Understanding why governements in developing countries waste natural resources
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Environment; Mar 2000; 42, 2; ProQuest
pg. 8

Understanding Why Governme

by William Ascher

It seems obvious to most observers: Governments squander natural resources because officials are ignorant, incompetent, or greedy. This appears to be especially true in developing countries, whose dependence on natural resources often turns the waste of such resources into a major tragedy. We hear that a government did not follow the World Bank's advice to charge high enough fees for logging on public lands, and we assume that the officials responsible are ignorant of basic resource economics or that logging companies are getting special treatment in exchange for kickbacks. Or we hear that a state resource company is inefficient and heavily indebted and exploits oil or minerals recklessly, and we assume that the managers are either incompetent or are gold-plating their operations. (For a synopsis of the types of resource policy failures that can occur, see Table 1 on page 10.) In many cases, though, the view that poor resource policies are due to mis- or malfeasance is surprisingly incomplete. The waste of natural resources is a complicated business. Poor resource practices typically stem from faulty government policies, but the question is why governments adopt or maintain these policies.

The simplest explanation—that government officials are ignorant of sound resource policy principles—is hardly plausible when it comes to extremely important resources valued in the many millions or even billions of dollars. And where ignorance does occur, it is often willful: Governments frequently keep themselves unaware of the extent and causes of resource depletion and environmental degradation because the facts are inconvenient for the policies that they wish to pursue. For example, the construction of commercial logging roads that opened up the forest to shifting

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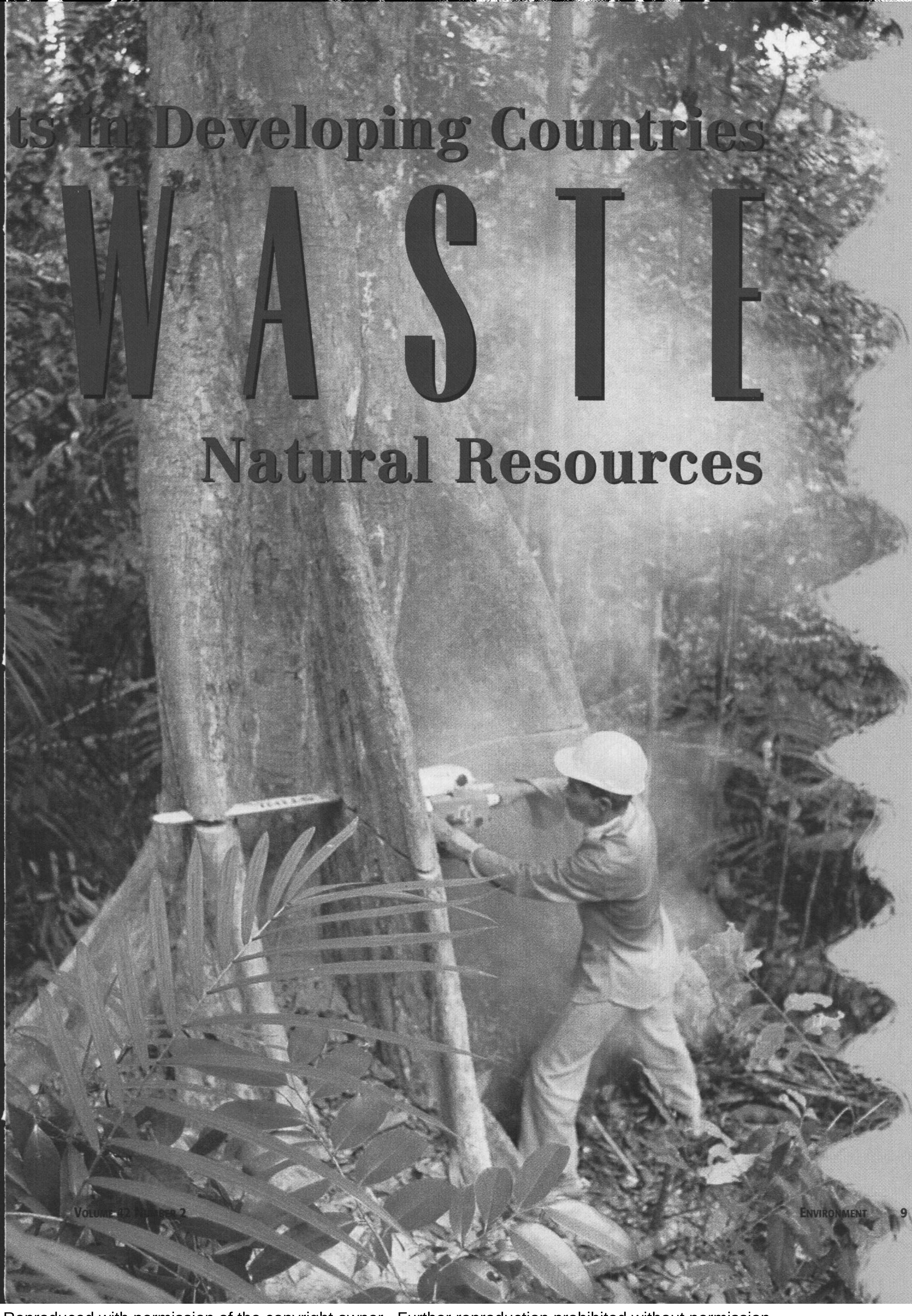

cultivators has been ignored by governments in Southeast Asia when it was convenient to blame deforestation solely on those cultivators.[1]

The "weak government" explanation is often superficial as well. When a government claims that it lacks the capacity to enforce resource regulations, this is often as much a choice as an intrinsic limitation. In Costa Rica, for example, the forestry agency can rightfully claim that it has great difficulty in enforcing logging regulations. However, on occasion, the Costa Rican government has left the agency with no budget for gasoline to patrol the forests, preferring to put the funding into maintaining personnel stranded in San José.

