Report No. 32724-GLB

Development Policy Lending and Forest Outcomes:

Influences, Interactions, and Due Diligence

June 2005

The World Bank
Agriculture and Rural Development Department

Contents

Boxes

Tables

Acknowledgments

This report was prepared by a team under the overall guidance of Kevin Cleaver (ARD Sector Director) and Sushma Ganguly (ARD Sector Manager), management of Gerhard Dieterle (Forest Adviser, ARD), and the leadership of James Douglas with contributions from Nalin M. Kishor (ESSD Forest Team) and Diji Chandrasekharan Behr (ESSD Forest Team).

This report is based on extensive consultations with Bank staff and documents and information available on Development Policy Lending and, more generally, the impact of macro-policy changes on natural resources, especially the forest sector.

This report was peer reviewed by Marjory-Anne Bromhead and John McIntire. The team would like to thank the following for their inputs and comments throughout the preparation of this report: Kulsum Ahmed, Kenneth Chomitz, Odin Knudsen, Muthukumara Mani, David Wheeler, colleagues in the regions, PREM, DECRG and OPCS, and members of the ESSD Forest Team. The team is also grateful to internal Bank reviewers and the External Advisory Group (who advise on the implementation of the Forest Strategy) for their comments on both the concept note and document draft.

Acronyms and Abbreviations

BR	Bank Report
CAS	Country Assistance Strategy
CEA	Country environmental analysis
CGE	Computable General Equilibrium
CIFOR	Center for International Forestry Research
CPIA	Country Policy and Institutional Assessment
CSA	Country social analysis
DECRG	Development Economics Research Group
DFID	Department for International Development
DPL	Development policy lending
ERRC	Economic Rehabilitation and Recovery Credit
ESW	Economic and sector work
FAO	Food and Agriculture Organization (United Nations)
FAOSTAT	FAO Statistical Databases
FY	Financial Year
GDP	Gross domestic product
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IMF	International Monetary Fund
IUCN	World Conservation Union
OP	Operational Policy
OPCS	Operations Policy and Country Services
PAL	Programmatic Adjustment Lending
P-E	Poverty-environment
PEAC	Public Expenditure Adjustment Credit
POVCAL	Program for calculating poverty measures from grouped data
PPDC	Programmatic Policy Development Credit
PPSAC	Programmatic Policy Structural Adjustment Credit
PRSC	Poverty Reduction Support Credit
PRSL	Policy Reform Support Loans
PRSP	Poverty Reduction Strategy Paper
PSIA	Poverty and social impact analysis
RCEA	Rapid country environment analysis
RECOFTC	Regional Community Forestry Training Center for Asia and the Pacific
SAC	Structural Adjustment Credit
SEA	Strategic environmental assessment
SECAL	Sector Adjustment Loan
SSC	Statistical Services Centre
WRI	World Resources Institute
WWF	World Wide Fund for Nature/World Wildlife Fund

Executive Summary

A new World Bank commitment on Development Policy Lending (DPL) and forests. In October 2002, the Bank's Board of Executive Directors approved the new forest strategy and a revision of the forests Operational Policy (OP) 4.36. During Board discussion on this new approach the concern was raised that, while Bank sector investments would be guided by the new policy, Bank adjustment lending would not. As a result, the latter could, indirectly and inadvertently, lead to adverse impacts on forests and forest-dependent people.

Bank management accepted that this possibility existed and decided that an operational policy was necessary to guide due diligence in adjustment lending. Since adjustment lending at the time was evolving toward the DPL framework, a policy to guide the design and implementation of this form of operation was prepared, and has since been approved by the Board and issued as OP 8.60.

Implementation of OP 8.60 is a challenge. Linkages between broad institutional and policy reforms under DPL, and outcomes at the forest level are likely to be diffuse, indirect, and highly variable from one situation to the next, which means implementing OP 8.60 is not straightforward. The first imperative is to develop an approach, or toolkit, to identify what combination of economic, institutional, policy and social conditions makes the forest impact issue potentially more significant, so that more upstream analyses ahead of DPL implementation can be planned. It should be noted here that DPL also has the potential to bring about highly positive outcomes for forests and forest people, and opportunities to do so must also be sought.

Economic change, poverty, and forests: What is known? It is evident that forests are extremely valuable to the livelihoods of large numbers of poor people, and that this value is not fully factored into official economic statistics (and sometimes not even perceived as value at all). In such cases, when rapid economic change is occurring, perverse incentives and misallocation of resources leading to forest removal or changes in the status of use and ownership of forests will be risk factors from the poverty alleviation viewpoint.

Under such circumstances, DPL operations will need to tread carefully. This raises the question of how significant DPL's impact, if shown to be there, will be on forests and where this impact will be an issue. Of particular concern are effects on poverty alleviation, sustainable economic growth, and protection of global public goods and environmental services—all of which are major objectives under

the Millennium Development Goals. Another question is whether a generic predictive model could be developed to anticipate these impacts.

This paper, in answer to the first question, asserts that it is clear that relatively large-scale economic changes can have significant impacts upon forests. However, there is great variability in outcomes in forests from such changes across the many different countries and situations covered in the studies reviewed. As a further complication, indicators used by the studies do not necessarily reveal whether the impacts are adverse or not. It also is clear that the generic model referred to above cannot be built at this point. Further information on what is driving the observed changes locally, and how these affect poverty alleviation, sustainable economic growth, and the protection of global and local forest values, is necessary.

Forest outcomes from major economic reform, targeting poverty alleviation and sustainable growth, will be highly dependent on prior conditions of the sector. An appropriate response in terms of DPL program design will therefore need to take these conditions into account.

The need to focus the analytical effort. The critical issue, based on the reasoning above, is to decide effectively when and where more detailed analysis and information gathering will be needed to complete due diligence for a given DPL operation, or to identify opportunities to use forthcoming DPL operations to achieve beneficial forest outcomes. It is argued in this paper that the analytical effort that will be needed in such cases will be significant and have serious implications for the Bank in terms of allocating resources and setting priorities.

Toward a toolkit for prioritizing the analytical effort. As argued, prior conditions in the forests sector are a major determinant of the outcome in forests and for forest people, under conditions of large economic change. This offers a pathway to an initial determination of whether significant forest impacts will result from a given set of reforms and changes in a DPL package. In this paper, a three-step approach to doing this is illustrated. The first is the development of a set of forest significance criteria to rank Bank client countries in terms of their forest sectors; their contribution to the three criteria of sustainable economic growth, poverty alleviation, and protection of global and local forest goods and services; and a fourth criterion, governance. The second is a categorization of forthcoming DPL operations based on their potential to have impacts on forests. The final step is the application of operations identified in step 2 as an overlay on the ranked list of countries produced using forest significance criteria.

The methodology uses a statistical approach that allows indexes for the four criteria to be calculated, and then combined into a single index. Since the four criteria are themselves in some cases composites of factors, this provides broader and more analytical approach to the task of prioritization than can be achieved through reference to single parameters, such as deforestation, the overall size of forests, poverty, output from the sector, the governance measure, and so on.

Next steps. The final section of the paper deals with the instruments that have been identified in the Bank as having some role in the due diligence task for OP 8.60, and what further may need to be considered. Country environmental analyses (CEAs) and strategic environmental assessments (SEAs) are two of the instruments explored as being appropriate to the task of due diligence.

CEAs are typically carried out by the Bank. They are used for a variety of purposes, including as an input to CASs, PRSPs, donor coordination, due diligence on DPL programs and other objectives. There is currently no completed example of a CEA of a DPL program. Nevertheless, drawing upon previous and planned CEAs, this paper argues that there will need to be some changes in design and allocation of CEAs of DPL programs—in particular in where and when they are done—if they are to take a stronger role in the due diligence task for DPL operations, than is presently the case. They will need to be aligned more closely to the DPL

program, and in particular to those DPL operations identified in a process such as that outlined in this paper as having particular potential to have significant impacts on forests.

SEAs, on the other hand, are typically carried out by the client country to integrate environmental considerations into policies, programs, and plans. A review of the use of SEAs for policies is currently underway, and it appears from more recent consideration of this instrument in the Bank that there is greater flexibility to apply it beyond specific sectoral concerns, including an ongoing effort to develop a framework for policy SEA that focuses more effectively on a country's institutional and governance capacity to manage the potential effects of policy reforms in a DPL operation. If so, this would make it a possible vehicle for the due diligence and opportunity identification task for forests (and the broader natural resources group) in the context of forthcoming DPL operations. However, the resource allocation and prioritization issue as raised for CEAs above would also apply in this case, but in the context of country client resources.

Recommendations

- Consideration should be given to partitioning the CEA process into two phases—the first having the general purpose for Country Assistance Strategy (CAS) formulation purposes (but at a reduced scale of effort, relying perhaps on more desk top analysis of existing policy, institutional and regulatory issues linked to policy formulation and implementation, to be followed later in the CAS cycle by more field level analyses focused on the specific content of DPL operations underway, in cases where the potential for significant impacts (on forests, for the purposes of this paper, but in effect on any sectoral or thematic area where potential impacts with significant environmental and related poverty implications) has been identified. This would allow funds for CEA work to be distributed along more prioritized lines, related to DPL operations.
- Country departments in their dialogue with client countries could play a greater role in helping to align country-planned SEAs more directly with the DPL pipeline.
- "Rapid CEAs" are already evolving in some areas of operations in the Bank. This tool should be considered for broader application to meet the provisions of OP 8.60.
- Even with the rationalization and prioritization of due diligence that the above adaptations would promote, aided by the selectivity that would be afforded from developing and applying the methodology outlined in this report, the costs of effective due diligence should be carefully considered.
- To address DPL operations' inadvertent impacts on forests and realize the potential for beneficial impacts, three basic steps would be needed: upstream analysis for identified countries and DPL operations; monitoring of outcomes during implementation; and follow-up investment lending, technical assistance, and analysis, or sectoral DPL operations.
- To facilitate dealing effectively with these sorts of eventualities, there will need to be considerable flexibility built into the Bank's CAS program. Flexibility will be equally important in the relationship with other donors involved, to ensure that sector investments, technical assistance, ESW or, in relevant cases, follow-up special-purpose DPL operations focused on one or a related group of sectors (forests; the broader group of natural resources; developments in rural space) can be designed and implemented in a timely fashion.

1

Background and Rationale

In October 2002, the World Bank's Board of Executive Directors approved the new Bank forest strategy, and a revision of the forests Operational Policy (OP) 4.36. One of the main concerns raised during Board discussion was that in some cases Bank adjustment lending might—indirectly and inadvertently—have adverse impacts on forests and forest-dependent people, through large economic forces created by the reforms implemented under adjustment.

Initially it was proposed, by external groups and some Board members with concerns about this matter, that the revision of OP 4.36 include safeguard measures to ensure that adjustment operations did not harm forests. Bank management responded that the precise and detailed safeguard policies of the Bank are directed at the impacts of specific sectoral investments on natural habitats, forests, indigenous people, and other subjects covered by these policies. As such, they cannot effectively be applied to the more diffuse and indirect influences that could come from adjustment operations. However, management did accept that this form of lending *might* have adverse and significant impacts on forests, and agreed that an operational policy that *could* guide due diligence in a range of areas for adjustment lending was needed. Since adjustment lending at the time was evolving toward the development policy lending (DPL) framework,[1] a policy to guide the design and implementation of this form of operation was prepared, and has since been approved by the Board and issued as OP 8.60.

It is important to recognize that the purpose of developing better approaches in this area is not simply to avoid doing harm inadvertently: the same tools offer the potential to identify elements in a policy lending instrument that could effect *positive* outcomes for forests and forest people.

Implementing the due diligence requirements for forests under OP 8.60 is not straightforward. As will be shown next, results from quantitative analyses on this general subject vary widely, indicating that given current data availability, there is no prospect of generically predicting the—sometimes significant—impacts of a given set of broad economic reforms on forests and forest people in a specific country and lending situation. Given this, the first imperative must be to develop an approach, or toolkit, to identify what combination of economic, institutional, policy, and social conditions makes the impact issue potentially more significant, so that more upstream analyses ahead of DPL implementation, aimed at clarifying the specific due diligence issues and opportunities for beneficial impacts that are present, can be targeted and prioritized.

This paper sets out to initiate the development of a suitable approach for implementation of OP 8.60 for forests.[2] Its intended audience includes multilateral lenders and other organizations that are involved or have strong interest in DPL activity.

2

Forests, Economic Change, and Reform Programs

Large-scale economic change in any country—whether induced in specific reform programs or inflicted through exogenous forces beyond the control of that country—has the potential to bring about major changes in the condition of natural resources and the environment. Especially in the case of developing countries, natural capital plays a significant role in economic growth and development, and is crucial to the sustainability of these processes; it is therefore of central interest when considering large-scale economic structural adjustment.

