to spend resources on defending ecosystems that are legally designated as protected. This may mean that the environmental failures identified in this volume are not simply a result of governments' lack of means and information. Powerful political economy motivations must be at work given the massive resources governments divert from high return environmental projects to endeavors of dubious social value.

The lack of environmental sustainability is only one symptom of the malaise that affects public policy priorities. The same government programs that dedicate little to basic and secondary education, such as those identified by Dreze and Sen (1995), also neglect policies and investments that could prevent environmental destruction and yield large social pay-offs. Moreover, as Dasgupta (1993) and other authors have shown, the losses created by environmental degradation are disproportionately paid by the poor, whose income is often most dependent on natural resources. In other words, the inadequate supply of public goods essential to environmental sustainability combines with the under-provision of other public goods to worsen poverty and social inequity.

In this introductory chapter, we first briefly review recent developments in economic growth and the environment to provide a general context for the chapters that follow. We then move through a series of common themes developed from various perspectives in the chapters. These themes include governance and political economy, the under-supply of non-environmental public goods, international trade issues, fiscal and structural adjustments, and the under-supply in terms of quantity and quality of specific environmental goods. In the concluding section of this chapter, we draw together key overarching lessons not just to better understand environment and development linkages, but also to better manage such linkages at both micro sectoral and macro economy-wide levels.

Modern Growth Theory and the Environment

The literature on (endogenous) economic growth and the environment has shown that environmental sustainability can be consistent with sustained economic growth if certain conditions are met. Positive economic growth that is achieved along with environmental degradation may impose several costs to society: (i) the degradation of the environment directly affects the welfare or utility function of people, so that the welfare benefits of economic growth are at least in part undermined; (ii) in countries where growth itself is significantly

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dependent on natural resources, environmental degradation is likely to directly hurt economic growth at least over the medium run; (iii) for countries where growth is not directly resource-dependent, continuous economic growth may be feasible, at least over the short run, but the degradation of the environment may, in the long run, lead the economy to approach certain critical environmental thresholds, which would compromise the health and even the life of important segments of society; (iv) environmental degradation may involve serious social-equity effects, since the costs of environmental degradation are not evenly shared among groups in society. The poor may suffer an inordinate share of the negative consequences of environmental destruction, whereas the wealthy are likely to obtain most of the short-run benefits of such destruction.

Modern growth theory shows not only that environmental sustainability is potentially compatible with positive economic growth but also, and perhaps more importantly, that failure to achieve environmental sustainability may become an obstacle to sustained economic growth. That is, a lack of environmental sustainability may entail non-monetary costs to society—this is effect (i) above. It may also make growth infeasible in countries where the economy is highly dependent on natural resources—this is effect (ii). Moreover, even in countries that are not resource-dependent, a lack of environmental sustainability may, according to effect (iii), prevent further growth once the economies approach critical environmental thresholds. This means that, even for policymakers who only focus on GDP growth as a measure of economic success, environmental sustainability is a relevant goal, at least over the long run. In addition, there is mounting empirical evidence that (iv), the negative-social-equity effect, is a feature of a lack of environmental sustainability. Modern (sustainable) economic growth theory integrates the effects of environmental degradation on social welfare and utility, medium-run economic growth, and the risk of approaching environmental thresholds within an *optimal* dynamic framework by fully accounting for the trade-offs between them and the speed of long-run, or 'balanced,' economic growth. Growth theory is generally mute about the social equity effects of environmental degradation, since it mostly sticks to the representative-agent approach and thus assumes away any distributional consequences.

Growth theory has been used in the context of sustainable development in two ways: as a tool to improve our measures of economic growth and as a conceptual instrument to understand the feasibility of, and policies needed for, sustainable growth. The paper in this volume by Hamilton and Hassan (see Ch. 2) focuses on the measurement of economic growth. It encapsulates a number of the measurement issues and challenges that arise in addressing the above issues of utility and medium-run economic growth [(i) and (ii)]. The authors study how growth theory can be embedded in an extension of the standard national-income-accounting framework under the so-called weak sustainability hypothesis. Under weak sustainability, environmental and natural-resource

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assets, or natural capital, can affect both production and utility, but there can also be trade-offs between these assets and other forms of capital. The theory admits the possibility of declining natural assets with sustainable income, at least for some period of time, provided there is offsetting capital accumulation in other parts of the economy's wealth portfolio. The net value of all changes of capital is referred to in this literature as 'genuine saving.' Negative per capita net saving must necessarily imply some eventual decline of per capita income over time.

A good empirical measure of genuine saving that includes environmental wealth, then, would serve as a valuable early warning indicator for an economy in decline. For the concept of genuine savings to be valid, however, environmental and man-made assets must be correctly valued. Each asset price must, in other words, reflect its true marginal contribution to welfare over time. Another way of stating this is that substitution between environmental and man-made assets cannot be linear. As environmental assets, for example, become scarcer relative to man-made assets, the shadow price of environmental assets should increase. Thus, any further substitution of natural capital needs a greater increase of man-made assets to compensate the welfare losses caused by environmental degradation. The second part of Chapter 2 by Hamilton and Hassan shows not only what has been accomplished in this arena, which is substantial, but also how much further we need to go to impute reliable values to changes in natural capital. As might be expected, the more qualitative or intangible the impact, the more difficult it is to value. We may have some success attributing values to soil loss, for example, but data and measurement problems make the valuation of pollution in national accounts difficult and biodiversity more difficult still.