Another misleadingly simple explanation is that resource policies become faulty because conditions change. For example, a timber royalty that is appropriate when it is first established may become insufficient because inflation erodes its true value. Or a reasonable land-use plan may become less sound when the community's population mushrooms. Here, too, the explanation may be valid as far as it goes, but it begs the question of why policy makers do not adapt policies to new circumstances. As will be shown, many government officials take advantage of obsolete resource policies to pursue other objectives at the expense of sound resource exploitation.

Asking Why

All of these critiques of the simplest explanations for resource abuse point in the same direction: If we want to understand resource policy failures, we need to identify the intentions and motives of the people responsible for them, not just label the "system" as weak. Recent research that looked at 16 cases of major resource policy failure in developing countries[2] asked precisely this question: Why did government officials select, or neglect to change, faulty natural resource policies? (See Table 2 on page 11 for a summary of the 16 cases.) In all of these cases, which included the exploitation of oil, mineral, forest, land, and water resources, the research traced the motives of the policy makers responsible for the failed policies. These motives proved to be surprisingly complex, as a few vignettes will illustrate.

Table 1. Types of natural resource policy failures

Resource exploitation in general:

- Underpricing natural resources or products derived from them (promotes excessive and hasty resource extraction)
- Overpricing natural resources (discourages worthwhile resource exploitation and promotes conversion to less worthwhile resources)
- Poor information (diverts resource managers from optimal strategies)
- Vague property rights (promotes hasty resource extraction and discourages resource development because of insecurity about receiving future benefits)
- Monopoly arrangements (encourage inefficiency due to lack of competition and distort resource prices)

State resource exploitation:

- Direct commands to over- or underexploit the resource base
- Under- or overcapitalization of state agencies
- Wasteful spending by state agencies that are not held accountable for the waste
- Poor investment decisions by state agencies

SOURCE: W. Ascher, *Why Governments Waste Natural Resources: Policy Failures in Developing Countries* (Baltimore, Md.: Johns Hopkins University Press, 1999).

In Indonesia, the forestry ministry clung to low forest royalties that allowed private commercial loggers to retain four-fifths of the standing timber's value—which should have gone to the central treasury because the timber is publicly owned. The royalty policy not only deprived the government of legitimate revenues (and thereby violated the conventional wisdom that governments try to grab all the revenues that they can) but also provoked loggers into hasty exploitation of the forests to take advantage of the boon while it lasted. At the same time, the ministry imposed a so-called "reforestation" levy that never went to finance reforestation.

What makes this case perplexing is that the commercial loggers were not independently powerful players whom the Indonesian government had to cultivate but rather Indonesian Chinese who were heavily dependent on President Suharto for their very survival. It is also puzzling because of the perverse role of the forestry ministry as a partner in the liquidation of the country's forest resources.

The logic of these arrangements, however, is revealed in examining the programmatic objectives that they served. The Indonesian Chinese, whom Suharto could trust to comply with his wishes, were instrumental in establishing a petrochemical industry that was high on Suharto's priority list but that had received a negative assessment by the economists within the planning agency and the finance ministry. To establish this industry through the conventional budget process would have risked a confrontation within the government and possible embarrassment for a president insisting on pursuing a money-losing megaproject. Instead, the project was financed "off-budget," in large part though "private" financing by the Indonesian Chinese. By the same token, the reforestation fund ended up financing the Indonesian state aircraft industry's economically questionable but high-profile development of Indonesia's own N-250 airplane. If one simply follows the money in both instances, the conclusion is that the government used questionable forestry policies to finance Suharto's projects outside of the normal budget process. Were greed and power considerations also involved? Yes, indeed: Suharto's children regularly sat on the boards of the Indonesian Chinese conglomerates, and some of the logging company's contributions went to prop up the bank that financed the president's election campaigns. Yet the story cannot be understood without looking at the

Table 2. Cases and magnitude of losses

Brazil: Government subsidies of $700 million to Amazonian ranches were practically a total loss; 4 million hectares of forest were lost in the process

Cameroon: Forest concessions are sacrificing more than 80 percent of the resource rent to foreign loggers; massive deforestation is occurring; the establishment of Korup National Park allowed foreign logging companies access to a buffer area previously under local control

Chile: Ban on state exploitation of new copper deposits will have cost the Chilean economy more than $300 million annually from the mid-1980s to 2000

Costa Rica: Losses of forest assets in the 1970s and 1980s amounted to $4 billion; the growth rate in gross domestic product was lowered 1.5 to 2.0 percentage points per year (25–30 percent of the country's potential economic growth)

Ghana: Cocoa taxes of the 1970s and early 1980s reduced production to one-fifth of its mid-1960s level

Honduras: The state forestry enterprise had a $240 million debt by the late 1980s, with virtually no effective capacity to process timber

India: Uneconomical copper mining costs more than $40 million a year in wages and salaries; overall, the cost of production is nearly twice the world price