Two key factors of concern arise when considering the full range of natural resources—but especially those related to forests and woodlands. The first is *irreversibility*. Poor outcomes from a given set of policy changes that have an impact on agriculture, economic development, or social programs can be identified through monitoring and then in most cases corrected within a reasonable time frame. However, impacts causing loss of forests or woodlands, and watersheds that depend on this form of vegetation, usually cannot be ameliorated so easily. The second is the *temporal factor*. It is well known that the impact of large economic and other changes that affect forests may take a considerable number of years to become evident at the field level—long after the completion of disbursements under a DPL that may have been a factor in the changes.

These factors are crucial when considering the link among sustainable economic development, poverty alleviation, and the state of natural resources. The studies and information cited in this chapter show that poor people living in or near forests depend on them for their livelihood, and that the values they derive from these forests are rarely fully incorporated into official economic statistics and decision making. Further, there are global public goods issues involved in addition to national and local ones: the loss of biodiversity and the significant role of forest destruction in global carbon emissions are of concern to the Bank and the international community. These are reasons why local, national, and global forest issues were all major elements in the new forests strategy and policy (OP 4.36), which now guide the organization's sectoral investments in terms of their impact on forests, and also for their incorporation into provisions dealing with forests, natural resources, and the environment in the new policy guiding DPL (OP 8.60).

Since, as noted in chapter 1, the linkages between the broad reforms, institutional changes, and policy developments that result under DPL, and outcomes at the forest level, are likely to be diffuse, indirect, and highly variable from one situation to the next, some basic questions need to be addressed before considering an approach to examining these linkages. First, what is the evi-

dence that large-scale economic changes, of the type usually being pursued under adjustment forms of lending, actually do have significant impacts on forests? Second, if the answer to this is that in some cases these impacts are significant, is there a possibility that a generic predictive model could be developed to anticipate such impacts once the nature of the intended DPL is known? Third, if the case is made that impacts on forests are likely to be significant, is it also likely that this might also involve significant effects on poverty alleviation, sustainable economic growth, and protection of global public goods and environmental services—all of which are major objectives under the Millennium Development Goals?

This chapter explores these questions using a conceptual base before presenting a review of literature on attempts to quantify the impacts of economic change on natural resources (mainly forests). This is followed by a discussion of the implications of information and results derived from the above steps for the due diligence issue, as framed in the three questions above.

The Conceptual Basis

There are valid conceptual reasons to expect cross-sectoral impacts on forests arising from macroeconomic adjustment. The simplest economic models of natural resources management strongly suggest that many of the changes in the macroeconomic incentive environment that have frequently accompanied stabilization and structural adjustment episodes in the past could have had potent effects on natural resources.

Examples of measures that could have such impacts are currency depreciation, tighter monetary controls and higher real interest rates, altered trade dynamics and tariff or non-tariff barriers, programs that encourage investment in extensification of agriculture and tree crops without accompanying land zoning and tenure provisions, public sector expenditure reform, and decentralization. Currency depreciation can lead to expansion in export of tradable goods in agriculture, tree crops, grazing and expansion in the commercial logging sector itself—all of which can place increased pressure on forest land and resources. The same effect, obviously, can result from increases in the relative prices of the same tradable outputs for reasons other than a currency depreciation. High real interest rates shorten optimal forest rotation periods, and tend to increase the relative attractiveness of holding wealth in the form of financial assets instead of natural assets. Decentralization policies, which are generally seen as advantageous to governance in terms of increasing accountability and transparency, could trigger the irreversibility risk in forests rapidly under conditions of poor sector governance—especially if insufficient attention is paid to the revenue incentives for increasing the rate of forest exploitation that can arise when control over resource decisions is passed to a level of government where other revenue opportunities are limited, and where sustainable and multiple-use forest management expertise is also limited. This effect could be compounded by nationally determined public expenditure goals that can further constrain the availability of such expertise. It could be argued that this has actually occurred in recent years in Indonesia, following the introduction of a broadly based decentralization program several years ago.

As noted in chapter 1, the nature of economic adjustment financing from the Bank has evolved, from the structural adjustment loans of the past to DPL, much of it focused on poverty reduction support programs. However, it seems likely that there is potential under newer DPL operations for significant impacts on forests and forest-dependent people—and indeed on the broader group of natural resources.

Even within the forest sector itself, policies determined at the national and economy-wide scale that favor the development of large-scale commercial forest enterprises over local or community management may significantly alter the forest landscape and its potential to produce the full range of forest and non-forest goods and services, and thus affect the livelihoods of significant numbers of people who depend on them. The speed, direction, and

magnitude of the impact depend on factors such as the size of the country's forest sector, the extent of its commercialization and export orientation, the strength of institutions dealing with the forest sector, the magnitude of the distortions operating in the economy, and the nature and size of the adjustment lending operation.

Adjustment Lending's Impacts on Forests and Economic Change

There is a growing body of work examining the relationship between economic growth and forests: the main findings from this work are summarized later in this section. Efforts to assess the impact of broad economic growth include empirical correlation analyses, theoretical studies, and simulations using computable general equilibrium (CGE) models. The purpose of reviewing the broad findings of some of these studies here is to build some understanding of the potential for economic change to have impacts upon forests, and to gain perspective on the impacts measurement problems that are inherent in this task.

One of the major constraints on this work, from the viewpoint of policy guidance, is that the measures of forest outcomes that are generally available and that have been used in many of these studies—deforestation, and forest production—are not reliable indicators of the group of forest outcomes that are of interest.

Deforestation is a complex phenomenon, and while there is general agreement that it is strongly influenced by economic change arising from outside the forest sector itself, its specific causes (and, equally important, its economic and social effects) vary widely between—and even within—countries.[3] In practical, analytical terms these findings suggest that aggregate deforestation figures will conflate undesirable forest loss with economically legitimate loss and environmentally benign conversion to other forms of land use, and in such cases the observed aggregate result will have very little policy value. Moreover, deforestation figures do not measure forest degradation until and unless it progresses to the point of forest loss—but much of the value of a forest can be lost well before that point is reached.

Forest production figures are not in themselves an accurate indicator of the condition of forests and forest-dependent people: an increase in forest production may indicate overexploitation of forests, or it may simply indicate an economically desirable and environmentally acceptable outcome such as rising production toward an optimal and sustainable level of output.

That said, relatively high levels of deforestation, or high rates of change in forest commercial forest output, can be taken as indicators that *something* of significance is occurring in forests—something that may warrant closer examination in the context of large forthcoming economic policy reforms.

The Impacts of Economic Changes Closely Related to Forests

There have been a number of studies that attempt to model the influence (primarily on deforestation) of economic or cross-sectoral changes closely related to forests. Some of these studies focus on the impacts of trade-related variables or the impacts of log export bans on forests (Capistrano 1990; Barbier et al. 1994; Vincent 1994). These studies concluded that such policies promoted only modest expansion of domestic processing capacity while encouraging overexploitation of forest resources by depressing domestic log prices. A recent study (Kishor, Mani, and Constantino 2004) for Costa Rica shows that *repealing* a ban on log exports can result in significant economic efficiency gains. Cropper, Griffiths, and Mani (1999) and Schneider et al. (2002) show that logging and other forest exploitation is unlikely to lead to permanent forest loss unless land prices are so low as to encourage agriculture or grazing as a follow-up.

Some studies have examined specific cross-sectoral issues in relation to forests' outcome. For

instance, Soares-Filho et al. (2004) produced a quantitative model linking governance and changes in forest cover around the BR-163 corridor of Central Amazonia in Brazil; the model shows that forest losses over the 30-year projection period used under improved governance scenarios will be about half those projected under business-as-usual conditions. An empirical study by Bhattarai and Hammig (2004) shows that the impacts of income change on forests vary widely, depending on the quality and nature of institutional arrangements and governance in place. While this is not surprising, it confirms the need to deal very specifically with such matters at the forest-sector level when it is expected that income changes (which can be expected to be a major objective of a development policy loan) will play out in some significant way in the forests. Finally, Chomitz and Thomas (2003) have developed a model that shows that the probability of forest land being cleared for agriculture or cattle farming in Brazil declines significantly in higher rainfall zones. This result also demonstrates the highly site-specific nature of forest loss, which may be an issue under certain types of adjustment operation.

The Impacts of Adjustment Lending and International Monetary Fund Programs on Forests

A number of earlier studies of this subject attempted to either qualitatively or quantitatively analyze the impacts of IMF stabilization operations and Bank adjustment lending on forests (see Reed 1992; Repetto and Cruz 1992; Young and Bishop 1995; Glover 1995; WWF 1994; Warford et al. 1994; Munasinghe and Cruz 1994; Persson and Munasinghe1995). Most of these studies set out to test the hypothesis that stabilization and structural adjustment programs are harmful to the environment, but the results derived are highly variable. In reviewing these studies, Dixon (1995) and Panayotou and Hupe (1996) suggest that their results often depend on geographic or sectoral coverage, differences in motivating assumptions, and depth of analysis. Data scarcity and the absence of previous research often forced the authors to make untested assumptions about the causality of adjustment in terms of forest and environmental impacts.

Some studies have focused on a program of IMF and follow-up Bank adjustment lending implemented in Indonesia in 1998–99, following the financial collapse in that country—the only example to date of where both the initial IMF program and the supporting Bank adjustment operations have included specific forest sector measures in their reform agendas (see Seymour and Dubash 2000, Barr 1999, Mainhardt 2001). Annex 1 outlines this program's history, its lessons learned, and reviews the commentary on it.

The relationship between structural adjustment loans and the environment remains widely debated in both the development and conservation arenas, and a number of newer studies have focused specifically on the impact of adjustment programs on forest resource use and deforestation (Angelsen, Shitindi, and Aarrestas 1999; Glomstrod, Monge, and Vennemo 1999; Benhin and Barbier 2000; Pandey and Wheeler 2001; Wunder 2003; Kishor, Mani, and Constantino 2004). These studies have attempted to trace the impacts on deforestation through changes in relative prices, exchange rates, conversion of forested lands, and collection of fuelwood. Pandey and Wheeler, for example, use a 38-year socioeconomic database for 112 developing countries in their analysis, and conclude that although the impact of structural adjustment on domestic deforestation is neutral, there is a displacement of domestic deforestation to other countries, which may be a policy concern. Further, their analysis of macro-policy variables reveals that the terms of trade have a significant effect on forest resource use.

Gueorguieva and Bolt (2003), in a review of studies, show that the various relationships between the environment and structural adjustment are indirect and complex. The authors highlight the potential for maximizing positive outcomes and mitigating negative impacts of adjustment operations on the environment.

Studies of the Impacts of Broader Economic Changes on Forests

A large study by Wunder (2003) examines how changes in exchange rates, government budgets, and consumer spending resulting from oil and mineral exports booms influenced deforestation. The results reveal that the impact depends on how governments spend the additional revenue, consumer spending, and changes in exchange rate. In Gabon, oil revenue resulted in appreciation of real exchange rate and growth in nontraded sectors. In contrast, in Ecuador, deforestation accelerated during the oil boom. This is associated with government expenditure of a large share of oil revenues in ways that promoted extensive land use. Also, demand for cattle-derived proteins was important. The study concludes that increases in the export of oil in resource-rich countries will not have a negative impact on forests if labor and other resources are drawn away from the forest and agriculture sectors into the exporting sectors, reducing pressure on forests (see also Wunder and Sunderlin 2004).

Cattaneo (2001) uses computer modeling to examine the relationship between deforestation in the Amazon and macroeconomic shocks resulting from structural adjustment. The simulation reveals that changes in the exchange rate affect the relative prices of goods, and a balanced reduction of private consumption, government demand, and investment would lead to reduced deforestation. This is because the region allocates a small share of its production to exports, and is therefore affected by contractions in private domestic consumption.

Benhin and Barbier (2000) have used a dynamic optimal control approach to address the forest biodiversity loss issue more directly. They develop a species-forest relationship to explain the link between policy and price changes and forest and biodiversity loss in Ghana from 1965 to 1995—a period that included adjustment lending activity. In terms of biodiversity, while losses continued during that period, the rate of loss was higher in the pre-adjustment period than the post-adjustment period. The authors conclude that structural adjustment has in this case led to less reliance on forests for production, therefore reducing biodiversity loss.

The Natural Resources–Poverty Linkage

The Millennium Development Goals have driven the Bank's—and others'—design of economic adjustment interventions toward prioritization of poverty alleviation. This in effect raises the stakes for natural resources, because the rural poor tend to be more heavily dependent on the condition of natural resources, and more vulnerable to adverse changes in this condition, than are others in the community. In the case of marine resources, the poor are more dependent on the retention of productivity of coastal fisheries as opposed to deeper ocean resources, and therefore more exposed to problems of coastal pollution, outwash from erosion of upland sites, larger-scale commercial operations that are based on unsustainable catch quotas, and so on.