Now we turn to the conditions required for sustainable growth. According to most growth models, the conditions for environmentally sustainable economic growth are strong even if we assume a benign and fully informed social planner that is able to fully internalize all environmental values. These are very special conditions not only in terms of what the social planner should do to regulate and steward the growth process towards sustainability but also in terms of assuming certain conditions about the representative agent's utility function and about the production technology that may be implausible (Aghion and Howitt, 1998).

Most growth models are extremely aggregative not only in terms of relying on a representative agent but also in their assumption of a single production sector and two or three inputs, including labor, capital, and the environment. To obtain sustainable growth, some models rely on exogenous technical change, which is simply assumed to allow ever-decreasing pollution to output intensity (Stokey, 1998). Other models allow for endogenous technical change. They assume that progressive tightening of environmental regulation, as income grows, stimulates pollution-saving technical change and, hence,

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decreases pollution intensities along the growth process (Bovenberg and Smulders, 1996). Still other models rely on a change of the input composition that increases the human capital (a 'clean' input) to physical capital (the 'dirty' input) ratio (Aghion and Howitt, 1998). Less-aggregative endogenous growth analyses, using two-sector models, find that structural change from commodity production towards production of services and from physical to knowledge inputs, in conjunction with investments in environmental and natural-resource protection, yield feasible sustainable economic growth (López, et al., 2004).

The assumption of a benign social planner who is able to internalize all environmental effects is obviously unrealistic. As noted by Smulders (2005), in a market economy—as opposed to the idealized optimal social planner case—the ability of endogenous innovation to support sustainable growth depends critically on the institutional backdrop. This backdrop can allow greater or lesser degrees of internalizing market failures, such as open access problems and pollution spillover effects. Also, endogenous innovation may in some cases increase the ability to exploit a scarcer resource (e.g. declining fish stocks) rather than serve as a way to reduce depletion.

Even under the unrealistic assumptions of full internalization of environmental effects and optimal institutions, there is another important condition for sustainable growth highlighted by all sustainable-growth models: the steady-state or 'balanced' rate of economic growth cannot exceed a certain *maximum* level. This maximum rate of growth in most analyses depends on society's discount rate, the elasticity of the marginal utility of consumption (the rate at which the marginal utility of consumption or income falls as income increases, often called the Frisch coefficient or coefficient of risk aversion in other contexts), and the elasticity of substitution in production between man-made capital and pollution. That is, regulation and investments in protecting the environment required by sustainable growth lead to an equilibrium (long-run) rate of economic growth. This rate is slower than it would be if the environmental 'problem' did not exist. Environmental sustainability requires partially sacrificing economic growth even under most optimistic assumptions, not only in the short run but also over the long run.

In the highly stylized world of growth models, sustainable growth thus may not be feasible if the conditions regarding production technology and the preferences of the representative agent are not satisfied. In this case, environmental sustainability would be 'technically' incompatible with positive long-run growth. If, however, these conditions are satisfied, then the planner is always wise enough to maximize welfare with environmental sustainability. Yet, it may be worthwhile to ask the following question: If we assume that the technology and preferences conditions are met, what potential errors on the part of the planner could conceivably lead to a failure to achieve environmental sustainability? This question is, in a sense, outside the realm of growth theory

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because it allows for the possibility that the social planner makes mistakes (or, alternatively, in the market interpretation of the model, that all markets do not exist or are not perfect). Nonetheless, this question could help guide a more empirically relevant analysis of sustainability.

Two possible mistakes of the planner may cause failure to achieve optimal (welfare-maximizing) sustainable growth. One, the planner shoots for too rapid a growth rate. That is, he or she invests too little in the mechanisms required to prevent continuous environmental degradation. The trade-off between economic growth and environmental sustainability is not optimally balanced and the result is an excessively high rate of growth over the short run in exchange for too much (vis-à-vis what is socially an optimum) environmental degradation. As a consequence of this imbalance, the economy fails to achieve its (environmentally constrained) maximum rate of welfare growth over the long run. Two, the planner may sacrifice too much growth for the sake of avoiding environmental degradation and thus forgo too much economic growth in the short run.

In the real world, however, economic growth is often sacrificed not for the sake of environmental sustainability, as postulated by optimal- or sustainable-growth theory, but for more prosaic reasons. Economic stagnation or semi-stagnation is almost always associated with government policy failures, including misallocation of public revenues, failure to correct market imperfections, and failure to promote the development of certain basic institutions and other public goods. Behind these policy failures, one does not typically find only ignorance or a lack of financial means and capacity building. Many policy 'mistakes' have political-economy roots as well.

But before discussing these political economy issues, it is important to emphasize that the diversion of economic growth to benefit economic elites or other special interest groups often makes environmental sustainability even harder to achieve. If income grows slowly, the demand for environmental services also expands slowly (the marginal utility of consumption decreases more slowly over time); the social discount rate may remain too high as a large segment of the population continues to live in poverty; and, most importantly, structural change (changes of the output and input composition towards cleaner outputs and inputs) is delayed.

When the potential for economic growth is wasted, there is a negative effect on most of the mechanisms that growth theory has taught us are important for achieving environmental sustainability. Moreover, in addition to exacerbating the sacrifice of environmental sustainability for growth in the short run, low growth rates entice policy-makers to misuse natural resources in a usually futile effort to expedite growth. Finally, for countries where the economy is highly dependent on natural resources, this scenario results in a further reduction in the rate of economic growth over the medium run. For economies that are not resource-dependent, this feedback effect may not happen until the health of

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the population is significantly impacted by environmental degradation. At this point, the full consequences of unsustainable economic growth are felt.