Indonesia:
- The state oil company's 1970s foreign debt of $10.5 billion bankrupted the government
- An early 1980s ban on the export of logs cost more than $400 million; the private sector retains $1.2 billion a year that should go to the central treasury

Mexico:
- 85 percent of PEMEX's contracts in the 1980s were illegally awarded without competitive bidding; discrepancies in the accounts relating to oil sales amounted to more than $3.5 billion for 1980; PEMEX's foreign debt reached $25 billion by the end of 1982; the company has been unable to increase production to take advantage of high oil prices
- Insufficient water charges for the national irrigation system led to its collapse by 1990 (when distribution efficiency was 30 percent)

Nigeria: The annual losses from corruption and poor oil investments and pricing amount to $2.5 billion; low domestic gasoline prices cost the government $4 billion annually as well as worsening pollution and congestion

Peru: The 1970s bankruptcy of the state oil company from questionable Amazonian explorations left the government with a $1 billion foreign debt to refinance

Malaysia:
- The forestry-based Sabah Foundation "lost" more than $1 billion from its accounts in the mid-1990s; logging in the 1980s took place at more than four times the sustainable harvest rate
- Timber extraction in Sarawak in the mid-1990s took place at more than twice the sustainable rate

Venezuela: The state oil company's controversial overseas investments exceeded $1 billion during the 1980s to avoid government investment fund raids; a low domestic gasoline price denies the government $2 billion in revenues annually and contributes to pollution

SOURCE: W. Ascher, *Why Governments Waste Natural Resources: Policy Failures in Developing Countries* (Baltimore, Md.: Johns Hopkins University Press, 1999).

development functions that the forestry policies were serving. Without question, industrial development aspirations prompted the wasteful forestry policies. As far as the seemingly strange behavior of the forestry ministry is concerned, the story becomes less puzzling when one realizes that the ministry still has jurisdiction over land designated as "forest" even if no trees are left there. This broad jurisdiction gives the ministry a greater claim on budget resources and more opportunities to receive "gifts" from developers.

Equally perplexing, at least at first glance, is the Mexican oil sector. For four decades, the enormous state oil company PEMEX has been the target of withering criticism for its huge indebtedness, operational inefficiency, overspending, secrecy, inappropriate financial dealings with the corrupt oil-workers union, and expansion into non-oil related sectors where it has little expertise. It has been taken to task both for inefficient oil exploitation and for being unable to produce enough oil when world prices were high. It has also been accused of squandering the oil proceeds that it has earned. How can Mexico's biggest money earner also be the country's largest debtor? Have PEMEX's profits simply been stolen or squandered?

More careful examination reveals a very different picture. Under various Mexican administrations, PEMEX had been the off-budget slush fund for the top government leaders, who tapped its revenues for everything from building supermarkets in areas where they wanted to please constituents to operating schools and hospitals. In the late 1970s, however, the Mexican government discovered that PEMEX could also be used to obtain international loans beyond the credit ceiling of the government itself; these funds were then taxed away by the central treasury. PEMEX thus became undercapitalized by virtue of a tax burden that kept it in chronic deficit. This undercapitalization was largely responsible for PEMEX's inability to gear up production when world oil prices were high, and it can also be linked to some of the company's operational disasters.

In India, the state enterprise Hindustan Copper Limited (HCL) is protected by very high import tariffs that enable the company to sell its copper to the domestic market (including the armed forces) at a price far above the world copper price. The government proclaimed the need for some domestic copper production on national security grounds, i.e., preparedness for war in case of invasions by Pakistan or China, without defending the questionable assumption that domestic production would actually be better than purchasing cheap copper from abroad and stockpiling it. This protection enabled HCL to produce copper from very poor ores without losing money, keeping open mines that by any reasonable economic standard should have been closed years ago. The overall impact is to distort prices for the entire manufacturing sector and other industries (such as transportation) that are dependent on copper.

Once again, closer examination reveals a more complicated story. In the 1980s, when HCL was losing money at alarming rates (in 1979–80, it was the third-largest money loser of all public enterprises in India), the company petitioned the government to protect its operations. Normally, one would think that the central government would look askance at such a request, inasmuch as it could perpetuate an unwise and inefficient effort at resource extraction. Yet by the mid-1980s, the Indian government declared that HCL's deficits were not the company's fault but rather reflected the national imperative to produce copper from poor ores. Therefore HCL should be held harmless and should be granted the protection. There was no serious analysis of whether HCL should simply cease copper production and whether India's copper supply could be obtained securely through stockpiling. Behind the rather questionable national security argument lay two other considerations: first, that the mine workers' wages were the only thing standing between them and destitution; and second, that the protection gave the fiscal authorities an opportunity to collect substantial taxes on every pound of copper imported into India (which even then was roughly 70 percent of India's total copper supply).

Programmatic and Political Motives

These vignettes from Indonesia, Mexico, and India reveal that faulty natural resource policies may be adopted to enable government officials to pursue unrelated programmatic objectives. The 16 cases examined in the study noted above can be put into one or more of three broad categories, depending on officials' purposes: financing controversial development programs; providing economic benefits for particular groups, areas, or individuals; or capturing natural resource rents (or other sources of revenue) for the central treasury.[3] In any particular case, one also sees closely related political motives: creating "rent-seeking" opportunities to gain the cooperation of others in meeting the programmatic objectives; capturing and maintaining discretion over the financial flows involved in natural resource exploitation (at the expense of other government, state, or private actors); and evading accountability and the loss of political popularity. (See Table 3 on this page for a synopsis of the motives underlying the natural resource policy failures in the 16 cases.)