The rural poor are usually located in more marginal lands, which by definition are more easily degraded than other areas, and they are more dependent on rain-fed agriculture. A forthcoming paper on rural development and pro-poor growth (World Bank/DFID 2005) examines the contribution of agriculture and rural development to pro-poor development, based on 12 countries spread through Africa, Southeast Asia, and Latin America. The study notes that while rural poverty has fallen in all 12 countries through the 1990s, it has done so more slowly than urban poverty. Responses of the sector to trade liberalization measures and other economic reforms have lagged behind those for the economy as a whole, and this tends to become even more pronounced in remote or marginal areas. The study confirms the idea that secure and equitable access to assets—which requires development of property rights and efficient land administration—is critical to pro-poor growth in the rural areas. It concludes that rural development remains critical to reducing poverty and inequality, and that unevenness in growth and growing inequality

in the sector must be addressed through effective poverty-oriented rural development strategies.

Forest-Poverty Linkages

Forests tend to be more remote, and the agricultural and other opportunities around them more marginal, compared to the average in rural space; consequently people living in or near them tend to be poorer. They are often highly dependent on non-timber resources and basic fuelwood. These resources are typically undervalued in traditional economic analyses, when compared to commodities that enter formal markets (commercial agricultural and tree crops, and large-scale timber-harvesting operations). When competition from such activities exists, the access of the poor to forest resources tends to be under high risk owing to the prevalence of state-imposed tenure in many natural forest areas.

In the Bank's forest sector strategy paper (World Bank 2002) it was estimated that more than 1.6 billion people globally depend on forests to some extent for their livelihoods; 60 million indigenous people are thought to be almost wholly dependent on forests; a further 350 million people living in or near forests are significantly dependent on them for subsistence and income. Figures cited in Calibre and SCC (2000) and Krishnaswamy and Hanson (1999) as cited in Scherr, White, and Kaimowitz (2004), provide some support for these estimates, indicating that 0.955–1.455 billion people are estimated to be forest-dependent poor.

It is also estimated that globally 17.4 million people (full-time equivalents) earn their living from formal sector forest-based employment (that is, enterprises with over 20 employees) in forestry, wood industries, furniture, and pulp and paper (Poschen and Lougren 2001, as cited in Scherr, White, and Kaimowitz 2004). Poschen and Lougren estimate that an additional 30–35 million are employed—most of them in China, Indonesia, Brazil, India, and Malaysia—in the informal and subsistence sectors.

Case study data have shown that smallholders living in forest margins in diverse parts of the world earn 10–25 percent of their household income from non-timber forest products, many of which, as noted above, are either undervalued or omitted completely from conventional economic income statistics (see Ndoye, Ruiz-Perez, and Eyebe 1999). Studies of income from indigenous natural resource management and small-scale local forest enterprises in a number of countries in Africa, and joint forest management in Madhya Pradesh state in India, bear out the significant impacts on income of poor people of these activities (see Monela et al. 2004; Angelsen and Wunder 2003; Mallik 2000 as cited in Scherr, White, and Kaimowitz 2004).

While the general case for the significance of forests' contribution to poverty alleviation is strong, it is evident from case study information that poor households' reliance on forests varies considerably based on context. Accordingly the impact of broad economic policy measures, such as barriers to local market participation or transfer of management rights, on the role of forests in poverty alleviation will vary from country to country. Making any further assessment of the effect of macro-changes on the poverty-environment linkage is constrained by the lack of data on the role of forests in poverty alleviation. Since most studies on such changes on forests have focused on forest cover or deforestation, the scope will have to be extended to adequately understand how economic change affects the poverty-environment linkage and biodiversity.

Trends in Community Forestry

An important element in the forest-poverty nexus, and one that in some cases will merit specific consideration in the policy discussion in DPL, is community forestry. There is clear evidence that natural forests in the developing world—especially in the tropics—are increasingly managed by communities. RECOFTC (2004) finds, for example, that about 11 percent of forests under management globally now have significant community involvement—a much higher share than that of the forest industry, and about the same as the total share of

all private forest holders. The percentage is predicted to grow to 45 percent by 2015.

The literature on community forests cites many examples of the improved incentives for sustainable management that are transferred to communities when they receive rights to utilize forests for their own benefit, rather than having to exploit them illegally, as is the norm when tenure and access issues are less favorable (see White and Martin 2002). Some of the most important basic governance measures needed to encourage the move toward community ownership of forests are within the policy reach of DPL. For example, the institutional arrangements needed to stimulate community involvement in the forests sector, the regulatory framework for forest management; and the fiscal and revenue implications of a change toward community forest management.

Implications for DPL Operations' Design and Due Diligence

Now that we have determined that large-scale economic changes *can* have significant impacts on forests, the next question is whether there is a possibility that a generic predictive model could be developed to anticipate such impacts once the nature of the intended DPL is known.

It is clear, from an overview of the studies cited in this paper, that relatively large scale economic changes *can* have significant impacts upon forests. Because these impacts are measured (for the most part) through the highly limited variables of deforestation, or forest output, it is not possible to assert that all such impacts would be classified as bad, from the overall economic growth and sustainability viewpoint, nor indeed from the biodiversity viewpoint – these are matters which are highly context-specific. Nevertheless, the fact that observed forests impacts can be linked to economic change is sufficient to conclude that the kinds of economic changes that are sometimes incorporated as goals into DPL have the potential to cause significant impacts. This in turn implies that in some cases further analysis of what these changes may be, and how they will impact upon poverty alleviation, sustainable economic growth and the protection of global and local forest values, will be necessary.

The high variability of outcomes in forests from specific economic changes suggests that with current data limitations there is little prospect of development of such a generic model that would allow impacts to be predicted in a specific country situation. The above review of studies shows that forest outcomes of major economic reform, targeted at poverty alleviation and sustainable growth, will be highly dependent on the conditions that exist in the sector, and an appropriate response in terms of DPL program design will need to take these into account. How well forests are managed, for what objectives, with what involvement of local populations, with what exposure to loss or damage from other land uses (and whether the associated regulatory and market environment is neutral or biased), and a range of other issues will all be relevant to major decisions on the content of DPL operations. The current situation could be exacerbated by broader policy measures in a DPL designed without the necessary knowledge in these areas.

While it is true that improving the availability of information on how forests contribute to poverty alleviation is a high priority task for improving understanding of the indirect and direct effects of large economic changes on the role of forests in poverty alleviation, it is already clear from what has been reviewed in this chapter that forests are extremely valuable to the livelihoods of large numbers of poor people. It is equally clear that much of this value is not factored into official economic statistics on livelihoods, nor, in many cases, even perceived as value at all. Under such circumstances, perverse incentives and misallocation of resources leading to forest removal or changes in the status of use and ownership of forests will be a risk factor from the poverty alleviation viewpoint. The next chapter explores the possibility of creating a toolkit based on this understanding.

3

Toward a Toolkit for Evaluating Forests and DPL's Poverty Outcomes

In the previous chapter, a number of risks and uncertainties regarding the influences that large economic change may have on forests were pointed out. None of this, however, is intended as an argument against implementation of broad policy reforms, under development policy lending. In many cases, there will be little risk of DPL operations causing serious harm to forests or forest people, and as was noted in chapter 1, there will in some cases be significant potential for *beneficial* impacts. The key initial requirement, at this stage, is to develop the means to identify countries and situations where more needs to be known about the prior conditions surrounding forests and forest people, in order to design DPL operations that will minimize the likelihood of significant adverse forest outcomes and maximize the opportunities for using the DPL instrument to produce favorable outcomes for sustainability, poverty alleviation, and global forest goods and services. This chapter presents an approach to this screening task.

Incorporating Forest Issues into DPL—The Story So Far

It is useful to examine briefly the extent to which DPL has dealt with forest issues. A number of studies address this matter for some recent DPL—especially by examining the content of PRSPs.[4] The Bank published a major paper on forests and poverty in 2004 (*Counting on the Environment*, Vedeld et al, 2004), which showed based on a meta-study of 54 case studies that 22 percent of total household income in the rural households included in the sample was forest environmental income. The study concluded that the significance of forest income in rural areas is such that leaving it out of poverty assessments in the countries surveyed will cause serious underestimation of rural incomes. By the same token, ignoring the serious problems of securing the forest resource base, continued access to it, and tenure for the most dependent communities will have significant consequences for poverty alleviation.

The Overseas Development Institute has used the results of an examination of the coverage of forest issues in I-PRSPs and PRSPs for 16 forest-rich countries, in West-Central Africa, the Neotropics, and Southeast Asia (Dickson and Bird 2004) to draw some general conclusions about the treatment of forest issues in these PRSPs. The study suggests that while most of the documents mentioned forests, the treatment was mostly brief and general, without significant policy implications that could be incorporated into the resulting PRSC operations. In particular, the sensitivity of issues such as public goods management

and forest tenure are not adequately addressed, and the study suggests that undervaluation of non-timber forest products and the participation issue—both of them major concerns for the poor—have been suppressed in the dialogue around the PRSP.

A study by Oksanen and Mersmann (2003) examined a large number of I-PRSPs, PRSPs and Joint Staff Analysis documents for a group of sub-Saharan countries, on the basis of four criteria: the extent to which forest issues were included in the assessments and analyses done for these programs, the extent to which causal links between forests and poverty were considered, the degree of definition of actions and responses included in the documents, and the extent to which linkages between the PRSPs and forest-related policy and planning were described. The study found that a significant majority of the documents did mention forests, but most were weak in terms of the criteria used in the study to evaluate them. It also found that Joint Staff Analysis and progress report documents made little or no mention of forests.

Tharakan and MacDonald (2004) have applied qualitative and quantitative techniques to an examination of the extent to which poverty related to environment (the P-E dynamic) issues have been incorporated into the design of PRSPs initiated by the Bank and the IMF in four countries (Cameroon, Nicaragua, Sri Lanka, and Vietnam). The authors conclude that all the PRSPs contained some reference to P-E issues, but with great variability in the extent and quality of such inclusions. Monitoring and evaluation frameworks are limited, and none of the PRSPs assessed the risks to the P-E context. They argue that more attention to these issues is required if PRSPs are to be more effective in addressing the P-E dynamic effectively. Taken in the broader DPL impact context, the study contains an interesting listing of the drivers of the P-E nexus that were used as a basis for evaluating the content of the PRSP documents on this matter: the linkages between natural resource degradation and poverty, and between energy and the P-E dynamic.

Focusing Due Diligence and Identification of Opportunities

Without necessarily endorsing all the views and conclusions drawn in the studies referred to immediately above, it seems clear that to satisfy the concerns expressed by the Bank Board on the potential impacts of DPL on forests, a more rigorous approach to anticipating where potential significant forest impacts (adverse and beneficial) might arise is needed, so that analytical and design efforts to deal with this can be focused.

Selection and Prioritization

This chapter proposes an approach to initiate this expanded effort. First, it develops criteria for scoring the significance (in the context of potential impacts from DPL) of forests in a given country. Second, it compiles data on current and projected DPL operations (the list is constrained by confidentiality requirements and data limitations in some cases) including available information on their likely nature and content. The two data sets are then overlaid to provide a prioritized listing of countries where the highest potential for forest impacts in the current and near-term DPL programs are identified. This will help to develop approaches to more closely analyze and identify the necessary actions at field level in these countries initially, and then to apply what has been learned from this to new DPL projects in the pipeline, as these emerge.

This stepwise approach to prioritizing where deeper analysis may be needed is suggested at this stage, for two pragmatic reasons: since resources needed to implement field analyses will be limited, it is unrealistic to propose a general application of analytical work to this task in all possible cases; and since a degree of uncertainty will inevitably surround the analytical process itself, at least in the early stages of application, it will be necessary to learn from and refine initial approaches along the way.

Ultimately, it is hoped that development of this approach will become possible through a combination of existing instruments and analytical approaches with new ones, and with revised systems for prioritization, rationalize and prioritize due diligence and opportunity identification activity along the whole continuum from Country Assistance Strategy (CAS) design, through individual DPL programs, to the logical follow-up to DPL.

The Initial Task: Prioritizing More Detailed Analyses

The review of literature in chapter 2 indicated that there is little possibility of developing a formal and generic modeling approach to determining likely forest outcomes from specific economic change, across the range of situations in countries where forests matter. Since prevailing institutional, policy, and governance conditions will significantly influence forest outcomes from economic change, a heuristic approach should be taken, to identify a set of suitable initial conditions that will indicate cases where forests should be recognized as significant in the design of forthcoming DPL operations.