Thus, many slow-growing countries do not fit the mold assumed by neo-classical growth models: they are not really facing a trade-off between the rate of economic growth and the degree of environmental sustainability, as assumed by growth models. With the right policies and institutions, such countries could simultaneously achieve both faster economic growth and a better environmental performance, thus allowing for sustainable growth over the long run. Unfortunately, however, the win-win policies that may lead to such a desirable outcome are likely to hurt powerful economic interests that benefit from the current policies.

There are, however, at least a handful of important developing countries that more closely fit the neoclassical sustainable growth models, which consider the trade-off between the speed of economic growth and environmental sustainability. India and, most especially, China and Korea have been able to maintain extremely rapid rates of economic growth for a significant time period. Recent studies have documented the astounding destruction of the environment in China over the last decade.² It is indeed difficult to expect that a country growing at 9–10 percent per annum can do so while sustaining the environment. The largely autocratic regime in China apparently has accepted an extreme trade-off entailing very rapid economic growth and large environmental losses (though some localized environmental improvements have been realized). In this case, growth theory would most likely suggest that this is not an optimal strategy and that the welfare of the 'representative' Chinese citizen could be enhanced by a slower growth rate accompanied by less environmental degradation or even no net degradation over the long run.

Finally, we must examine the important question, for whom are policies optimal? Reliance on the representative agent implies that growth models simply ignore this crucial question. Here, distributional factors come into play, across both space and time (i.e. across generations as factors that determine policies and institutions that affect growth). The tension between sustainability, inter-generational distribution, and optimality is illustrated by a simple bio-economic model of optimal fishery exhaustion. Even though the resource base in this case is renewable, impatient and egoistic individuals today may prefer inter-generational unsustainable consumption paths.³ The inter-generational issue may be regarded as a problem of choosing the right discount time rate in general and thus may not be inherently associated with optimal growth

² See, for example, Economy (2004) and Elvin (2004) for dramatic accounts of the massive increases of water and air pollution that are causing severe effects on the health of a large segment of the population and of the destruction of a large portion of rural ecosystems. Economy reveals that China's environmental protection agency has a staff of 300 to deal with environmental regulation, monitoring, and enforcement for the whole country of 1.2 billion people!

³ For relatively recent compendia on these subjects see Pezzey and Toman (2002) and Simpson, Toman and Ayres (2005).

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theory. But the issue of distribution within generations has not been tackled by growth theory; and constitutes one of its key remaining weaknesses.

Governance and Political Economy

Most chapters in this volume conclude that excessive natural-resource and environmental degradation is associated with institutional failures and market imperfections, both of which impede the full internalization of the true social value of the environment in economic decision-making. In addition, several chapters provide evidence suggesting that governments mostly exacerbate, rather than manage, such market and institutional imperfections: 'Rather than correcting market imperfections governmental intervention often aggravates them' (Bulte and Engel, p. 18).

A dramatic illustration of this phenomenon is provided by the so-called perverse subsidies, including energy subsidies, water subsidies, and credit and fiscal incentives for activities such as livestock and land conversion in forest areas. This is an issue discussed at length by Deacon and Mueller, López, and Strand in Chapters 4, 5, and 3 respectively. The conclusion is that, despite some reforms, notably in energy, these subsidies often continue to be massive and pervasive. In addition to their microeconomic efficiency costs and the environmental consequences of induced resource over-use, these subsidies have been, for the most part, counterproductive—even as instruments to accelerate aggregate economic growth or to spread its benefits. Their main effects have been to redistribute wealth in favor of the economic elites as well as to exacerbate environmental degradation. Large subsidies, according to several analyses, constitute a heavy fiscal burden (on average, they have absorbed about 25 percent of total government revenues in non-OECD countries), crowding out the supply of many important public goods from the fiscal budget.⁴ Thus, subsidies may not only cause economic inefficiency and greater resource degradation but also greater social inequity.

It would be naive to assume that these subsidies persist merely because of policy-makers' lack of information and lack of clear understanding about their deleterious effects. By now, the long-run effects of subsidies are more or less known, given the significant dissemination (even through mass media) of evaluative studies. It would, however, also be an exaggeration to blame the subsidies' permanence entirely on corruption and political contribution patterns

⁴ Alternatively, subsidies may be financed through higher taxes instead of through lowering the provision of public goods. The efficiency costs of higher taxes are well known, but the social-equity effects of taxation are also often undesirable because of the high degree of tax evasion and the great reliance on indirect taxes in developing countries, which make them socially regressive (World Bank, 2004). In reality, non-social subsidies are financed through a combination of both lower investment in public goods and higher taxes.

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that permit the economically powerful, the greatest beneficiaries of the subsidies, to 'buy' public subsidies. After all, very diverse countries around the world, some of them with sophisticated and highly democratic political regimes and with seemingly low indexes of corruption, have these subsidies in place.

There can also be an *ideological bias* among policy-makers and politicians, which is partly due to factors that do not exactly correspond to the level of corruption and bribery: policy-makers are under significant pressure to attain 'good' economic performance, as measured over a short time period by conventional national account indicators. The fate of current policymakers and politicians once they abandon office does not depend so much on decreases in pollution or deforestation as on increases in GDP, declines in unemployment, and the corporate friendly nature of a given administration. The ability of former policymakers and politicians to obtain lucrative positions in the private sector and in international organizations, as well as to command profitable lecture fees and other significant benefits, are likely to be a potent incentive for politicians and policymakers to promote policies which are heavily biased in favor of economic elites. In the short run, such policies contribute to sustaining employment levels and boosting GDP as measured by conventional national accounts, however, the absence of an accepted system of 'genuine' national accounts is certainly a factor that conspires to preserve this ideological bias. As Hamilton and Rashid suggest in this volume (see Ch.2), we are still far from the time when genuine accounts can be widely accepted and used.