Two clarifications will help to put these motives into better perspective. The first pertains to rent-seeking. The monopoly licenses and subsidies that are common in developing countries clearly create such opportunities, but so do giving away government-controlled natural resources and protecting domestic resource-based industries from international competition. Most of the concern about rent-seeking opportunities focuses on the obvious risk that rent seekers will give bribes or kickbacks to the government officials responsible for creating them. Yet it is important to understand that the beneficiaries of rent-seeking opportunities (like the Indonesian Chinese logging magnates) can also reciprocate by assisting government officials in carrying out programmatic objectives.

Second, despite the temptation to say that "everything boils down to politics," it is a sterile exercise to try to determine whether political or programmatic motives are more important. Government leaders often pursue programmatic ends to secure or shore up their political support, while political power is necessary to pursue programmatic objectives. In short, these motivations are thoroughly intertwined, making it impossible to say that one is more important than the other. What we can say, though, is that in virtually every case examined, the political

Table 3. Programmatic motives behind resource policy failures

Country and sector	Programmatic objectives or preferences
Brazil (land and forests)	National security, regional development
Cameroon (forests)	Foreign assistance inflows, tax revenues
Chile (copper)	Income redistribution
Costa Rica (land and forests)	Income redistribution (largely temporal)
Ghana (cocoa)	Tax revenues
Honduras (forests)	Downstream industrialization
India (copper)	Income redistribution, national security, regional development, tax revenues
Indonesia (forests)	Industrial development, downstream industrialization
Indonesia (oil)	Industrial development
Malaysia - Sabah (forests)	Industrial development, downstream industrialization, social services
Malaysia - Sarawak (forests)	Income redistribution
Mexico (oil)	Income redistribution, industrial development, tax revenues
Mexico (water)	Agricultural development, income redistribution
Nigeria (oil)	Income redistribution, industrial development, national security
Peru (oil)	National security, regional development, tax revenues
Venezuela (oil)	Industrial development, tax revenues

SOURCE: W. Ascher, *Why Governments Waste Natural Resources: Policy Failures in Developing Countries* (Baltimore, Md.: Johns Hopkins University Press, 1999).

leaders and natural resource exploiters were acutely aware of the importance of controlling the money flowing from resource extraction or toward resource development. Indeed, many of the policy failures originated in the struggle to assert or maintain such control. For example, the peculiar reliance on private-sector loggers and the reforestation fund to finance Indonesian development projects in petrochemicals and aerospace was part of a strategy to keep forestry revenues out of the hands of the central treasury and the finance ministry. This strategy can actually be traced back to the 1960s and 1970s, when President Suharto used the state oil company Pertamina as his off-budget development agency. It was only after Pertamina's financial collapse in the mid-1970s that Suharto turned to the forestry sector as the primary means to go around the central treasury.

Similarly, Venezuela's state oil company PDVSA and Chile's state copper company Codelco have been struggling for decades with central budget authorities over who determines their investment budgets and whether those budgets will be adequate for the companies to operate effectively. After blatantly inappropriate raids of PDVSA's investment fund in the early 1980s, the company protected its remaining funds by purchasing overseas assets such as the Citgo gasoline station chain in the United States. Many of these purchases were hasty and controversial, but PDVSA was facing a dramatic decapitalization. One result is that PDVSA, which was originally formed as the culmination of Venezuela's nationalization of the oil industry, has essentially become a multinational oil company, leaving domestic oil exploration and production increasingly in the hands of foreign companies. Codelco, the world's largest copper company and a relatively well-managed one at that, was denied the right to exploit its own richest deposits for more than two decades by a finance ministry fearful of allowing the company too much autonomy over its finances and operations. One reliable analysis estimates that this restriction has cost the Chilean economy $300 million annually from the mid-1980s to the present.[4]

In Brazil, Cameroon, Costa Rica, Honduras, and Indonesia, the land resettlement agencies, forestry agencies, and agriculture ministries have been engaged in continual battles over who has jurisdiction over forest lands and their resources, often leading to very hasty projects in a scramble to establish jurisdictional claims. The Mexican irrigation system virtually collapsed by 1990 because successive administrations and competing government agencies all used water subsidies (i.e., allowing farmers to use water without paying for the costs of the irrigation system) to pursue different strategies of agricultural development and income redistribution. The agriculture ministry, the irrigation authority, and other agencies fought for control over both the investment funds for the irrigation system and the recipients of the unsustainably cheap water.

With this understanding of the complexity of the motives behind natural resource abuses, the question becomes: What circumstances lead government officials to abuse natural resources to pursue programmatic and political ends? The answer should enable us to identify institutional weaknesses that can be corrected.

Why Pick on Natural Resources?

The first part of the answer focuses on why the natural resource sector in particular is targeted for the maneuvers detailed above. After all, governments could find other economic activities to manipulate for their programmatic and political ends. Governments have been known to sacrifice one industrial sector for the sake of another—by, for example, subsidizing highways and airports at the expense of railroads and other forms of mass transit or putting factories in impractical locations for political or income redistribution purposes.