Characterizing Forest Significance

The findings from literature reviewed in chapter 2 underscored the importance of governance in countries when assessing the significance of forests issues for DPL purposes. In the Bank's forest sector strategy, approved by the Board in 2002, three main pillars of strategy (each of which is strongly linked to specific requirements under the Millennium Development Goals) were identified: harnessing the potential of forests to reduce poverty, integrating forests into sustainable economic development, and protecting vital local and global environmental services and values. These three objectives, plus governance, provide a logical basis for developing criteria for forest significance.[5]

Characterizing Forest Significance Using Multicountry Data

Datasets that are readily available with adequate data to capture the four dimensions of country characteristics,(actually, proxies for these, as outlined immediately below) are available for 82 countries. The Food and Agriculture Organization (FAO), the World Bank, and World Resources Institute (WRI) maintain the data that are widely used to capture changes in forest and forest outcomes.[6] The following variables have been identified as proxies for the different dimensions.

Governance—Rule of law, which is a measure from Kaufmann, Kraay, and Mastruzzi's (2004) corruption indicators, and presence of democratic institutions. These are well-known and documented measures of governance. Their limitation as a proxy in this context is that they do not necessarily reveal the state of governance in the forests sector itself, nor do they shed any light on how that is influenced by broader trends in the economy.

Contribution of forests to the economy—Production of woodfuel (2000) and production of roundwood (2000), both from the FAOSTAT online statistical services, 2004. This measure picks up an element of forest output beyond the conventional measure of commercial logging–the large amount of fuelwood that is used by local communities and frequently does not enter formal markets.

Forest-conservation linkage—Percentage of threatened bird species (2000), percentage of threatened mammal species (2000), and rate of change in forest cover (1990–2000). These variables provide some reflection of biodiversity loss, as well as a gross measure of forest loss. The latter will have some relationship with the contribution of forests to the economy, in that it will provide a measure of whether the contribution, as currently constituted, is sustainable. Eventually, a more rigorous approach to estimating the sustainability of ongoing forest operations would be a useful ingredient in this overall measure, but it is not possible to implement this approach at present.

Forest-poverty linkage. The annual rate of change between 1990 and 2001 in the (headcount) percentage of poor living below a dollar a day, and the percentage of poverty of in 1996. Both of these measure use the Poverty Calculator (POVCAL) approach developed by the Bank. The variable is the weakest proxy for what is of interest here—which is some estimate of the prevalence of poor people who live in or near forests and depend on them greatly. The reason a *rate of change* of the poor as a proportion of the whole population was included is that it has been observed (see World Bank/DFID 2005) that persistence of rural poverty, in comparison to overall poverty reduction, is associated with lower responses in the rural sector to trade liberalization and other economic reforms, and that where poverty levels remain relatively high, strategies heavily oriented toward alleviating poverty, and dealing with some of the important underlying causes—notably access to land and other assets—will be essential to a solution. In poorer countries, rates of change in poverty incidence overall are a reasonably good indicator of the state of rural poverty, because in these countries rural populations tend to constitute a high proportion of total population. As the overall income status of the country rises, this is less and less the case, and the variable becomes less useful as an indicator.

The variables for each of the four forest significance criteria have been converted into z-scores and averaged for each dimension. This involves two steps. The first is differencing the value of the variable by the mean and dividing by the standard deviation. Second, the z-scores for each of the variables associated with a dimension are summed and divided by the total number of variables for that dimension. The average z-score per dimension provides information on how a country performs along each of the four dimensions.

It is also possible to sum the average z-scores for each of the dimensions and divide by four to attain an average z-score for all four dimensions. The aggregate value enables the ranking of countries based on the overall forest significance conditions. (It is important to note that while these criteria attempt to approximate a measure of the current losses of forest area and biodiversity, and also the poverty link, they also reflect the contribution of forests to the economy: they are not, therefore, focused only on risk factors, but also on the relative importance of forests.)

A ranking based on the above scoring procedure of all 82 countries for which the data for the criteria above are currently available has been made, and is shown in annex 2. The ranking of countries in the overlay table (table 2 in this chapter) uses the same aggregate index produced with this approach, but includes only those countries from the full list that have DPL operations currently scheduled (and for which information can be publicly released at this stage) in financial years 2005 and 2006.

Evaluating DPL Operations' Potential to Affect Forests

As noted above, the second part of the task of identifying and prioritizing situations where more intensive due diligence on forest outcomes under DPL will be needed is to examine the specific nature of those DPL operations in the pipeline.

Linkages between Broad Economic Change and Forests

The Operations Policy and Country Services (OPCS) Good Practice Note on Environmental and Natural Resource Aspects provides a summary of potential linkages between typical sectors for policy-based operations and the environment (2004b, 13–14). The information in the OPCS table provides a starting point for identifying potential cross-sector linkages.[7] For example, the table shows that agricultural reforms, such as reforms in land markets, improved rural finance, and reform of government institutions such as marketing boards can potentially strengthen resource management. In contrast, changes in

prices of inputs can increase the adoption of management strategies that may be detrimental to the environment. Similarly, price-induced reduction of demand for energy, as well as environmental regulatory regimes in the energy sector, can ensure that energy reforms result in improved environmental health. Energy sector reforms could also result in negative environmental and health effects if the differential pricing results in households substituting clean fuels with dirty fuels (see box 1). At the macro-policy level, when reforms in public expenditures and public sector management result in priority setting and efficient allocation of public expenditures, there are potential environmental benefits. Negative consequences can result if such reforms do not result in the protection of public environmental expenditure during major fiscal consolidation.

The sectors in which many DPL operations are concentrated (such as Central Government Administration and General Public Administration Sector) do not immediately suggest a direct or indirect linkage with forest outcomes. However, a closer examination of the thematic orientation of the DPL operations can reveal areas of intervention in these categories that could potentially benefit or adversely affect forests. For example, 100 percent of the DPL operation proposed for Guatemala (in FY05) is allocated under the sector of Central Government Administration. Thematically, this lend-

Box 1. Upstream Analyses Inform a Lending Operation in Azerbaijan

Recently several lending operations in Europe and Central Asia (Armenia, Azerbaijan, Georgia, Hungary, Kazakhstan, Moldova, and Poland) have focused on sector reforms to improve the efficiency and effectiveness of service delivery in the region. One sector that has been subject to this change is the power sector. A review of the World Bank's activities in terms of the fiscal, efficiency, social, and environmental dimensions of reforms in the energy sector in seven countries in the region (Lampietti 2004) provides food for thought regarding the potential environmental impacts. The environmental impacts considered in the study were those associated with human health benefits resulting from reduced pollution from the electricity sector. However, the study also discussed the possibility that the reforms have damaged health because households switched to dirty fuels (such as wood, coal, or kerosene). The study lacked adequate data to evaluate the impact of reforms on fuel switching, energy use, substitution effects, and health and social impacts; however, findings such as the following raise concern: "In Armenia 80 percent of households and 95 percent of poor households reported using alternative fuel sources to reduce reliance on electricity (primarily wood (60 percent) and/or gas (24 percent)." The study also highlights the possibility that fuelwood use may cause deforestation, although this could not be proven owing to inadequate data availability.

Such a study justified the poverty and social impact analysis (PSIA) undertaken prior to an energy reform operation in Azerbaijan (World Bank 2005). This study used spatial information to assess the environmental impact of energy reform. The methodology enabled identifying where households (due to poverty level) may switch to dirty fuels. Overlaying this information with data on forest cover revealed where the risk of increased residential wood use is greatest. With this information it was possible to consider promoting access to alternative energy sources and more efficient wood stoves in high-risk areas, as well as preparing and implementing spatially explicit forest management plans and encouraging participatory forest management to reduce this risk.

The data collection process for this study was done with extensive in country collaboration.

ing operation will focus on macroeconomic management and tax policy and administration—themes that could impact forest outcomes.

Evaluating the Potential of DPL to Affect Forests

The Bank classifies its delivery of operations under two basic headings: theme codes, and sector codes. The 11 theme codes are based on objectives of Bank activities, consistent with the organization's corporate advocacy and global public goods priorities, and support for the Millennium Development Goals: economic management, public sector governance, rule of law, financial and private sector development, social protection and risk management, social development, gender and inclusion, human development, urban development, trade and integration, rural development, and rural and natural resources management.[8] The 10 sector codes are high aggregated groupings of economic activities based on the types of goods and services produced: agriculture, fishing, and forestry; law and justice and public administration; information and communications; education; finance; health and other services; industry and trade; energy and mining; transportation; and water, sanitation, and flood protection.[9]

As a first cut, a review of which elements of the thematic codes of activity had most potential to stimulate impacts on forests and forest people at the field level was made: it was concluded that the thematic codes reveal more, in terms of instruments and activities likely to be employed in their implementation, than do the sector codes, which can encompass widely differing aspects of investment in a given sector, from one location to another. For this reason, the screening process undertaken in this paper focuses on thematic divisions. Aspects from the 11 theme codes that could have implications for forests were identified next.[10] Applying these selections to some[11] forthcoming DPL operations listed for 2005–06 (since there is sufficient information available on the content of these operations) results in the identification of 21 operations (out of a total of 82) as having potential to have a significant impact on forests. These operations and their proposed lending amounts are listed in table 1.

A second listing could be produced by using the same criteria and approach for the sector codes: information on the results of doing so for DPL operations for which information can be released at this time can be obtained from the Bank.

Overlaying Forest Significance Information with Identified DPL Operations

Table 2 combines the information on countries ranked on the basis of the aggregate index of prior conditions with the proposed DPL operations of thematic importance, as identified in the previous sections.

This exercise gives an initial idea of how the process of prioritizing due diligence efforts for forests includes identifying the countries where forests are likely to come under most stress. It also is helpful in strategically deploying important instruments such as country environment analyses (CEAs), strategic environmental analyses (SEAs), rapid CEAs (RCEAs), and so on. The potential of these is discussed in the next chapter.

Obviously, given all the caveats related to the reliability of data on which this is based, this exercise must also be seen as preliminary: it is indicative of an approach, but also of a need to improve the availability and reliability of the information used to apply it.

Table 1. DPL Operations with Thematic Areas of Interest

Fiscal year	*Country*	*Project title*	*IBRD/IDA lending level* [a]	*Themes of concern associated with the lending operation*
FY05	El Salvador	(CRL2) Program. Broad-Based Growth DPL	1	Macroeconomic management, tax policy, and administration
FY05	Colombia	Finance and Business Growth	1	Regulation and competition policy, small and medium-size enterprise support, trade facilitation and market access
FY05	Lao PDR	PRSC-1	1	Macroeconomic management
FY05	Brazil	Programmatic Fiscal Reform III	2	Macroeconomic management
FY05	Niger	PEAC III	1	Public expenditure, financial management and procurement, infrastructure services for private sector development
FY05	Vietnam	PRSC IV	1	Regulation and competition policy
FY05	Benin	PRSC II	1	Rural services and infrastructure, rural policies and institutions
FY05	Burkina Faso	PRSC 5	1	Poverty strategy, analysis and monitoring, decentralization
FY05	Sierra Leone	ERRC IV	1	Macroeconomic management, rural policies and institutions
FY06	Tanzania	PRSC 3	2	Environmental policies and institutions, regulation and competition policy, rural policies and institutions
FY06	Senegal	PRSC 2	1	Poverty strategy, analysis, and monitoring
FY06	Pakistan	PRSC II	2	Macroeconomic management
FY06	Mozambique	PRSC 2 (FY06)	1	Macroeconomic management
FY06	East Timor	Fourth Transition Support Program	1	Macroeconomic management
FY06	Ukraine	PAL 3	2	Macroeconomic management, environmental policies, and institutions
FY06	Turkey	PPDPL 2	2	Rural policies and institutions
FY06	Georgia	PRSC	1	Public expenditure, financial management, and procurement
FY06	Vietnam	PRSC V	2	Regulation and competition policy
FY06	Uganda	PRSC 5 (FY06)	1	Rural policies and institutions
FY06	Pakistan	Sindh SAC II	1	Macroeconomic management
FY06	Cambodia	Poverty Reduction Support Credit	1	Public expenditure, financial management, and procurement

Source: World Bank staff compilation based on data in April 2005 Monthly Operational Summary (http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/PROCUREMENT/0,,contentMDK:50004501~pagePK:84269~piPK:60001558~theSitePK:84266,00.html)
a. Lending Level 1 = less than or equal to USD 100 million. Lending Level 2 = more than USD 100 million.
Note: See the acronyms and abbreviations list for definitions

Table 2. Overlay of Forest-Important Countries and Pipeline DPL Operations

COUNTRY	*Index of Forest Significance*	*Pipeline (FY05&FY06) DPL operations of Thematic Importance for forests and the IDA/IBRD allocations in parentheses*
Brazil	–0.906	Fiscal Reform III (500)
Vietnam	–0.701	PRSC IV (100); PRSC V (200)
Niger	–0.496	PEAC III (40)
Uganda	–0.380	PRSC 5 (150)
Pakistan	–0.329	PRSC II (200); Sindh SAC II (100)
Turkey	–0.208	PPDPL2 (400)
Burkina Faso	–0.050	PRSC 5 (55)
Tanzania	–0.026	PRSC 3 (175)
Ukraine	–0.011	PAL 3 (250)
El Salvador	0.009	Growth DPL (100)
Colombia	0.130	Finance and Business Growth (100)
Senegal	0.141	PRSC 2 (30)
Mozambique	0.151	PRSC 2 (60)

Source: World Bank staff compilation.
Note: See the acronyms and abbreviations list for definitions.