Under-supply of Non-Environmental Public Goods

The insufficient supply of non-environmental public goods in most developing countries is thoroughly documented by the literature (The World Bank, 2004; Dreze and Sen, 1995; Baland and Kotwal, 1998). Among the many *public goods* that most governments under-provide, the development of property-right institutions is one that is emphasized by several chapters in this volume. At issue are a lack of recognition and a lack of enforcement of informal property rights of the poor, especially in rural areas, which sometimes makes such property rights vulnerable to external challenges from big commercial interests and often leads to expropriation or 'enclosure' of the poor. These issues are discussed by Barbier and López in Chapters 1 and 5 of this volume. In addition, unlike the enclosures in Western Europe more than two centuries ago, the property-right issue in today's developing countries is often not solved through expropriation. The beneficiaries of these usurpations rarely obtain legal rights, and are often simply content to mine the resources—especially during commodity booms. Even if these beneficiaries do obtain legal rights, the newly acquired rights are often not secure, in part because of the illegitimate

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means used to obtain them.⁵ The lack of development and subsequent enforcement of property rights is also a cause of massive illegal extraction of natural resources, including expensive woods and rare animal and plant species.

Another important non-environmental public good that appears to be heavily under-supplied is human capital. The literature systematically reports extremely high and persistent rates of return over time for investments in education, R&D, and other forms of human capital and knowledge-enhancing investments. The under-investment in human capital may significantly affect the potential for environmental sustainability. As discussed earlier, structural change is one of the most important vehicles for environmental sustainability. The slow investment in human capital and related knowledge assets delays structural change. The reason is that clean inputs mainly consist of such assets, while production of clean outputs is generally knowledge and human-capital intensive. Thus, if environmental sustainability is to be achieved, it needs to rely much more on instruments that are blunt, costly, and politically difficult to implement, such as regulation and taxation instead of structural change. The net result is that such instruments are rarely implemented to the extent needed; thus, the chances for environmental sustainability are considerably diminished.

The under-supply of human capital also worsens poverty, since the poor are the most affected by the insufficient public support of human capital formation. The poor are affected not only by the insufficient provision of public goods but also by the *composition of the public goods* provided by governments, which is generally biased against them. For example, the emphasis on tertiary education in many countries subtracts from the already limited budgets such countries have to invest in primary and secondary education, the component that is most beneficial to the poor. In addition, the composition of public goods tends to prioritize large physical infrastructure (roads, dams, etc.) to the detriment of social public goods, such as welfare and social-security services. Thus, governments not only under-provide public goods, but they often bias this low supply toward physical infrastructure and against human and social public goods. Recent studies have shown that countries with autocratic and corrupt governments tend to supply fewer public goods. Additionally, the composition of available public goods in these countries is biased in favor of large infrastructure projects (Deacon, 2002).⁶

The consequence of such priorities is that poverty is more widespread and deeper than it would otherwise be. Barbier, in this volume, and several

⁵ The challenges through occupation and other means faced by many owners of lands that were originally usurped from native communities in Latin America (Deacon and Mueller, Ch. 4 Alston et al., 1999) are an interesting illustration of the fragility of property rights when they are acquired through illegitimate means.

⁶ It may also be, as Sterner and Somanathan's paper (Ch. 7) and others in the volume indicate, that in the environmental and resource sphere an additional problem is one of supplying the wrong kinds of infrastructure.

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other studies have shown that poverty worsens the degradation of certain environmental resources such as forests, particularly in heavily populated countries. Governments frequently use development policies at the extensive margin, through colonization–settlement projects (often poorly conceived and poorly funded) into remote frontier areas, as ways to relieve the political pressures of the poor in already settled areas. That is, frontier expansion in land-rich countries plays the role of anti-poverty policy, substituting for social programs. However, as Barbier shows, frontier expansion has rarely contributed to economic development and has even more rarely led to significant poverty reduction. It has, however, contributed quite massively to deforestation, habitat loss for many species, and other environmental losses.

International Capital Mobility and Trade Issues

Apart from the obvious effects of corruption and apart from the less obvious ideological biases that motivate politicians, there are also international developments that may play an important role in promoting such environmentally perverse subsidies. Competition among countries and even among states within countries to attract *foreign capital* can be another important motivating factor for such subsidies. The studies reviewed by Copeland and Gulati in Chapter 6 show that the pollution-haven hypothesis is not empirically supported. However, many countries try to persuade multinational corporations to establish operations in their countries by giving away natural resources for free and by providing other subsidies and tax exemptions (see Chapter 5 by López, in this volume, and Oman, 2000). Although empirical evidence suggests that subsidies to attract foreign investment are very large in certain countries (Calmon, 2004; Oman, 2000), there are no studies showing that these subsidies have indeed played an important role in affecting the location of foreign investment. But there is increasing empirical evidence demonstrating that the fiscal costs of these apparently futile efforts to attract foreign investment ('race to the bottom') are significant.

Has *trade openness* worsened the tendency to waste scarce fiscal resources and natural resources through subsidies? According to Copeland and Gulati in Chapter 6, trade openness has not played an important role in countries that do not already have comparative advantages in activities that are natural-resource intensive. For such countries, a weak domestic environmental policy, although contributing to increased pollution in general, has not been a decisive factor in attracting 'dirty' industries. The authors point out however, that emerging empirical evidence suggests that countries that are natural resource-intensive exporters with weak domestic institutions are vulnerable to increased natural capital degradation from trade liberalization. In these

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countries, trade liberalization may also lead to increased pressures on policy-makers to 'liberalize' corporate access to natural resources and to increase the 'incentives' (e.g. subsidies) for corporations to become more competitive in world commodity markets.