Nigeria's state-owned oil company has been called a "state within the state" because of its relative autonomy.

It turns out, however, that the natural resource exploitation process is particularly convenient for manipulation because of the low political costs of doing this: The low "transparency" of natural resource exploitation permits government officials to evade responsibility for resource abuses; to most people, the manipulations appear to have little redistributive impact; the current losers from resource distortions are often the poor, who have few political resources to exact compensation (or take revenge) for the damage; the future losers are future generations, who are even less powerful than the poor; and some natural resource manipulations appear (falsely) to be pro-development and pro-conservation.

Natural resource exploitation often occurs in remote locations, and it frequently involves complicated processes that mask the true efficiency of the operation. Moreover, the accounting procedures for determining whether such exploitation is profitable or not are often woefully distorted. All of these factors contribute to low transparency. Yet even when people recognize that natural resources may be wasted, the low political cost of such waste is reinforced by the false presumption that natural resource exploitation is not a matter of winners and losers. This is rooted in the image of natural resource wealth as springing from the Earth or waters without human loss or cost. Even when resource exploitation benefits particular groups, the cruel image of redistribution is often lacking—in contrast with other types of economic transfers. Yet this distinction is largely an illusion: One group's benefits from resource wealth certainly represent a forgone opportunity for other groups. Nonetheless, the enrichment of particular groups from the exploitation of natural resources of uncertain value in a remote area of the country is generally very different from openly combative issues such as tax policy, central government spending, or wage policy.

The political costs are also low because the losers from poor resource exploitation are often economically marginal people who have little ability to protest the manipulations. The same, of course, holds for future generations, who will suffer the loss of resource wealth and healthy ecosystems. Natural resource sites (other than conventional farms) tend to be geographically and economically marginal areas that have become the refuge for similarly marginal groups, often of minority ethnicity. In these areas, property or user rights tend to be poorly defined or to have passed into state control. Protests against resource abuses are thus stymied by the legal weakness of such claims in addition to the political marginality of the protesters. Similarly, the interests of future generations are often weakly defended by today's political actors, who need immediate political support. Resource depletion and other squandered opportunities to ensure the well-being of future generations entail lower political risk for officials than do policies that extract benefits from the current generation.

The final reason why programmatic goals are often pursued through natural resource manipulations is that despite their actual damage, these manipulations can often be passed off as healthy for the economy, the environment, and society. Thus, reforestation programs often have great superficial appeal—it is a rare politician who is willing to go on record as opposing reforestation, even though some reforestation programs have had disastrous consequences. In Costa Rica, for instance, a 1980s reforestation scheme involving tax credits encouraged some firms with minimal forestry experience to plant trees of the wrong species and without adequate care. On occasion, these firms even ripped out natural forest to plant trees to qualify for the tax break. Yet neither the government nor private environmental organizations had the stamina or access to keep track of how many acres of "reforested" land actually recovered reasonable forest cover.

By the same token, inefficient domestic resource processing has often been successfully portrayed as a great contribution to national economic development because processing "adds value" to products before they are exported. However, the mere fact that processed goods can be sold at a higher price than the corresponding raw materials does not make the processing profitable, let alone ensure an economic return as high as that available from alternative activities. Poor resource policies dressed up as green or economically beneficial policies have often allowed government officials to pursue ulterior motives while gaining political credit. And while illegal or excessive resource extraction is typically done furtively, unsound resource development and processing are often done with great fanfare because of misconceptions of their merits.

While wasting natural resources may be a politically expedient way to accomplish programmatic and political objectives, we need to ask a more complicated question: Why abuse any economic activity to achieve these objectives? Clearly, all such objectives—financing development programs, redistributing income, and capturing revenues for the treasury—can be achieved in much more straightforward ways. In the mid-1800s, the famous liberal economist John Stuart Mill laid out the simple formula for achieving economic efficiency and other goals such as more equitable distribution of income: Forgo the temptation to pursue these ends through manipulation of the productive process itself, and instead address them through public spending.[5] (Of course, the government must be able to collect taxes, borrow at reasonable interest rates, or receive foreign assistance to make this work.) Natural resource exploitation is very much a facet of the productive process, and the ends sought at the expense of sound resource exploitation clearly fall into the category of objectives that could be pursued by straightforward taxing and spending. This is a fundamental point: The abuse of natural resources to pursue programmatic ends is a gratuitous waste of these resources and the financial resources associated with it.

Institutional Roots

This means that something in the structure of governance and policymaking in the countries under examination must be amiss, or else government leaders could approach their programmatic and political objectives without wasting natural resources. What are these structural (or "institutional") problems?

First, it is clear that in many cases the government's reach has exceeded its grasp. For instance, governments have frequently responded to conservation concerns by appropriating the property rights to natural resources. In the 1960s and 1970s, in particular, many countries (including Honduras and Indonesia from among the 16 cases) nationalized all their forests; the establishment of parks and reserves is still going on throughout the developing world. The problem is that governments have often (but certainly not always) been very poor natural resource stewards, frequently succumbing to the temptation to overexploit the resources or not to enforce restrictions on exploitation vigorously enough.