4

Tools Available or Needed for Implementing Due Diligence

The challenge for the Bank and other organizations and groups involved in DPL is now to implement an effective process for targeting where due diligence or DPL operations with regard to forests is needed, and in the same process identify opportunities for using DPL operations to bring about significant improvements in forests' contribution to poverty alleviation, sustainable economic growth, and global public goods.

How well the Bank is equipped to deal with these tasks can be determined by examining the extent to which its current tools and approaches are—or could be—effective in developing the information and analysis needed in a timely fashion, for due diligence.

OP8.60's Environment, Forests, and Natural Resources Due Diligence Requirements

The network of the Bank has produced a good practice note (OPCS, 2004a) on designing DPL operations. The note discusses the importance of the quality of the analytic underpinnings for DPL design, and emphasizes that reform programs can be designed in detail only when there is adequate diagnosis of the problems and sufficient clarity on solutions. In particular, PSIA and, where relevant, environmental impact analysis should underpin important policy measures, and measures should be taken to ensure that environmental considerations are adequately incorporated into the design of the DPL operation.

> Good practice generally reflects the confluence of a number of favorable factors: (a) environmental issues that are large scale; (b) relatively direct linkages between environmental management and development outcomes; (c) a sound body of analytic work to guide the design of the operation; and (d) a client and country department that is aware of these conditions and is willing to embrace environmental reforms as part of the larger reform program. (p.19)

> Country-level analytical or diagnostic work is a sound basis for ensuring that environmental considerations enter the development planning process at an early stage. Priorities, including the costs of environmental degradation, identified by an existing country led environmental work, as well as assessments by the World Bank and development partners, are important to inform and deepen understanding of key envi-

ronmental challenges, particularly in connection with the preparation of Poverty Reduction Strategy Papers (PRSPs) and Country Assistance Strategies (CASs). An assessment of environmental policy, regulatory, and institutional capacity is also essential to gain an understanding of institutional capacity strengths and challenges in order to ensure that environmental implications of lending programs are properly considered, including monitoring of environmental trends with specific attention to resources at risk.

Appropriate analytic instruments for assessing the effects of development policy operations on the environment include country environmental analysis (CEA) and strategic environmental assessments (SEAs) since development policy lending involves economy wide or sector wide policy programs rather than physical investments.

- ***Country environmental analysis*** covers countrywide policies and institutions dealing with the environment forests and natural resources. The CEA focuses on the major environment issues in a country; reviews the policy and institutional framework; assesses institutional capacity to implement the framework; and makes recommendations for priority reforms. It does this all at the level of the country or, in large countries such as India, a state. The CEA is a relatively new approach, with five full CEAs having been delivered to the client, including recommendations on which both the World Bank and the country agree.
- ***Strategic environmental assessment*** concentrates more on policies, plans, and programs within a specific sector. Policy SEA considers the linkages between a given sector (energy, for example) and the environment and natural resources; reviews the policy and institutional framework for dealing with environmental issues within the sector; assesses institutional capacity; and may make recommendations for reforms of policies or institutions. Policy SEA is an evolving tool with few examples of application in the World Bank's work to date.

In the absence of any useful analytic work, however, there may be a need to initiate such work, either to study issues linked to the operation or to better understand issues at the level of the country program. In all cases, there is a general set of questions that need to be posed:

- What are the priority environmental problems in a country or a region? Is there a danger of these problems getting exacerbated by ongoing reforms in the country?
- Do the environmental and natural resource management institutions have the capacity to identify environmental priorities, monitor the priority environmental problems, and respond accordingly? Do these institutions have the policy framework and legislative authority to act when problems arise?
- Do governmental organizations have the capacity to respond to environmental problems? Are there conflicting or unclear responsibilities across governmental organizations? (p 9)

The Resources Issue and the Applicability of CEAs and SEAs

The DPL policy paper (Mani, 2004) outlines a five-year program of implementation of environmental analytical work to support DPL operations. This includes conducting CEAs and SEAs or other appropriate economic and sector work (ESW) where the volume of development policy lending is large, where adjustment lending makes up a large share of the country's gross domestic product (GDP), or where reforms are proposed in environmentally sensitive sectors such as forests, agricul-

ture, natural resources, energy, mining, transport, and water supply and sanitation (OPCS 2004b; Mani 2004).

The good practice note for OP 8.60 suggests that CEAs and SEAs are appropriate instruments for assessing the effects of development policy operations on the environment. However, some variation in their design and allocation may be required for them to be effective for the purposes of early identification of situations where DPL operations have significant potential to affect forests and forest people, and then for implementing the necessary upstream analyses.

Country environment analyses serve the broad purpose of evaluating the environmental priorities of development in client countries, the implications of key policies, and the capacity of those countries to address these. This information is assembled so that it to be used as a guide in formulating the content of the CAS. This is a more general purpose than the DPL due diligence task, and to achieve this broader purpose, it may be necessary to schedule a CEA *prior* to the CAS development program, or as part of it. This would be too early to assist in implementing DPL impact analyses, since the nature and timing of DPL operations will not be clear prior to finalization of the CAS. There is also a question of selectivity and prioritization involved here: if CEA resources are to be applied effectively to the DPL due diligence task, a significant proportion of those resources can only be committed to this task once the priority countries and forthcoming DPL operations are identified, using a process along the lines of that described in the previous chapter. This is not the case right now: currently three CEAs have been completed, 10 more are ongoing, and 10 more are planned. In addition, the majority of these CEAs do not focus specifically on DPL programs, but are being conducted for other purposes. Nevertheless, on the basis of the sample of countries examined in this paper, relatively few ongoing or forthcoming CEAs seem to have been planned for countries with higher indexes for forest significance.

Policy SEAs, in particular, are a less well-defined entity at this stage, and therefore offer potential for modification to serve due diligence needs. While some have been designed to address environmental and natural resource issues related to a given sector (energy, for example), it appears from more recent consideration of this instrument in the Bank that there is greater flexibility to apply it beyond specific sectoral concerns. SEAs, as defined above, can be useful in evaluating how a country's institutional capacity and governance structures affect its ability to manage the potential physical impacts of policy changes likely to be undertaken in a DPL environment. The Environment Department of the Bank is currently completing an analysis of a policy SEA approach to formulate a framework for this assessment, and will pilot this approach in one or two priority countries. This development will make SEAs a possible vehicle for the due diligence and opportunity identification task for forests (and the broader natural resources group) in the context of forthcoming DPL operations. Again, the resource allocation and prioritization issue as raised for CEAs above would apply in this case, but in the context of client country resources, because typically SEAs are undertaken by countries.

Coordinating and Rationalizing the Due Diligence Resources

Some options exist for applying selectivity and prioritization in this area, while keeping in mind the multiple objectives for environmental due diligence activity in the Bank.

First, it may be possible to partition the CEA process into two phases. The first phase may have the general purpose for CAS formulation purposes, but at a reduced scale of effort, perhaps relying more on desk analysis of existing policy, institutional and regulatory issues linked to policy formulation and implementation. This would be followed in the CAS cycle by more field-level analyses focused on the specific content of DPL operations

under way (which usually will not be known in any detail at the time of preparation of the CAS), in cases where the potential for significant impacts (on forests, for the purposes of this paper, but in effect on any sectoral or thematic area where potential impacts with significant environmental and related poverty implications) has been identified. This would allow funds for CEA work to be distributed along more prioritized lines related to DPL operations.

Second, country departments could initiate a dialogue with client countries with large DPL programs on aligning their SEAs more directly with the DPL pipeline, and the definition of what SEAs can cover could be broadened to allow a focus on all potential impacts from a given DPL, where needed, instead of retaining a specific sectoral outcome focus.

And third, "rapid CEAs" are already evolving in some areas of operations in the Bank, and are being seen as a means of meeting the provisions of OP 8.60. The case of Bosnia (see box 2) is interesting, in that it proposes (a) to use historical data on the performance of previous structural adjustment operations, in the area of environmental impacts, and then recent environmental plans and (b) to quickly identify which policies and sectors supported by the development policy credits pose significant risks to the environment, forests, and natural resources. This would appear to be precisely the objective of due diligence in these circumstances.

Financing Implications

All three of the above suggestions are based on the central idea that, given the significance of development policy lending in the Bank, and other agencies, the pipeline of such projects provides the best organizing basis for planning environmental due diligence. It is unlikely, however, that even with the rationalization and prioritization of effort that this would promote, aided by the selectivity that would be afforded from developing and applying the methodology outlined in chapter 3, the costs of effective due diligence—especially when extended to cover the full range of environmental and natural resource outcomes—will exceed present operational budgets. Some estimates of CEA implementation costs will provide some perspective on the level of incremental funding that may be needed to implement due diligence along the lines put forward in this paper:

An estimate made in the Environmentally and Socially Sustainable Development Network (M. Mani 2004) of costs associated with applying CEAs in countries with a lending volume exceeding $500 million for FY05 is $3–4 million. This amount is based on the estimate that to apply the CEA approach in any such country would cost anywhere between $200,000 and $400,000 (excluding the cost of staff resources).

Furthermore, meeting due diligence requirements in an SEA candidate country (that is, a country where the Bank's key sectoral reforms are planned in the environmentally sensitive sectors) may range from $100,000 to 200,000 (excluding the cost of staff resources) (Mani 2004). It may be possible to reduce the cost associated with upstream analyses by linking these studies with those required for the social due diligence (Bojö 2005). The latter, which is often addressed through a country social analysis (CSA), costs approximately $150,000. Some of the costs associated with the environmental due diligence may be covered by reallocation of existing country program budgetary resources, but it is clear that these program resources would have to be significantly supplemented to finance the above program.

Monitoring and Follow-Up

Sequencing the Process

In the initial discussions within the Bank in reaction to issues raised during Board consideration of the forest sector strategy and policy, it was suggested that to be confident that inadvertent impacts on forests that might result from DPL operations

Box 2. Use of the Rapid CEA Approach in Bosnia

A World Bank workshop on CEA/SEA in January 2005 recognized that a rapid form of CEA should be examined as one option for meeting the new provisions of OP 8.60 in Bosnia. The core of the RCEA will be a prioritization of policies and sectors that will be supported by the Programmatic Policy Development Credits (PPDCs) regarding environmental implications and risks; an assessment of state, entity, and local capabilities to mitigate negative effects; recommendations to fill key gaps; and a small set of recommended key indicators to track progress. This RCEA will be carried out in parallel with the final stages of fiscal year 2005 Programmatic Policy Structural Adjustment Credit (PPSAC) preparation, and would be amenable to updating as needed in subsequent Fiscal Years.

According to the National Environmental Action Plan,[a] freshwater and air quality in rural areas are in fairly good condition, but with wastewater management, waste disposal, and industrial controls generally below international norms, environmental risks are increasing. Bosnia's goal of meeting the requirements of the environmental acquis communitaire of the European Union means that considerable investment in both the technology for pollution control, and institutions for monitoring and compliance will be required. The United Nations Economic Commission for Europe's Environmental Performance Review for Bosnia (2004)[b] outlined deficiencies and needs for improvements in the policy, legal, and institutional framework; public participation and access to information; water resources management (including drinking water quality); land use; agriculture and biodiversity; management of waste sites; and environmental aspects of tourism and energy development.

The RCEA will first "look back" to frame how past adjustment operations have examined environmental implications. It will then "look forward" by building on the National Environmental Action Plan, the Environmental Performance Reviews, and other studies to quickly identify which policies and sectors supported by the PPDCs pose the more significant risks to the environment, forests, and natural resources. New data will be collected by Bank staff and consultants on specific privatizations, new government permit programs, and the like.