The size of perverse subsidies appears to be even larger among natural resource-abundant countries, the countries affected by the so-called resource curse. As Deacon and Mueller point out in Chapter 4, evidence suggests that natural resource abundance is associated with poor governance and poor institutions. In turn, earlier works by Deacon (2002), as well as by others, have shown that poor governance, lack of democracy, and lack of participation of civil society increase the tendencies of governments to under-provide public goods and to waste public revenues in non-social subsidies (including perverse ones), which are mostly directed to the economic elites.

Copeland and Gulati (Ch. 6) do not explicitly deal with *trade in services*. A relatively recent development has been the promotion of free trade in services, especially between North and South. A fundamental consequence of the liberalization of service sectors is the freeing of the service sectors from limitations on foreign ownership. This usually occurs after privatization of service sectors that were previously in public hands. Once foreign ownership is established, the foreign investment agreements are often governed by GATT rules as established by WTO or by more ad hoc Regional or Bilateral Free Trade Agreements (Mann, 2004). The overwhelming aim of these rules is to protect foreign investment against policy changes that were not foreseen at the time the investment took place. Moreover, complaints from foreign investors are mainly subject to international arbitral decisions, not to appeal in any national court of law. Mann (2004) points out that 'it is questionable whether such arbitration tribunals would apply human rights and environmental laws when considering the scope of a state's rights and obligations' (p. 14).

The consequences for host countries that decide to change some of their policies are becoming increasingly more serious. Argentina is facing lawsuits for \$16 billion (6% of its annual GDP) from several foreign firms in reaction to state policy changes—mainly the exchange rate devaluation that took place in 2002, which may have affected the firms' profits (Solano, 2004). Other countries, including Mexico, Chile, and Nicaragua, are facing similar legal challenges, though perhaps none so costly as those faced by Argentina (Mann, 2004; Solano, 2004). Some countries have had to turn back important environmental regulation because foreign firms have threatened to bring their cases to international arbitration. Governments face obvious losses when forced to divert money from social and environmental programs to pay compensation to foreign investors. The tight grip of foreign capital may significantly restrict the scope of countries to implement

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reforms that reduce subsidies and change policies. This factor may militate against sustainable development.⁷

The failure of the international community to develop mechanisms to compensate developing countries for *global services*, such as retention of carbon and other climate-changing gases, and for services related to biodiversity preservation is another important international factor that worsens the chances of environmental sustainability. The rich countries, presumably because of their high income, are more able than developing countries to value and to afford paying for such services (Albers and Ferraro, see Ch. 12). Yet the international institutions that could make the development of trade in environmental services possible are, at best, at an incipient state of development. As Albers and Ferraro point out, the failure to develop adequate international trade mechanisms (in environmental services) is related not only to failures at the international negotiation level, but also to property-rights imperfections and government failures in developing countries. Successful trade in environmental services needs the assurance of compliance with international contracts, which can only be guaranteed if domestic institutions that assign responsibility for contract enforcement are in place.

Fiscal and Structural Adjustments

In addition to openness to trade and capital inflows, another important international influence affecting developing countries is the policy role played by international organizations such as the World Bank and the IMF. On the one hand, fiscal adjustment (monetary and fiscal policies to induce macroeconomic stability and to correct for internal and external disequilibria) has been a main mechanism used by the IMF to influence short-run policies. On the other hand, structural adjustment (trade, factor market, and financial liberalization, privatization, and others) has been a key vehicle to influence long-run policies by the World Bank and associated international institutions. Despite that the policy agenda promoted by international organizations is hardly concerned about environmental sustainability—or, perhaps, because of this fact—this agenda has significantly affected the environmental consequences of economic growth, as López argues in this volume. The demands from the IMF for the reduction of fiscal deficits have generally been met through the further

⁷ The case of NAFTA and the current US Model Bilateral Investment Treaty are particularly worrisome. NAFTA and other US bilateral free-trade pacts use a top-down approach, where foreign investment in all sectors is considered covered by the investment protection agreement unless specific exclusions are negotiated. This may be particularly risky to poorer countries, which have little capacity to negotiate exclusions. The result is that poorer countries are exposed to great losses if their policies need to be changed.

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reduction of the supply of public goods, including the supply of environmental public goods, which worsens environmental distortions. In addition, structural adjustments gave only scant technical and financial support to the development of environmental institutions and regulation.⁸

At the same time, international institutions, mainly through structural adjustment, demanded that developing countries integrate themselves into world commodity and financial markets very rapidly. As economic openness increased, so too did the need to develop measures to prevent the significant market and institutional imperfections that affect the environment from undermining, or even negating, the gains from globalization (Copeland and Gulati, Ch. 6). Thus, precisely when environmental institutions and regulation were most needed, structural and fiscal adjustments further discouraged such endeavors.

The narrowness of the international financial institutions' policy agenda has been the greatest setback to sustainable development. There has been a strong preoccupation with preventing governments from interfering with markets. The removal of government-induced market distortions in some cases was a single-minded objective. This narrow approach does not address distortions that result from market imperfections and from government-induced distortions through mechanisms other than market intervention. The public sector expenditure allocation, which encompasses subsidies to the rich and the under-supply of public goods, is among the often overlooked non-market distortions. As long as the subsidies are provided through mechanisms that are not openly distorting markets, they have often not been a matter of concern to fiscal and structural adjustments. Massive financial grants, land gifts, and natural resource transfers given for free, as well as special tax exemptions, are usually enjoyed by rich individuals and corporations. Financial bail-outs of unregulated banks and other financial institutions are rarely mentioned as a concern in the structural-adjustment reports.⁹ It is now clear that fiscal tightening coupled with the protection of expenditures on non-social subsidies is bound to cause an even graver under-supply of public goods, including environmental protection, human capital, and social anti-poverty programs. Such policies drastically affect the potential for sustainable development.