Second, as mentioned earlier, disagreements at the highest levels of government over development strategies, combined with the unwillingness or inability to hash out these differences and settle on an approach handled through the central budget (i.e., taxing and spending), is a major cause of off-budget financing through questionable natural resource policies and practices. Recall that President Suharto went to great lengths to avoid bringing the petrochemical and aerospace projects under the central budget, even though he was surely powerful enough to force those projects through. The reason is that in Indonesia the prevailing political culture would not tolerate the open conflict within the government that this confrontation may have produced. Recall also the case of India's HCL: The impoverishment of the copper workers if the mines were to close is certainly a serious issue, but it would have been less costly to the entire Indian economy to shut down the mines and continue to provide income to the mine workers (e.g., through pensions), thus releasing them to go into more productive—and far less hazardous—occupations. However, the willingness of the central government or the relevant state governments to provide comparable incomes to laid-off copper miners is very much in doubt. These examples illustrate that policymaking institutions that cannot resolve disagreement in a definitive fashion within the government provoke more devious ways to pursue programmatic ends.

Used as a magnet for international loans, Mexico's state-owned oil company has remained undercapitalized and inefficient.

Third, it should be obvious from the considerations mentioned above that whatever institutional weaknesses lie behind the lack of transparency also create temptations to manipulate natural resource exploitation so that top government leaders can evade accountability. While natural resource exploitation is generally of low transparency, it does not have to be. Some government structures, particularly those that involve the oversight of resource exploitation and the clarity of the mandates of government agencies involved in it, are more prone to obscurity than others. This helps to explain why many state resource institutions are remarkably complex in their structures and accounting procedures. For instance, in the 1980s, the Peruvian state mining company Centromin was part owner of the mixed private-state company Mineroperú; Mineroperú, in turn, was a part owner of Centromin. In this situation, it was very difficult to determine who was accountable and how to assess profits or losses.

Transparency is often lacking within the government as well. In fact, the ability to go around the opposition of other government officials depends on the fact that it is difficult for those officials to get information about wasteful resource maneuvers. Excessive logging by the Honduran state forestry enterprise and unsustainable farm settlements in the Brazilian Amazon and the Indonesian Outer Islands (due to poor soil quality) initially escaped the attention and effective criticism of opposing officials because of the lack of information.

Fourth, the mandates of many government agencies and enterprises are muddled and at times even in conflict with those of other agencies. When an agency has a mixed or contradictory mission, its accountability will be compromised: If it fails to achieve a particular objective, such as efficiency or conservation, it can dismiss this shortcoming as the cost of fulfilling its other responsibilities. For example, the Honduran forestry enterprise COHDEFOR was entrusted with four goals: exploiting timber, developing a forest-products industry, regulating forest uses for the sake of conservation, and promoting the economic development of low-income Hondurans living in and around the forests. It dismissed its very poor record in conservation and poverty alleviation as being part of the unavoidable tradeoff with pursuing its logging and industrial mission.

Mandates that conflict with those of other agencies also open up interagency struggles over control. When two or more agencies can claim the same tasks or jurisdictions, the contest over discretion begins in earnest. In Costa Rica, for example, the agriculture ministry, the forestry agency, and the land reform agency have long invoked different land classification systems to back up their competing jurisdictional claims and have rushed to establish their presence wherever they could.

Fifth, the relationships between state enterprises and their own governments are particularly prone to structural problems. Many state resource enterprises have blurred lines of responsibility to government ministries. These enterprises often report to many different government offices, resulting in either confused control, delays in making crucial decisions, or both. Yet as has been shown, many state resource enterprises exploit natural resources and invest their proceeds with little effective oversight—which should come as no surprise, given that some state enterprises were formed to carry out political and programmatic tasks that have little to do with their formal missions. It is no accident that the state oil companies of Indonesia, Mexico, and Nigeria have been labeled "states within the state" because they seemed to spend with impunity. Making this problem worse is the poor and often hidden accounting of state resource enterprises. State enterprises should purchase the raw resource from the government, just as any private exploiter would; yet, they are rarely charged the full value of the resource. Rather than reflecting its success as a business, the fact that such an enterprise shows a "profit" simply means that some cash was left over, no matter how inefficiently the resource was exploited. For example, a state petroleum company that sells $1 billion worth of oil would still show a profit even though its costs are $200 million instead of the $100 million that they would have been with greater efficiency.

The financial structure of many state resource enterprises is also faulty because of their uncertainty as to their investment budget. As shown above, the state oil or mining enterprises of Chile and Venezuela have suffered from this insecurity, which distorted the resource-exploitation strategies of those enterprises. The same was found for the state oil companies of Mexico and Peru.

Sixth, government officials are often insulated from the negative consequences of their own actions by the very structure and operating principles of government agencies. Officials are typically far from the physical sites of resource exploitation; their careers and their agencies do not suffer very much if resources are unnecessarily depleted or the environment suffers.

Lessons and Implications

It does little good for outsiders to try to educate government officials about wise resource use or to chastise them for choosing the "wrong" policies. Given the circumstances they face, these officials make decisions that are conducive to their own objectives, whether selfish or not. Conservation-minded people, both within and outside of resource-rich countries, can nonetheless work toward changing the conditions and structures that make abusing natural resources attractive for government policy makers. They can take heart in the realization that while some government officials may have ulterior motives for supporting resource abuse, others are likely to oppose that abuse for their own programmatic or political reasons. For example, both the Indonesian finance ministry and the country's planning agency have been staunch supporters of sound forestry policy. Not only is this the right thing to do, it would also increase the royalties flowing into the central treasury—and thus the revenues available to these agencies.