The RCEA proposes a three-tiered approach, first reviewing what are felt to be weak institutions in Bosnia for addressing the environment in privatizations. The second tier of analysis will look at implications from PPDC Business Environment Reform on environmental management systems in the country. And the third tier will look at policies and sectors that the PPDCs will support that pose less risk or are mitigated by other Bank operations (such as Health). One important outcome will be the identification of a few suggested indicators of progress.

a. http://www.esiweb.org/bridges/bosnia/BiH_Nat_Environment_Plan_2003.pdf.
b. http://www.unece.org/env/epr/studies/bosnia_and_herzegovina/welcome.htm.

could be identified and dealt with, and the potential for beneficial impacts on forests and poverty in forest-dependent populations from DPL could be realized, three basic steps would be needed:

- In advance of preparation of the DPL itself, upstream analysis of the potential linkages between measures and reforms that would be implemented under the DPL, and outcomes for forest-dependent poor people and for the condition of the forests themselves, would need to be done.
- During preparation and implementation of the DPL, a system for monitoring outcomes for forests and forest-dependent people would have to be designed and implemented.
- In some (perhaps most) cases the manifestation of outcomes at the field level in forests may occur over a much longer period than that of DPL implementation. Moreover, in the

course of implementation, it is likely that a number of specific policy, institutional, and technical issues at the sectoral level may have arisen, or at least been brought into sharper relief. These should be considered integral to the DPL implementation process.

Monitoring

In situations where upstream forest impact analyses are undertaken in preparation for a DPL, it will be essential to leave flexibility and room in the process so that monitoring of outcomes during the implementation of the DPL operation itself (based on a listing of issues to watch from the analysis) is incorporated into the design of the DPL.

The Bank's Development Economics Research Group (DECRG) has investigated recent developments in monitoring technology and believes that it is now technically feasible to monitor proxies for poverty and for forest cover, in near-real time and at relatively low cost. DECRG has a number of projects under way related to the global and national-scale mapping of population, poverty, forest cover, and biodiversity. Results from the application of this technology could be used to institute "no-fault" monitoring during the implementation of the loan and, in some cases, beyond that period. In the event of a poverty or deforestation spike, a rapid response could be prepared. If no spike is observed, that too is valuable information and could help defuse controversy or anxiety about these loans.

While such monitoring is technically feasible, the challenge is to mainstream it into Bank practice and client institutions. Ideally the monitoring effort should not be ad hoc, but rather a part of the overall environmental management capability that DPL fosters, and also address the specific issues identified in upstream analyses, which would build toward a shift from project-specific safeguards to in-country environmental management. There will be implications for support and capacity building for national or regional agencies capable of monitoring, evaluation, and policy analysis, and possibly for building this capacity in advance of major policy lending.

Flexibility for Follow-Up

The processes of upstream analyses of possible impacts on forests from DPL operations, and results from monitoring during implementation of the operation, may point to a need for longer-term follow-up to deal with issues, problems, and opportunities that arise. To facilitate dealing effectively with these sorts of eventualities, considerable flexibility will need to be built into the Bank's CAS program, as well as into the relationship with other donors involved, to ensure that sector investments, technical assistance, ESW, or, in relevant cases, follow-up special-purpose DPL operations focused on one or a related group of sectors (forests, the broader group of natural resources, developments in rural space) can be designed and implemented in a timely fashion. In principle, where CAS documents propose one or a number of DPL operations in a given country, sufficient flexibility in the programming of investment lending (and ESW) should be incorporated to allow for adequate response to outcomes in the forest, or major prospects for improving outcomes there, that might arise during implementation.

5

Findings and Recommendations

Findings

The findings from individual studies of the potential impacts of large-scale economic change, and more specifically adjustment or development policy lending on forests (and more broadly on environment and natural resources) vary widely, as do the methodologies and focus of the work done. However, taken as a whole the literature suggests that macroeconomic changes and associated cross-sectoral flows can have a strong impact on forests. If these outcomes include significant damage to forest resources, in many countries this could have serious implications for sustainable economic growth, especially in cases where the forest resources being lost are undervalued in the economy—which, as noted, is quite common because of the wide range of forest goods and services that do not enter formal, monetized markets. Furthermore, forests play a vital role in sustaining the natural resource base underpinning economic growth in many other sectors. The irreversibility of such losses, once incurred, adds to the significance of this issue, for local, national, and global public goods reasons. Long periods that might elapse before adverse impacts become evident further complicate due diligence for (relatively short-term) DPL.

The poverty alleviation goal at the heart of DPL will, in many cases, also be highly relevant in impacts on forests from broad-based economic change. As the statistics in the section on the "Natural Resources–Poverty Linkage" show, a large proportion of people who are poor and marginalized living in and near natural forests depend to a significant extent for their livelihoods on these forests. These numbers bear out the conclusions that forests are making a much larger contribution to subsistence and income opportunities for poor people than is evident in formal poverty calculations and survey results, and that loss of forests, or significant changes in how they are used (and by whom), can have serious implications for poverty. This implies both a caution for DPL and an opportunity for adding to its poverty alleviation impacts.

This paper has argued that determining whether significant forest impacts will result from a given set of reforms and changes in a DPL package will not be easy. In cases where impact is identified as likely, major analysis will be needed to explore the implications, and to develop offsetting measures where necessary. This work will need to be initiated well ahead of preparation of the DPL itself, and outcomes will need to be monitored during implementation. Additional follow-up may be needed via investment lending, technical assistance, or even

special-purpose DPL operations. This clearly has serious financial implications for the Bank: present budgets for project preparation and management could not support the application of this approach to every case where DPL and forests coexist.

This emphasizes the need for careful selection and focusing of this more intensive due diligence task onto situations where there is expected to be a higher likelihood of significant forest outcomes. In this paper, a three step approach to this has been illustrated. First, a set of *forest significance* criteria was developed to make a preliminary ranking of Bank client countries on the basis of the significance of their forest sectors, in terms of sustainable economic growth, poverty alleviation and protection of global and local forest goods and services. These factors feature strongly in the Millennium Development Goals, and the new Bank forests sector strategy. A fourth factor—governance—was added to the significance calculation, based on the Bank's experience in the forest sector, and strong indications from literature reviewed in this paper, that the state of governance in a country will be an important determinant of forest outcomes.

The second step was to categorize forthcoming DPL operations for which adequate information is available and able to be released, on the basis of their likely potential to have impacts on forests. In this case the thematic codes for DPL operations were used to determine which ones might have such impacts.

The third step was to overlay the ranked list of countries produced using forest significance criteria with the list of forthcoming DPL operations assessed as having the potential to impact on forests. Table 2 at the end of chapter 3 shows the result of this process.

The final section of the paper deals with the instruments that have been identified in the Bank as having some role in the due diligence task for OP 8.60, and what further may need to be considered. The good practice note for OP 8.60 identifies CEAs and SEAs as being appropriate to the task of due diligence, although it acknowledges that in some cases other analytical work may need to be undertaken to address the due diligence issues.

This paper argues that the design and allocation of CEAs need to be revised if they are to take a stronger role in the due diligence task for DPL than is now the case. They will need to be aligned more closely to the DPL program, and in particular to those DPL operations identified as having potential to have significant impacts on forests.

In the case of SEAs it appears from more recent consideration of this instrument in the Bank that there is greater flexibility to apply it beyond specific sectoral concerns. If so, this would make the SEA a possible vehicle for the due diligence and opportunity identification task for forests (and the broader natural resources group) in the context of forthcoming DPL operations.

Recommendations

Adapting the Current Instruments

- Consideration should be given to partitioning the CEA process into two phases – the first having the general purpose for CAS formulation purposes (but at a reduced scale of effort, relying perhaps on more desk top analysis of existing policy, institutional and regulatory issues linked to policy formulation and implementation). This would be followed in the CAS cycle by more field level analyses focused on the specific content of DPL operations underway in cases where the potential for significant impacts (on forests, for the purposes of this paper, but in effect on any sectoral or thematic area where potential impacts with significant environmental and related poverty implications) has been identified. This would allow funds for CEA work to be distributed along more prioritized lines, related to DPL operations.
- Country departments in their dialogue with client countries could play a greater role in helping to align country-planned SEAs more directly with the DPL pipeline.

- RCEAs, which are already evolving in some areas of Bank operations, and their potential as a means of meeting the provisions of OP 8.60, should be considered for broader application.

Financial Implications

- Even with the rationalization and prioritization of due diligence that the above adaptations would promote, the costs of effective due diligence will exceed present operational budgets, and this issue will need to be considered by management in the budgetary context.

Sequencing the Process

- To be confident that DPL operations' inadvertent impacts on forests could be addressed, and the potential for beneficial impacts could be realized, three basic steps would be needed: upstream analysis for identified countries and DPL operations as outlined above; monitoring of outcomes during implementation; and follow-up investment lending, technical assistance, and analysis, or sectoral DPL operations.
- Considerable flexibility should be built into the CAS program, as well as into the relationship with other donors involved, to facilitate dealing effectively with these sorts of eventualities.

Endnotes

1. Adjustment lending has evolved since its introduction. At first it provided temporary balance of payment financing to member countries while stabilization and adjustment measures took effect. In the 1990s, it took a more development-oriented perspective, focusing on medium-term structural, social, and institutional issues. This was the move toward DPL, a fast-disbursing lending instrument that does not identify a particular policy area for reform, allowing countries to tailor their policy program to their specific needs and circumstances. In this study DPL operations and DPL projects refer to specific lending activities, and DPL programs refer to a set of (or series of) DPL operations.

2. There is a Good Practice Note on Development Policy Lending OP/BP 8.60 specific to Environmental and Natural Resource Aspects (OPCS, 2004b)

3. A comprehensive survey of analyses of deforestation can be found in Angelsen and Kaimowitz (1999). Margulis (2004) and Geist and Lambin (2001) review country- and regional-level studies of deforestation, and reveal significant variation in cause-and-effect across different situations.

4. Poverty Reduction Strategy Papers (PRSPs) document a government's poverty reduction strategy for its country. These papers reveal the priority concerns of the government and inform Poverty Reduction Strategy Credits (PRSCs), which are a form of adjustment lending that is fully subject to the provisions of OP 8.60. PRSCs differ from DPL operations in that the former are focused chiefly on social sectors and public sector management themes.

5. A potential alternative to this approach to characterizing forest significance is using elements of the revised Country Policy and Institutional Assessment (CPIA) index. Specifically, this system uses certain variables that are measured as part of the revised environment indicators. The index is a blend of objective and subjective information. Country officers use assistance from experts in the subject area, available data, and/or personal experience and knowledge of the country to complete the CPIA questionnaire. This information is also updated periodically and widely used throughout the World Bank. Efforts to expand the scope of the CPIA to gather additional information relevant to the criteria mentioned in the section on "Focusing Due Diligence" are under way, and details are available from the Bank.

6. As discussed in Angelsen and Kaimowitz (1999), there are limitations to these data sets.

7. The information, however, extends beyond those associated with forests.

8. For details, see http://siteresources.worldbank.org/PROJECTS/Resources/WBthemes_eff_OCT03.doc.

9. For details, see http://siteresources.worldbank.org/PROJECTS/Resources/WBsectors_eff_OCT03.doc.

10 Details on the elements selected are available from the Bank.

11. Information on some projected DPLs for 2005–06 cannot be publicly released until further processing and negotiation on them have been completed.

Annexes

ANNEX 1. Incorporating Forest Conditionalities into Large-Scale IMF and Bank Adjustment Loans: Lessons Learned from the Indonesia Experience

In October 1997, following the Asian financial crisis and its major impact on the Indonesian economy, the IMF began negotiations with the Government of Indonesia on an assistance package. The Letter of Intent focused on banking sector reform and other financial sector issues, and initially did not include environmental provisions. By January 1998, it had become a $43 billion assistance package, which did include a set of environmental and forest sector reforms aimed at dismantling the forest product marketing monopolies that had dominated the sector. The package committed the Government to implementing a series of forest concession management reforms that the Bank and other development agencies had been promoting in Indonesia for a considerable period of time.

In April 1998, the Bank followed up on the IMF package with the first of two Policy Reform Support Loans (PRSLs), with a loan value of $1 billion followed by a second PRSL in the following year. A more detailed history and timeline of the events that took place in this period, and the tumultuous political environment in which they occurred can be found in Seymour and Dubash (2000). The PRSL loans added details to the reform of regulations and legislation governing the award and management of concessions; an interim moratorium on any further conversion of forested lands to other uses; and moves toward stronger participation of local communities in the management and protection of forests (and ultimately recognition of traditional title to forest).

The Bank—among many others—recognized that a great deal of follow-up activity would be needed to bring the full force of reform into the forests sector, and a broad-based dialogue with stakeholders on this subject was initiated in June 1998. Initially, a large sector adjustment loan (SECAL) was considered as the most appropriate way to support a longer-term process of reform following the IMF and Bank PRSLs. This would have included stronger performance criteria, and a more intensive focus on the introduction of community-based forest protection and management. As conditions in Indonesia continued to deteriorate, ultimately leading to a significant reduction in overall Bank lending to the country, and dialogue and consultation intensified on the major reform

issues, the SECAL proposal was dropped, and a major consultative exercise on forest sector issues, spearheaded by the donor-based Consultative Group on Indonesia but including participation by a wide range of local stakeholders was launched.