⁸ For his part, Strand notes that the direct impacts of a domestic economic crisis will depend on its nature; for example, a drop in a commodity export price could lead to less extraction, unless the state itself raises extraction rates to compensate for lost revenue. However, the indirect effects resulting from a general drop in incomes could be as serious as any direct effects; for example, more intensive land exploitation with a return to subsistence agriculture or state efforts to enhance competitiveness through relaxed controls on resource use and environmental degradation.

⁹ The case of the recent bailout of one bank and its few but highly influential customers by the government of Dominican Republic is an important illustration. The almost \$2 billion spent by the government in this endeavor (more than 25% of the country's GDP) practically ruined the country and triggered a massive economic recession in 2003. International financial institutions, often ready to advise against market interference by governments, were conspicuously complacent about this particular interference.

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Under-supply of Natural Resource and Environmental Goods

A number of the chapters are consistent with the hypothesis of under-investment in natural capital advanced above. They identify several investments that improve natural and environmental resources management and exhibit high social rates of return. Nevertheless, these investments are not implemented. Investments in water supply, watershed protection, soil conservation, and in other environmental resources of national or domestic value have large rates of return, yet governments often attach relatively low priorities to their realization. Given the theory of international public goods and international agreements for their protection (e.g. Barrett, 2003), resources of global value, such as biodiversity conservation and carbon retention services are, not unexpectedly, of even lower priority. In addition to domestic institutional failures, inadequacies of international institutions largely prevent the compensation of developing countries for the provision of such services, and, consequently, this international institutional failure becomes an important additional source of environmental distortion.

The chapters by Dinar and Saleth and by Barnes and Toman (Chs 9 and 8 respectively) address the problem of chronic under-supply of water and energy in many developing countries. Both of these resources figure prominently in the Millennium Development Goals, which is not a coincidence given their important influence on economic growth and social development. The *quality* of water is also of obvious importance and is addressed in Chapter 10 by Markandya. Both the Dinar-Saleth and Barnes-Toman chapters focus on issues identified in previous chapters. Problems of resource availability just as often reflect difficulties in the provision of adequate and appropriate delivery infrastructure as they do basic problems of material scarcity. However, countries with limited water, or the need to import large quantities of expensive energy, face additional challenges.

Infrastructure problems in turn reflect a variety of market and institutional distortions. Government agencies that provide these services usually have little incentive to be efficient or provide reliable services, and may be biased toward larger but less cost-effective investments. Private provision of infrastructure may in turn be impeded by government regulations that limit entry or distort investment choices. Both public and private provisions face problems related to the political economy of these services, especially the desire to hold down prices in an effort to benefit the poor. Revenue shortfalls can undermine the financial, and therefore the economic, sustainability of the services and can drain funds badly needed to remedy poorly targeted subsidies in the public budget.

In their analysis of energy and, in particular, electricity-service provision, Barnes and Toman (Ch. 8) advance two arguments. First, increased availability of modern energy services is an important driver of social and economic

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development. Secondly, greater attention to the social value of increased energy availability and to the cost of service provision is needed in overall energy policy and planning. Flexibility in the ways these services are provided is also needed. In many cases, smaller-scale systems, especially renewable-based systems, are the best practical option though theoretically, such systems are less technically efficient than larger scale, grid-based electricity (which may take years to arrive). These systems can be combined with targeted subsidies of fixed capital and connection costs to benefit the poor without creating the costly and distorting effects of usage subsidies.

Dinar and Saleth (Ch. 9) address similar issues in their analysis of water-resources provision, though, given the long and difficult history of water allocation in all societies, their conclusions are somewhat different. They note that although the standard economic prescription of more efficient water tariffs and of greater involvement of the private sector is conceptually sound and has been effective in improving water allocation, in practice, this advice has been taken relatively infrequently. Their diagnosis of the problem echoes themes of political economy, property rights, and endogenous institutional constraints identified in previous chapters. Specifically, they argue that institutional transactions costs and idiosyncratic linkages of water reforms to other issues (e.g. public debt, crises in agriculture or electricity sectors) influence the practical capacity to implement standard economic prescriptions for efficient pricing. Reforms, they conclude, must be designed to incorporate these endogenous constraints and the political interests of powerful interest groups.

The chapters by Albers and Ferraro (Ch. 12) and Bulte and Engel (Ch. 13) consider natural and environmental resources, such as forest landscapes and, more generally, terrestrial protected areas. These resources provide multiple potential benefits and involve substantial quality as well as quantity components. Bulte and Engel summarize the many causes of deforestation, from the direct effects of weak property-rights regimes and rent-seeking to the induced effects of increased returns to agriculture in land clearing or incentives to mine forests for cash flow in the face of debt problems. The resulting social costs of such excessive tropical deforestation range from reduced yields of timber and non-timber forest products to reduced benefits of a variety of ecosystem services, such as erosion control and carbon sequestration. It is perhaps surprising, however, that the *marginal* value of these losses is in some cases relatively low—not large enough *per se* to trump economic gains from forest clearing.