Several recommendations flow directly from the diagnosis sketched out above. They essentially entail placing resources under the control of those who are most likely to have an incentive to manage them sustainably; making the decision process as manipulation-proof as possible; and making government officials share in the pain of poor resource management or the gain from sound management. They can be summarized as seven directives for reform:

Restore nongovernmental resource control. If government control over natural resources has not been the solution to unsound exploitation, then we must consider how and when to press governments to recognize preexisting property rights, whether private or communal. This approach has some distinct advantages: Private and communal resource exploiters are more likely than government officials to "internalize" the dam-

Chile has managed to create competition between its state-owned copper company and private firms.

age that they cause to the resource base or the environment (provided the government can enforce property rights and regulations against environmental damage to others' property). In other words, as long as they can count on enjoying the eventual benefits of their own conservation efforts, private and communal resource users have greater incentives to care about the long-run sustainability of the resource base.[6] The involvement of nongovernmental actors in resource exploitation can also increase the public's awareness of government efforts to manipulate that exploitation, thus increasing the transparency of the government's actions.

There are signs that governments are beginning to recognize that monopolizing natural resource rights is a poor conservation strategy. In Honduras and Colombia, for example, the governments have been handing back forest-user rights; in other countries, like the Philippines, the government has maintained forest ownership but has granted long-term (e.g., 99-year) leases to encourage local people to regard the forests as their own. Yet one must keep in mind that putting resource exploitation into the hands of private or communal users does not address all of the problems that can arise, particularly when governments adopt unsound policies toward nongovernmental resource use. For example, in the 1970s and early 1980s, the government of Ghana taxed cocoa growers to the point of destroying the cocoa industry, and the governments of Brazil and Costa Rica have provided excessive subsidies to farming and ranching enterprises.

Treat the nation's resources as valuable assets. The resources that remain in government hands must be treated as valuable. This point may seem obvious, but it is remarkable how often governments underprice or even give away natural resources rather than obtaining their full value on behalf of the nation (this occurs whether the beneficiary is a private firm or a state entity). To be responsible, a government must assess the full value of the natural resources that it allows resource exploiters to extract and charge them accordingly.

The means of requiring or prodding governments to charge fully for extracted resources vary depending on who is trying to accomplish this. If the initiative comes from government officials themselves, the means may range from legal requirements to assess and charge full value to oversight by the government ministries or departments with an incentive to have the proceeds paid to the central treasury. If the initiative comes from nongovernmental organizations or the media, much can be accomplished simply by publicizing the nation's loss of revenues.

A more difficult challenge is presented by the need to have governments charge enough for resource-based products such as gasoline, fuelwood, and food, which are often subject to price controls. The difficulty lies in convincing the public that cheap fuel and food ultimately undermine the resource base. Understandably, politicians are reluctant to allow prices for these basic commodities to rise if it means great public dissatisfaction. Of the oil-exporting countries in the study (Indonesia, Mexico, Nigeria, Peru, and Venezuela), only Mexico was able to reform domestic fuel pricing while oil was still a major export item. This was accomplished as part of a major shift to thinking of oil as a precious resource for Mexico's sustained growth rather than as a source of immediate gratification.

Increase transparency. The most obvious way to counter the political allure of abusing natural resources is to simplify and increase the visibility of government operations. Revealing the true costs of resource waste and unmasking the real motives behind faulty resource policies can turn these maneuvers into political liabilities. The media and nongovernmental organizations can play an enormous role in revealing resource abuse, making it less politically attractive for government officials to pursue their objectives through such abuse. For example, Indonesia's umbrella environmental group WALHI helped to reveal the seriousness of the low timber royalties, while courageous members of the press revealed that the reforestation funds were being diverted to the state airplane enterprise rather than being used for reforestation. These revelations had an impact on the Indonesian government, leading to some improvements in forestry policy.

Transparency is also crucial for healthier intragovernmental relations because it reduces the likelihood that one agency will be able to take advantage of its information advantage over others. For example, one of the successes in the reform of Indonesia's bankrupt state oil company Pertamina was the establishment of an oversight commission comprising representatives of multiple ministries, all with knowledge of the company's operations and investments. This structure sharply reduced Pertamina's controversial spending on activities that were not related to oil.

Simplify the mandates of government agencies. The intragovernmental rivalries and the poor accountability of resource agencies can be reduced by simplifying and clarifying agency mandates. If the Honduran government wants to have a state forestry enterprise, for example, it should give it the straightforward mandate of forestry development and extraction, leaving conservation and poverty alleviation to other agencies. If the conservation agency then finds the forestry enterprise in violation of conservation regulations, it should penalize that enterprise as if it were a private operation. Such a simplification saved Mexico's irrigation system: In the 1990s the irrigation authority was given the narrower mandate of simply providing water to paying customers, leaving other objectives (such as poverty alleviation and promoting export crops) to other agencies.

Prioritize through the central budget. Financial resources should be allocated by the highest authorities at the relevant level of government—normally through cabinet-level decisions and legislative decisionmaking on the central budget. This principle would enhance accountability and discourage the practice of cloaking poor resource policies with pretexts such as national security. For example, if the Indian defense ministry, cabinet, and parliament had had to decide whether subsidizing domestic copper production was worth defense ministry funds, it is doubtful that HCL would ever have received tariff protection.