Compliance with forest sector conditionalities established under the IMF and Bank adjustment programs, under a series of subsequent regimes, was incomplete and in some cases overwhelmed by subsequent Government policy changes, such as the introduction of a highly flawed devolution of authority over forest resources to district-level governments. The Indonesia forest sector remains unreformed in some critical ways, but the dialogue and consultative processes that have emerged—at least in part as a result of the reform measures the Bank has sought to introduce—have certainly been vigorous and representative, and offer some promise that beneficial change will eventually occur in the sector. A large—and largely critical—literature on the appropriateness of the Bank's adjustment based activities in the forest sector in Indonesia has emerged (see Seymour and Dubash 2000; Barr 1999; Mainhardt 2001). The criticism is that the IMF and the Bank tried to do too much in the sector, in very restricted time frames for implementation, and in some cases (such as requiring the introduction of an auctioning system and performance bonding into the concession management system) this was probably true. The studies also argue that the Bank had not done the necessary advance analytical preparation and consultative work to ensure that the measures proposed were optimal, and accepted by all stakeholders—again true, but in this case mitigated by the fact that this group of interventions were genuinely emergency measures, and the option to reschedule the loans to allow for more analysis and consultation did not exist.

In addition to reviewing the merits of the specific forestry measures that were included in this package of assistance in Indonesia, the studies all raise the matter of a provision in the IMF program that called for removal of a restriction of foreign investment in oil palm production in the country. A number of commentators have concluded that this measure may have accounted for an increase in oil palm planting in Indonesia in the following period, some of which was found to have occurred on naturally forested areas, rather than on degraded or otherwise unforested lands in Kalimantan and Sumatra. However, this example illustrates the difficulty of assigning cause and effect in this area: other causes may have accounted for the upswing given the massive economic trauma that was afflicting Indonesia at the time. Large numbers of people were leaving the major cities and returning to their villages, owing to loss of employment, and the oil palm sector was one of very few that were able to maintain external markets and profitability during the crisis. It is quite possible that the entry of foreign investors into the sector at this difficult time may have at best been a marginal cause of the rise in oil palm production.

For present purposes, the lessons learned from the Indonesian experiences are that the use of the adjustment instrument for forest sector reform will be more effective when done on the basis of good up-to-date analysis, which will allow the linkages between reforms introduced and outcomes for forests and forest-dependent people to be assessed; and that the adjustment instrument is limited by time frames and the necessarily broad focus of the reforms. Careful monitoring of actual outcomes and follow-up with more focused and longer-term operations (which were proposed but not pursued in the Indonesia case) are essential to good results.

ANNEX 2. Details of Criteria for Forests Significance Using Available Cross-Country Data

For governance:

- Rule of law is a measure from the KKZ indicators (see discussion above). This variable includes several indicators that measure the extent to which agents have confidence in and abide by the rules of society. The variable includes perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. Together, these indicators provide information on the effectiveness of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions, and the extent to which property rights are protected (Kaufmann et al., 2004).
- Presence of democratic institutions: this measure is based on the Polity IV Project of the University of Maryland. It ranks countries according to a scale from –10 (autocratic) to +10 (democratic) based on the presence of democratic institutions. This variable is used in the CIESEN as part of their Environmental Sustainability Index (see: http://www/ciesin.columbia.edu/Indicators/ESI/)

For forests contribution to economy:

- Production of woodfuel (2000): This is information from the FAOSTAT online statistical services, 2004. It is the aggregation of wood fuel from coniferous and non-coniferous tree areas. The unit of measure is production in cubic meters.
- Production of roundwood (2000): Roundwood production refers to all wood in the rough, whether destined for industrial or fuelwood uses. Commodities included in this classification are sawlogs and veneer logs, pulpwood, other industrial roundwood, and fuelwood. Other industrial roundwood includes roundwood used for tanning, distillation, match blocks, piling, posts, pitprops, gazogenes, etc. All wood production data refer to both coniferous and non-coniferous species. Roundwood comprises all wood obtained from tree removals, including the quantities removed from trees both inside and outside forests. Wood recovered from natural, felling and logging losses during the period are also included. (data is from FAOSTAT online statistical services, 2004)

For forest-conservation linkage:

- Percentage threatened bird species (2000): 2000 IUCN Red List, http://www.redlist.org/info/tables/table3.html, and World Resources Institute, World Resources 2000-2001, Washington, DC: WRI, 2000. Original sources: World Conservation Monitoring Center, IUCN-The World Conservation Union, Food and Agriculture Organization of the United Nations and other sources. http://earthtrends.wri.org. The number of bird species threatened divided by known bird species in the country, expressed as a percentage. The percent of breeding birds threatened gives an estimate of a country's success at preserving its biodiversity.
- Percentage threatened mammal species (2000): The source for this information is 2000 IUCN Red List, http://www.redlist.org/info/tables/table3.html, and World Resources Institute, World Resources 2000-2001, Washington, DC: WRI, 2000. Original sources: World Conservation Monitoring Center, IUCN-The World Conservation Union, Food and Agriculture Organization of the United Nations and other sources. http://earthtrends.wri.org. Number of mammal species threatened divided by known mammal species in the country, expressed as a percentage. The percent of mammals threat-

ened gives an estimate of a country's success at preserving its biodiversity. (World Economic Forum et al., 2002)

- Rate of change in forest cover (1990-2000): Estimated by calculating the change in forest area. Total forest area, average annual percent change, 1990-2000, as defined by the Food and Agriculture Organization of the United Nations, is the average annual percent change in both natural forests and plantations between 1990 and 2000. Total Forest is defined as land with tree crown cover of more than 10 percent of the ground and area of more than 0.5 hectares. Tree height at maturity should exceed 5 meters. (source: Earthtrends, WRI)

For the forest-poverty linkage:

- The annual rate of change between 1990 and 2001, in the (headcount) percentage poor living below a dollar a day (using the POVCAL approach developed by the Bank)
- The level of percentage poverty in 1996 (using the POVCAL approach developed by the Bank)

ANNEX 3. Ranking of Countries Using the Forest Significance Criteria

COUNTRY	*fgov_z*	*COUNTRY*	*fecon_z*	*COUNTRY*	*fenv_z*	*COUNTRY*	*fpov_z*	*COUNTRY*	*agg_z*
Pakistan	–1.445	China	–4.460	Philippines	–3.218	Uganda	–1.339	China	–1.411
Cameroon	–1.406	Brazil	–4.051	Madagascar	–1.801	Bulgaria	–1.157	Brazil	–0.906
Vietnam	–1.326	Indonesia	–2.415	Indonesia	–1.248	Zambia	–1.086	Philippines	–0.856
China	–1.306	Ethiopia	–1.880	Jamaica	–1.117	Nigeria	–1.047	Indonesia	–0.802
Zimbabwe	–1.220	Nigeria	–1.252	Malaysia	–0.572	Moldova	–1.030	Nigeria	–0.764
Kazakhstan	–1.189	Philippines	–0.657	Brazil	–0.519	Niger	–1.001	Vietnam	–0.701
Croatia	–1.188	Uganda	–0.460	Niger	–0.485	Mali	–0.972	Ethiopia	–0.582
Algeria	–1.093	Mexico	–0.396	Chile	–0.452	Latvia	–0.786	Madagascar	–0.561
Tanzania	–1.011	Pakistan	–0.338	El Salvador	–0.349	Zimbabwe	–0.769	Niger	–0.496
Kenya	–0.978	Vietnam	–0.256	Mexico	–0.308	Ecuador	–0.687	Uganda	–0.380
Niger	–0.827	Thailand	–0.100	Sierra Leone	–0.308	Madagascar	–0.648	Zimbabwe	–0.363
Uganda	–0.786	Tanzania	–0.066	Pakistan	–0.294	Tanzania	–0.536	Pakistan	–0.329
Burkina Faso	–0.736	Ghana	–0.051	Nigeria	–0.242	Peru	–0.514	Zambia	–0.282
Senegal	–0.671	Kenya	–0.012	Thailand	–0.221	Nicaragua	–0.491	Cameroon	–0.253
Zambia	–0.652	Chile	–0.003	Vietnam	–0.137	Burkina Faso	–0.453	Kenya	–0.229
Ethiopia	–0.567	South Africa	0.025	Ecuador	–0.124	Malaysia	–0.433	Turkey	–0.208
Nigeria	–0.517	Mozambique	0.054	Romania	–0.116	Ghana	–0.427	Ghana	–0.185
Ghana	–0.396	Colombia	0.229	Nicaragua	–0.057	Malawi	–0.349	Mali	–0.140
Armenia	–0.340	Cameroon	0.275	Zambia	–0.045	Ukraine	–0.331	Bulgaria	–0.123
Paraguay	–0.319	Madagascar	0.277	Panama	–0.034	Argentina	–0.312	Ecuador	–0.113
Ukraine	–0.284	Poland	0.282	Ethiopia	–0.030	Venezuela, R.B. de	–0.300	Malaysia	–0.109
Mali	–0.282	Botswana	0.287	China	–0.026	Armenia	–0.276	Peru	–0.096
Guatemala	–0.249	Malaysia	0.298	South Africa	–0.019	Mozambique	–0.252	Burkina Faso	–0.050
Peru	–0.244	Paraguay	0.300	Malawi	–0.019	Paraguay	–0.205	Mexico	–0.028
Honduras	–0.207	Peru	0.301	Kenya	–0.007	El Salvador	–0.123	Tanzania	–0.026
Indonesia	–0.137	Guatemala	0.303	Argentina	0.002	Romania	–0.087	Nicaragua	–0.025
Mozambique	–0.104	Turkey	0.312	Bulgaria	0.004	Hungary	–0.051	Ukraine	–0.011
Venezuela, R.B. de	–0.097	Zimbabwe	0.313	Tanzania	0.020	Botswana	–0.045	El Salvador	0.009
Madagascar	–0.074	Niger	0.327	Uganda	0.059	Cameroon	–0.041	South Africa	0.021

(Annex continues on next page)

ANNEX 3 continued

COUNTRY	*fgov_z*	*COUNTRY*	*fecon_z*	*COUNTRY*	*fenv_z*	*COUNTRY*	*fpov_z*	*COUNTRY*	*agg_z*
Sierra Leone	–0.052	Burkina Faso	0.337	Peru	0.074	Colombia	0.082	Croatia	0.024
Ecuador	–0.045	Zambia	0.340	Colombia	0.088	Kenya	0.082	Moldova	0.028
Moldova	–0.034	Algeria	0.351	Poland	0.094	China	0.150	Paraguay	0.036
Mexico	0.021	Honduras	0.351	Turkey	0.106	Ethiopia	0.151	Argentina	0.050
Panama	0.033	Sierra Leone	0.370	Ukraine	0.126	Honduras	0.182	Romania	0.051
Romania	0.033	Romania	0.375	Ghana	0.134	Philippines	0.303	Malawi	0.052
Nicaragua	0.047	Argentina	0.382	Mongolia	0.160	South Africa	0.316	Algeria	0.080
El Salvador	0.088	Nicaragua	0.400	Cameroon	0.162	Trinidad and Tobago	0.374	Thailand	0.110
Turkey	0.088	Latvia	0.400	Zimbabwe	0.226	Senegal	0.390	Latvia	0.113
Colombia	0.120	Senegal	0.401	Mali	0.277	Mongolia	0.390	Jamaica	0.117
Argentina	0.128	Ecuador	0.405	Costa Rica	0.288	Croatia	0.460	Colombia	0.130
Latvia	0.133	Malawi	0.408	Guatemala	0.302	Turkey	0.504	Senegal	0.141
Philippines	0.148	Ukraine	0.413	Hungary	0.312	Panama	0.538	Mozambique	0.151
Malawi	0.168	Mali	0.416	Croatia	0.334	Brazil	0.553	Honduras	0.176
Bulgaria	0.187	El Salvador	0.420	Paraguay	0.367	Mexico	0.569	Armenia	0.191
Malaysia	0.273	Costa Rica	0.439	Honduras	0.376	Guatemala	0.582	Guatemala	0.235
Thailand	0.387	Venezuela, R.B. de	0.442	Venezuela, R.B. de	0.428	Indonesia	0.591	Panama	0.264
Brazil	0.395	Hungary	0.451	Senegal	0.443	Algeria	0.598	Kazakhstan	0.292
Jamaica	0.407	Estonia	0.454	Botswana	0.455	Jamaica	0.643	Chile	0.334
Estonia	0.456	Bulgaria	0.475	Algeria	0.462	Poland	0.672	Botswana	0.358
Mongolia	0.493	Lithuania	0.480	Lithuania	0.548	Costa Rica	0.739	Mongolia	0.395
Lithuania	0.583	Croatia	0.491	Moldova	0.621	Pakistan	0.761	Hungary	0.396
South Africa	0.617	Panama	0.519	Burkina Faso	0.652	Thailand	0.954	Venezuela, R.B. de	0.451
Botswana	0.737	Mongolia	0.537	Trinidad and Tobago	0.673	Kazakhstan	0.964	Poland	0.465
Chile	0.778	Jamaica	0.537	Estonia	0.681	Lithuania	1.008	Costa Rica	0.581
Poland	0.813	Trinidad and Tobago	0.555	Latvia	0.704	Chile	1.012	Trinidad and Tobago	0.639
Trinidad and Tobago	0.823	Kazakhstan	0.555	Armenia	0.825	Vietnam	1.032	Lithuania	0.655
Costa Rica	0.858	Armenia	0.555	Kazakhstan	0.839	Estonia	1.147	Estonia	0.685
Hungary	0.873	Moldova	0.556	Mozambique	0.907	Sierra Leone	—	Sierra Leone	—

Source: World Bank staff compilation.
Note: Countries such as Bolivia, India, the Russian Federation, Cambodia, Papua New Guinea, and Lao PDR are not included in this table because of data unavailability. For Sierra Leone, poverty data were unavailable.