Bulte and Engel's chapter (Ch. 13), and the chapter by Albers and Ferraro (Ch. 12) on protected-areas management emphasize two additional critical points. First, there is a large degree of uncertainty surrounding efforts to economically value the ecosystem services in question. Moreover, there needs to be a way to realize the value of protecting these ecosystems as a way of reducing the risk of adverse economic and social impacts, even if the expected values of conservation or protection benefits seem a bit low. A corollary observation is

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the essential need for more primary research on the valuation of local and national benefits of ecosystem services in developing countries and of the global benefits of services like biodiversity and carbon sequestration. Albers and Ferraro sketch some promising directions for such work, drawing on recent developments in spatial economic analysis as well as interdisciplinary assessments of ecosystem functions.

The second critical point is the need to undertake practical measures for conservation and protection that reflect the incentives and institutional conditions present. Both chapters describe sometimes quixotically hopeful efforts to engineer increased protection as an indirect co-product of ostensibly sustainable local land- and resource-development programs. Often, such efforts deliver neither the desired protection outcomes, due to indirect and weak incentives, nor the local benefits of sustainable resource development. Two other alternatives explored in the chapters involve direct financial transfers for protection (e.g. compensation for foregoing access to sensitive areas) or direct local participation in reaping financial rewards of conservation (e.g. local participation and benefit sharing in game protection for ecotourism). In principle, these approaches should have stronger, more direct incentive effects. In practice, institutional weaknesses in monitoring and enforcing conservation requirements and outcomes can undermine these activities by means of 'paper parks' or other forms of encroachment and opportunistic rent seeking. Once again, a key issue in designing effective policies is the recognition that institutions matter and that their performance is endogenous to the economic rewards and costs present.

The same problem arises in connection with activities to reduce net-greenhouse gas emissions by limiting fossil fuel combustion and changes in land cover. Neither the Convention on Biodiversity nor the Framework Convention on Climate Change currently offers solid mechanisms for monetizing and rewarding the global value of efforts in developing countries to produce these global public goods. The beginnings of such mechanisms are evident under the Kyoto Protocol to the Framework Climate Convention through the adoption by industrialized ('Annex B') countries of limits on greenhouse-gas emissions and through the ability of developing countries to earn revenues by producing 'carbon emission reduction credits' (CERs). But this mechanism remains weakened by uncertainties about developed country commitments to their Kyoto targets and by uncertainties about negotiations of future targets. This lowers the economic reward to sustainable energy and land management beyond the softness of nominal emission targets under Kyoto and beyond any domestic obstacles to more environmentally sustainable management.¹⁰

That there are weaknesses in international commitments to produce global public goods is not surprising since, theoretically, we know such agreements

¹⁰ Despite criticism by many environmentalists on this point, it is not necessarily bad.

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have a tendency to be weak and fraught with free riding. It is also not surprising from a political economy perspective that the developed world would decry unsustainable resource management in the developing world while also participating or acquiescing in weak international commitments themselves. Two facts remain: first, there are win-win opportunities for jointly deriving local/national and international benefits from more sustainable management. Secondly, given richer countries' greater ability to pay and the need for developing countries to focus on raising living standards without undermining natural capital, greater success in the production of international environmental public goods still depends on the leadership—not just piety—of richer countries in bearing the burdens.

The last three chapters emphasize the valuation and management of environmental goods that have a strong quality dimension, in particular clean air and water. The chapter by Sterner and Somanathan (Ch. 7) embeds this discussion in a larger context by noting first that although some of the needs of the poor in developing countries are similar to those for residents of richer countries—such as clean air and water to protect human health—other needs of the developing country poor are more distinctive. For example, the developing country poor need access to, and the protection of, basic land fertility. This contrasts with the pursuit by richer countries of environmental recreational opportunities. Sterner and Somanathan use examples to suggest that the variety of institutional and political economy problems already identified above—including a concentration of political power that masks social preferences and causes a misallocation of social investment as well as more conventional concerns with corruption—need to be addressed through the construction of effective environmental policies in developing countries. Additionally, they argue that in designing environmental protection instruments, the tools used must reflect the institutional capacities for design, monitoring, and enforcement. The role of market-based instruments may be more circumscribed. For example, even though these instruments can be very cost-effective, broader market distortions or lack of effective monitoring may impede the operation of economic incentives.¹¹

The chapter by Markandya (see Ch. 10) takes up one of the central challenges of the Millennium Development Goals: the provision of clean water for human use and, more generally, the treatment of waterborne effluents to protect both water sources for human use and inland aquatic ecosystems. Markandya summarizes both the compelling health evidence in support of safe water provisions and ecological protection. The economic valuation of

¹¹ In comparing incentive-based instruments to alternatives such as traditional technology or performance standards, it is important to avoid comparing the actual with the ideal. It is well known that incentive-based instruments are not a substitute for effective environmental laws, effectively implemented. However, lack of monitoring or enforcement capacity will undercut the effectiveness of the more traditional instruments as well.

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these resources is at the cutting edge of environmental valuation research and practice.

The conclusions of the chapter may be somewhat surprising. The MDGs call for halving (by 2015) the number of people without access to safe drinking water and for reducing significantly those without access to modern sanitation. Assuming a 50 percent cut in those without access to sanitation as well, Markandya concludes that available evidence on benefits and costs supports these twin objectives. However, the achievement of the sanitation goal is several-fold more expensive than the achievement of safe water access, which may be accomplished in several ways without necessarily resorting to greatly expanded sanitation investments.¹² When one looks separately at the two objectives of safe water and sanitation, the economic case for water is much stronger than for sanitation. Subject to the caveat that in some cases sanitation may indeed be the best or even the only way to ensure safe local water supply (along with investments to increase the safety of the water delivery system), this finding is of considerable relevance for decision-makers in developing countries that must set priorities in the use of very scarce investment resources.