Reform the arrangements between the government and state resource enterprises. Many improvements can be made in the typical financial and governance arrangements that bind state resource enterprises to their governments.[7] These include reforming the accounting conventions so that the profits of the state enterprise reflect the full cost of the natural resource that the enterprise purchases from the nation. In addition, when state enterprises are asked to serve functions other than the efficient exploitation of natural resources, the financing for such efforts should come directly from the relevant ministries. State resource enterprises should also be subject to all of the environmental rules that nongovernmental resource exploiters must observe. Information about state resource enterprise operations should be accessible to all relevant ministries, so that off-budget financing will be apparent.

Clever arrangements for state enterprises can also introduce a certain degree of competition to encourage efficient resource exploitation. Even when it is not desirable or politically feasible to privatize a state resource enterprise, the government can still introduce competition into the resource sector by allowing private firms to enter. For example, the Chilean government has not privatized Codelco but rather allowed private copper companies to bid on leases to extract copper from lands not assigned to Codelco. This provides Codelco with an incentive to be more efficient so that eventually it can compete in this bidding. Competition is also possible within the state sector itself. Until recently, Venezuela's state oil company PDVSA maintained three more or less autonomous exploration and production affiliates that were allowed to compete for the assignment of oil leases on the basis of their competence. Compared to other state oil companies, the Venezuelan companies have been notably efficient. However, in keeping with the tendency of governments to take advantage of inefficient and less transparent structures, it appears that the Venezuelan government is in the process of dismantling this structure in favor of a more conventional, unified arrangement. Having one huge exploration division and an even larger production division would provide no rewards for efficiency.

Tie agencies' financial standing to sound resource management. Perhaps the most straightforward way to get government officials to internalize the costs of unsound resource management is to base the financing of their agencies on the efficiency and sustainability of their management practices. Many government officials, especially those at high levels, have a strong commitment to the standing and power of their agency with respect to other agencies in the government, as well as a sense of pride and responsibility regarding its financial strength and prestige (to say nothing of what the agency's demise would mean for their personal standing and future pensions). Many arrangements can build on this connection. The competition between PDVSA's affiliates mentioned above would certainly qualify. So would the self-financing arrangement for the Honduran forestry agency, as its reliance on the proceeds of timber harvests encouraged it to adopt sustainable harvesting practices once agency officials realized that the liquidation of the pine forests could mean the end of the agency. In some circumstances, resource agencies and state enterprises can be induced to manage natural resources more soundly when they are under "performance contracts" that reward good performance with greater discretion and bonuses. These contracts have a few pitfalls, though, including the possibility that the ministries or departments on the other end of the agreements may not be serious about establishing reasonable criteria for judging performance. Nevertheless, the prospect of giving agencies incentives for good resource management that are akin to those commonly offered to private resource exploiters is a very exciting avenue for institutional reform.

Final Words

If there is an overarching lesson that emerges from this review of the 16 cases, it is that the fate of natural resources is enmeshed in institutions as well as in development strategies. Development strategies affect resource management beyond the obvious impacts of resource-dependent approaches (such as industrialization based on cheap energy prices) because resource exploitation often finances those strategies in indirect ways. This makes it imperative that governments and citizens evaluate development strategies in terms of their full impacts on the natural resource endowment. Yet it is just as important to examine how government institutions are designed to conduct economic policy to ensure that the natural resource endowment does not become the casualty of malformed government structures and shortsighted strategies.

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NOTES

1. M. Dove, "Theories of Swidden Agriculture and the Political Economy of Ignorance," *Agroforestry Systems* 1, no. 3 (1983): 85–99; and J. Walton, "The Economic Structure of Sarawak," in V. King and M. Parnwell, eds., *Margins and Minorities: The Peripheral Areas and Peoples of Malaysia* (Hull, U.K.: Hull University Press, 1990), 136–37.

2. See W. Ascher, *Why Governments Waste Natural Resources: Policy Failures in Developing Countries* (Baltimore, Md.: Johns Hopkins University Press, 1999).

3. A rent is an unusually high profit that is possible because of some especially favorable situation (such as the availability of cheap, price-controlled inputs) or exceptional privilege awarded by government authorities (such as an exclusive license to manufacture or import an item).

4. E. Tironi and Grupo de Minería CED, "Prioridades para la expansión del cobre: Empresas extranjeras o codelco?" (Priorities for the expansion of copper: Foreign enterprises or Codelco?), in E. Tironi, J. Bande, I. Valenzuela, V. Zuñiga, and J. M. Vivanco, eds., *Desarollo minero: Evolución y desafíos para Chile* (Mining development: Evolution and challenges for Chile) (Santiago: Editorial Universitaria, 1985), 188–203 at 198.

5. J. S. Mill, *The Principles of Political Economy* (London: J. W. Parker, 1848).

6. The logic of these points is elaborated in W. Ascher, *Communities and Sustainable Forestry in Developing Countries* (San Francisco, Calif.: ICS Press, 1994); and W. Ascher, "The Logic of Community Resource Management in Latin America," in L. U. Hatcher and M. E. Swisher, eds., *Managed Tropical Ecosystems: The Mesoamerican Experience* (New York: Oxford University Press, 1999), 17–27.

7. Many of these recommendations are elaborated in Y. Aharoni and W. Ascher, "Restructuring the Arrangements between Governments and State Enterprises in the Oil and Mining Sectors," *Natural Resources Forum* 22, no. 3 (1998): 201–13.