References

Angelsen, A., and D. Kaimowitz. 1999. "Rethinking the Causes of Deforestation: Lessons from Economic Models." *World Bank Research Observer* 14(1): 73–98.

Angelsen, Arild, and David Kaimowtiz. 2001. "Forest Cover and Agricultural Technology." In Matti Palo, Jussi Uusivuori, and Gerardo Mery, eds., *World Forests, Markets and Policies*, World Forests Volume III, 231–37. Dordrecht, London, and Boston: Kluwer.

Angelsen, Arild, and Sven Wunder. 2003. "Exploring the Forest-Poverty Link: Key Concepts, Issues and Research Implications." CIFOR Occasional Paper No. 40. Bogor, Indonesia.

Angelsen, A., E. Shitindi, and J. Aarrestas. 1999. "Why Do Farmers Expand Their Land into Forests? Theories and Evidence from Tanzania." *Environment and Development Economics* 4(3).

Barbier, E., J. Burgess, J. Bishop, and B. Aylward. 1994. "Deforestation: The Role of the International Trade in Tropical Timber." In K. Brown and D. Pearce, eds., *The Causes of Tropical Deforestation*. London: University College London Press.

Barr, Christopher. 1999. "Banking on Sustainability: A Critical Assessment of Structural Adjustment in Indonesia's Forest and Estate Crops Industries." CIFOR-WWF. Bogor, Indonesia.

Benhin, James K., and Edward B. Barbier. 2000. "Estimating the Biodiversity Effects of Structural Adjustment in Ghana." In Charles Perring, ed., *The Economics of Biodiversity Conservation in Sub-Saharan Africa: Mending the Ark,* 273–99. Cheltenham, U.K.: Edward Elgar.

Bhattarai, Madhusudan, and Michael Hammig. 2004. "Governance, Economic Policy and the Environmental Kuznets Curve for Natural Tropical Forests." *Environment and Development Economics* 9: 367–82.

Bojö, Jan. 2005. "Development Policy Lending: An ESSD Perspective on the Implementation of OP 8.60." Note presented to the ESSD council. World Bank, ENV-ESSD, Washington, DC.

Calibre Consultants and The Statistical Services Centre (SSC). 2000. "Numbers of Forest Dependent People." A feasibility study for DFID's Forestry Research Programme. University of Reading, U.K.

Capistrano, A. 1990. "Macroeconomic Influences on Tropical Forest Depletion: A Cross-Country Analysis." Ph.D. Dissertation, University of Florida, Gainsville.

Cattaneo, Andrea. 2001. "Deforestation in the Brazilian Amazon: Comparing the Impacts of Macroeconomic Shocks, Land Tenure and Technological Change." *Land Economics* 77(2): 219–40.

Chomitz, Kenneth M., and Timothy S. Thomas. 2003. "Determinants of Land Use in Amazônia : A Fine-Scale Spatial Analysis." *American Journal of Agricultural Economics* 85(4): 1016–28.

Cropper, M., C. Griffiths, and M. Mani. 1999. "Roads, Population Pressures, and Deforestation in Thailand, 1976–1989." *Land Economics* 75: 58–73.

Dickson, C. S., and N. M. Bird. 2004. "Forestry, Bushmeat and Livelihoods: Exploring the Coverage in PRSPs." Overseas Development Institute, London.

Dixon, S. 1995. "Introduction: The Nature of Structural Adjustment." In Simon, Spendgen, Dixon, and Naerman, eds., *Structurally Adjusted Africa: Poverty, Debt and Basic Needs*. London and Boulder: Pluto Press.

Geist, Helmut J., and E. F. Lambin. 2001. "What Drives Tropical Deforestation?" LUCC Report Series no. 4. CIACO, Louvain-la-Neuve, Belgium.

Glomstrod, S., M. Monge, and H. Vennemo. 1999. "Structural Adjustment and Deforestation in Nicaragua." *Environmental and Development Economics* 4(1): 19–43.

Glover, David. 1995. "Structural Adjustment and the Environment." *Journal of International Development* 7: 285–89.

Gueorguieva, Anna, and Katharina Bolt. 2003. *A Critical Review of the Literature on Structural Adjustment and the Environment.* Environmental Economics Series. Environment Department Papers No. 90. Washington DC : World Bank.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2004. "Governance Matters III: Governance Indicators for 1996–2002." World Bank, Washington, DC. Available at http://www.worldbank.org/wbi/governance/pdf/govmatters3_wber.pdf.

Kishor, Nalin, M. Mani, and Luis Constantino. 2004. "Economic and Environmental Benefits of Eliminating Log Export Bans—The Case of Costa Rica." *World Economy* 24(4): 609–24.

Lampietti, Julian, ed. 2004. "Power's Promise. Electricity Reforms in Eastern Europe and Central Asia." World Bank Working Paper No. 40.

Mainhardt, Heike. 2001. *IMF Intervention in Indonesia: Undermining Macroeconomic Stability and Sustainable Development by Perpetuating Deforestation*. Washington, DC: WWF–Macroeconomics for Sustainable Development Program Office.

Mani, Muthukumara. 2004. "An Overview of Environmental and Natural Resource Aspects of IBRD-Financed Development Policy Lending Operations in FY05." World Bank, ENV-ESSD, Washington, DC. (Internal note)

Margulis, S. 2004. "Causes of Deforestation of the Brazilian Amazon." World Bank Working Report, no. 22. Washington, DC.

Monela, G. C., S. A. O. Chamshama, R. Mwaipopo, and D. M. Gamassa. 2004. "A Study on the Social, Economic and Environmental Impacts of Forest Landscape Restoration in Shinyanga Region, Tanzania." First Draft. The United Republic of Kenya, Ministry of Natural Resource and Tourism Forestry and Beekeeping Division, and World Conservation Union (IUCN) Eastern Africa Regional Office. Study cofunded by PROFOR, World Bank. Washington, DC.

Munasinghe, Mohan, and Wilfrido Cruz. 1994. "Economywide Policies and the Environment: Lessons from Experience." World Bank Environment Paper # 10, Washington, DC.

Ndoye, O., M. Ruiz-Perez, and A. Eyebe. 1999. "NTFP Markets and Potential Forest Resource Degradation in Central Africa. The Role of Research for a Balance between Welfare Improvement and Forest Conservation." In T. C. H.Sunderland, L. E. Clark, and P. Vantomme, eds., "The NWFP of Central Africa: Current Research Issues and Prospects for Conservation and Development." Rome: FAO.

Oksanen, T., and C. Mersmann. 2003. "Forestry in Poverty Reduction Strategies—An Assessment of PRSP Processes in Sub-Saharan Africa." In T. Oksanen, B. Pajari, and T. Tuomasjukka, eds., *Forests in Poverty Reduction Strategies: Capturing the Potential.* EFI Proceedings No. 47. Joensuu, Finland.

OPCS. 2004a. *Good Practice Notes relating to the Development Policy Lending OP/BP 8.60: Designing Development Policy Operations*. World Bank, Washington, DC.

OPCS. 2004b. *Good Practice Notes relating to the Development Policy Lending OP/BP 8.60: Environmental and Natural Resource Aspects*. World Bank, Washington, DC.

Panayotou, T., and K. Hupe. 1996. "Environmental Impacts of Structural Adjustment Programmes: Synthesis and Recommendations." United Nations Environment Programme, Environment and Eco-

nomics Unit, Environmental Economics Series, Paper No. 21.

Pandey, K., and D. Wheeler. 2001. "Structural Adjustment and Forest Resources: The Impact of World Bank Operations." Policy Research Working Paper 2584. World Bank, Washington, DC.

Persson, A., and M. Munasinghe. 1995. "Natural Resource Management and Economywide Policies in Costa Rica: A Computable General Equilibrium (CGE) Modeling Approach." *World Bank Economic Review* 9(2): 259–85.

RECOFTC. 2004. "An Analysis of Community Forestry and Its Impact on Poverty, with an Emphasis on Asia." Briefing note in response to a question by Dr. Charles Bailey, Ford Foundation, Country Director, Vietnam. Prepared by the RECOFTC Program Team, August 31.

Reed, David. 1992. *Structural Adjustment and the Environment*. Boulder: Westview.

Repetto, Robert, and Wilfrido Cruz. 1992. "The Environmental Effects of Stabilization and Structural Adjustment Programs: The Philippines Case Study." World Resources Institute, Washington, DC.

Scherr, Sara J., Andy White, and David Kaimowitz. 2004. "A New Agenda for Forest Conservation and Poverty Reduction: Making Markets Work for Low-Income Producers." Forest Trends, CIFOR, and IUCN.

Schneider, Robert, E. Arima, A. Verissimo, Carlos Souza Jr., and Paulo Barreto. 2002. "Sustainable Amazon: Limitations and Opportunities for Rural Development." World Bank Technical Paper No. 515, Environment Series. Washington, DC.

Seymour, Frances, and Navroz K. Dubash. 2000. *The Right Conditions: The World Bank, Structural Adjustment and Forest Policy Reform*. Washington, D.C.: World Resources Institute.

Soares-Filho, Britaldo, Ane Alencar, Daniel Nepsted, Gustavo Cerqueira, Maria Del Carmen Vera Diaz, Sergio Rivero, Luis Solórzano, and Eliane Voll. 2004. "Simulating the Response of Land-Cover Changes to Road Paving and Governance along a Major Amazon Highway: The Santarém-Cuiabá Corridor." *Global Change Biology* 10: 745–64.

Tharakan, P., and M. MacDonald. 2004. "Poverty-Environment: Developing and Testing a PRSP Evaluation Methodology." WWF Macroeconomics Program Office, Washington, DC.

Vedeld, P., A. Angelsen, E. Sjaastad, and G. K. Berg. 2004. *Counting on the Environment: Forest Incomes and the Rural Poor*. Washington, DC: World Bank.

Vincent, J. 1994. "The Tropical Timber Trade and Sustainable Development." In K. Brown and D. Pearce, eds., *The Causes of Tropical Deforestation*. London: University College London Press.

Warford, J., A. Schwab, W. Cruz, and S. Hansen. 1994. "The Evolution of Environmental Concerns in Adjustment Lending: A Review." Environment Department Working Paper No. 65. World Bank, Washington, DC.

White, Andy, and Alejandra Martin. 2002. *Who Owns the World's Forests? Forest Tenure and Public Forests in Transition*. Washington, DC: Forest Trends.

World Bank. 2002. "A Revised Forest Strategy for the World Bank Group." Washington, DC.

———. 2005. "Azerbaijan. Raising Rates: Short-Term Implications of Residential Electricity Tariff Rebalancing." Europe and Central Asia Region, Environmentally and Socially Sustainable Development. Report No. 30749-AZ.

World Bank/DFID. 2005. *Agriculture, Rural Development and Pro-poor Growth*. Draft (February 2005). World Bank, Washington DC.

Wunder, Sven. 2003. *Oil Wealth and the Fate of the Forest: A Comparative Study of Eight Tropical Countries*. New York: Routledge.

Wunder, Sven, and William D. Sunderlin. 2004. "Oil, Macroeconomics, and Forests: Assessing the Linkages." *The World Bank Observer* 19(2): 231–57.

WWF. 1994. *Structural Adjustment and the Environment: Jamaica Country Study*. Washington, DC: WWF.

Young, C., and J. Bishop. 1995. "Adjustment Policies and the Environment: A Critical Review of the Literature." Working Paper Series 1, Center for Research in Experimental Economics and Political Decision Making (CREED), Amsterdam.