Markandya also underscores that the limited evidence available suggests that poor as well as rich households have a willingness to pay well above current water prices for safe water. The price is sufficient to provide a financial base for enhancing household water quality, especially if poorer households receive well-targeted subsidies for connection in lieu of more poorly targeted consumption subsidies from richer to poorer users. This indicates once again that the challenge is political and institutional (e.g. are people willing to pay without more assurance that existing municipal authorities will actually deliver the goods?) rather than a matter of costs-versus-benefits.

The economic evidence on the value of cleaning up water bodies for other uses is even more limited and equivocal. Looking at a number of case studies, Markandya concludes that, although river basin clean-up may be a priority in many environmental agendas, the overall economic benefits (including all amenity and other values) may not be sufficient to justify the costs. This holds true unless the water body has special cultural significance, or it is very costly to turn to other sources. Water bodies with significant biodiversity potential also generate global public benefits, but, as already noted, the capturing of these benefits in payment streams to those who would incur the costs of clean-up remains somewhat elusive.

Many similar issues arise in the assessment by Krupnick, in Chapter 11 who discusses the health effects from urban (outdoor) air pollution and options for

¹² Safe water could be provided by tapping more remote clean sources that are protected through an upstream-integrated-river-basin management plan. Moreover, investment in ensuring that the delivery system is not subject to contamination, without necessarily investing in greatly expanded downstream municipal-household effluent treatment, will also provide safe water.

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ameliorating these impacts.¹³ Drawing on similar sources of information in linking pollution to health and in evaluating the health impacts, Krupnick notes that, from an economic perspective, it is important to set priorities and target policies. Fine particulates from various sources have been implicated as a much more serious health threat than some other pollutants, causing, for example, chronic lung disease and other illness as well as premature death. Airborne lead from gasoline also has been implicated as a serious health problem, and, although this threat has been abated in many countries, it still lingers notably in Africa. These problems, although smaller in the aggregate than the health problems associated with water contamination, are significant enough in the overall hierarchy of threats to human health in developing countries to warrant serious policy attention.

After establishing these points, Krupnick reviews recent policy attempts to ameliorate urban airborne pollutants. The examples he gives echo the point made by Sterner and Somanathan (Ch. 7) about the need to craft policy to fit circumstances. Krupnick provides a variety of examples, especially in Asia, of the potential for the use of incentive-based instruments for pollution control. In some cases, these instruments may be less direct and therefore less efficient than a direct attack on a pollutant—for example, a fuel tax in lieu of a direct measure for controlling diesel-based particulates. Nevertheless, even indirect incentive-based policies may offer opportunities to improve on the performance of more command-and-control-based measures.

Concluding Comments

In these final comments, we would like to try to highlight four cross-cutting messages that we believe are especially important for decision-makers seeking to strengthen environmental policies individually and the environmental sustainability of economic growth generally. The first point is the need to broaden the discussion of environmental sustainability. Contrary to what many believe, environmental sustainability is not achieved merely through environmental policy or even through optimal environmental policy. Optimal environmental policy in the context of economy-wide policies that consistently discriminate against the poor and that under-provide non-environmental public goods, such as human capital, would amount to pressing the brake and the accelerator at the same time. Such policy would assure neither sustained nor environmentally sustainable economic growth. We need not only to see the environment as an important value, for which the evidence is compelling, but also to address the interactions between

¹³ Indoor air pollution, mainly from smoky fuels in poor households, also is a serious health concern. This problem is addressed in the energy chapter by Barnes and Toman (see Ch. 8).

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under-provision of environmental and non-environmental economy-wide policies. This calls for a more holistic and integrated approach to policy in which some of the most important actions in support of environmental values may focus on, for example, financial markets or human capital. At the same time, the contributions of good environmental policy to sustainable development must be addressed.

The second point is the pervasiveness of the political economy challenges resulting from weak or opaque property rights in many spheres. By this we mean not just the problems directly plaguing governance of environmental resources, but also the problems citizens face in exerting a collective demand for less corruption, more efficient and fair taxation. Having noted the problem, we are left somewhat humbled by the chapters in this volume regarding proposed solutions. In some cases, the authors have indicated that innovative solutions involving different strategies of decentralization and public participation can be effective. But in other instances, such solutions are ineffective; solutions must be based on solid evidence of promise, not on quixotic wishes.

Our third point is that, although expanded trade may sometimes exacerbate the lack of environmental sustainability, there is, at this time, no broad and deep evidence that international trade itself has become an obstacle for environmental sustainability. Though trade liberalization is often analyzed separately from the liberalization of capital flows, it is clear that liberalizing trade of services is closely linked to foreign investment expansion. While foreign investment has at times contributed to economic growth, increasing evidence points to the emergence of biased legal international institutions that limit independent policy-making and environmental regulation by the states. The effects of domestic fiscal and structural adjustment programs, on the other hand, seem more worrisome, though here again, the empirical record is not entirely clear. It is clear, however, that fiscal and structural adjustment programs have previously missed an opportunity to help address many of the key issues that have contributed to slow long-run growth, inadequate social equity, and environmental degradation in a large number of developing countries.

The fourth and last point we wish to underscore is a corollary of the first three: there is a desperate need for more and better empirical work on environment and development issues and on policies in developing countries. There is also a need for international economic institutions to broaden their policy advice and act in favor of a more balanced political economy. Such steps would induce governments to give a greater weight to the needs of the poor and to environmental sustainability in their policy agendas. At the global level, a need exists for greater balance in the role of international institutions so that emerging global arrangements take the interests of the developing countries more seriously.

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