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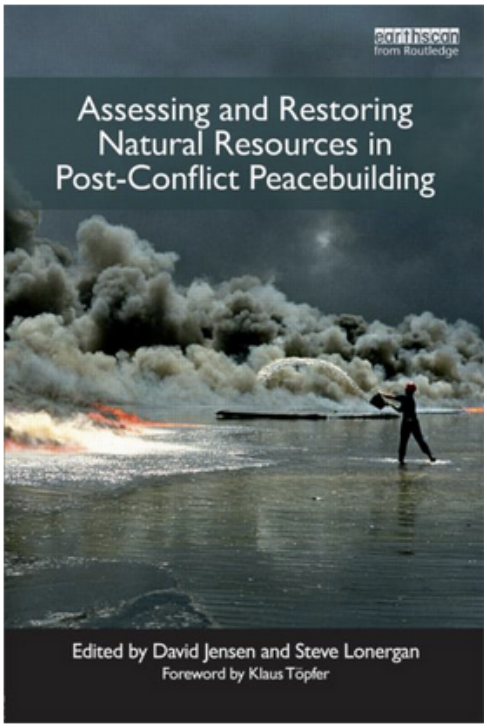

Natural resources and post-conflict assessment, remediation, restoration, and reconstruction: Lessons and emerging issues

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PART 5

Lessons learned

Natural resources and post-conflict assessment, remediation, restoration, and reconstruction: Lessons and emerging issues

David Jensen and Steve Lonergan

Post-conflict situations are often characterized by multiple transition processes, including not only the transition from conflict to peace, but also democratization, decentralization, and market liberalization. The transformation of conflict-affected countries into peaceful, stable, and more prosperous ones is an immensely complex task, often susceptible to contradictory pressures and to the risk of relapsing into violence (UNDP and World Bank 2007).

Among the immediate challenges in post-conflict situations are (1) defining needs and assigning priorities to them, (2) coordinating response and reconstruction, and (3) implementing a coherent plan to consolidate peace and prevent the relapse of violence. Simultaneous activities are also undertaken to lay the future foundations for good governance and sustainable development. All of these efforts must respond and adapt to a complex and fluid political environment, pressure for rapid recovery and growth, and expressions of investment interest from the private sector.

Assigning priority to the management of natural resources and the environment is often difficult, given competing priorities that include security sector reform; disarmament, demobilization, and reintegration; the return of displaced persons; and the organization of national elections. In many cases, the drive for rapid reconstruction comes at the expense of transparency, equitable sharing of resource wealth, and the sustainable management of natural resources. In the worst circumstances, natural resources are captured by elites, provide an avenue for corruption, and are used to sustain short-term political interests.

Although countries emerging from conflict often delay decisions on natural resource management until stability is restored, this approach can prove disastrous for long-term sustainability. As the cases in this book demonstrate, natural resources are essential assets in the peacebuilding process, and decisions about

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how they will be managed, owned, allocated, and accessed cannot be put off. Poor choices made early on (including the choice to defer action) may establish trajectories that will undermine the fragile foundations of peace. Moreover, in the absence of clear policies and laws, some choices are inevitably made by the most powerful stakeholders; when such choices become institutionalized, it may take decades to undo then. The key challenges are (1) to identify those natural resources that have the greatest potential to contribute to conflict and peace, and (2) to determine how they should be managed and which stakeholders should be engaged in the process. Early decisions about resource governance can be critical, in the long run, in determining whether social relations follow a peaceful or a violent path (Conca and Wallace 2012*).[1]

Furthermore, failure to respond to the environmental needs of war-torn societies can greatly complicate the difficult tasks of peacebuilding. For example, the degradation or contamination of renewable resources, such as water and arable land, can deepen human suffering and increase vulnerability to natural disasters. At worst, tensions triggered by environmental damage or contested access to natural resources may lead to renewed violent conflict. Ultimately, poor governance of natural resources can threaten the effective functioning of the governmental, economic, and social institutions necessary for sustained peace (Conca and Wallace 2012*).

Too often, environmental governance and the sustainable management of natural resources are perceived as being distinct from—and sometimes even in conflict with—peacebuilding and development. Both this book and the other books in the series clearly demonstrate that this view is mistaken. In fact, natural resources and the environment hold tremendous peacebuilding potential and underpin many peacebuilding priorities. For example, opportunities to kick-start economic growth often depend on oil, minerals, and other high-value natural resources, and the creation of new jobs and sustainable livelihoods typically relies on a range of natural assets, including land, water, forest resources, and minerals (Brown et al. 2012*). Post-conflict governments also rely on revenues derived from the extraction, sale, and trade of natural resources. And shared natural resources or common environmental threats can create platforms for dialogue, confidence building, and cooperation between divided groups (Conca and Wallace 2012*). In short, natural resources can be a fundamental engine of economic growth and stability in post-conflict countries, provided that they are managed transparently, equitably, and sustainably. In some cases, they can also be used as the basis for regional cooperation and economic integration (Bruch, Wolfarth, and Michalcik 2012*).

To unlock this potential, it is essential to determine, at the outset of the reconstruction process, how natural resource management and environmental governance can concretely support conflict prevention, peacebuilding, and broader

[1] Citations marked with an asterisk refer to chapters within this book.

development goals. The next steps involve the development of action plans, capacity-building programs, environmental remediation and restoration projects, and investments in key infrastructure. Throughout the reconstruction process, it is essential to minimize the environmental impacts of reconstruction itself; practitioners must also be on the alert for potential negative interactions between different peacebuilding priorities (Unruh and Shalaby 2012*). Particularly in the case of natural resources that are being used to support multiple peacebuilding goals and that are therefore subject to multiple competitive pressures, success in one area of peacebuilding may have unintended consequences in another (Nanthikesan and Uitto 2012*).

This book is designed to help domestic and international actors understand how to achieve these multiple objectives more effectively. The twenty-one chapters in the book were written by thirty-five specialists representing a cross section of practitioners from United Nations agencies, government ministries, nongovernmental organizations, academia, and the military. Taken together, the case studies demonstrate that environmental and natural resource governance can support more effective peacebuilding and can be better integrated into peacebuilding programs, policies, and practices.

This chapter consists of seven major sections that cover the following topics: (1) post-conflict environmental assessment; (2) remediation of environmental hot spots; (3) restoration of natural resources and ecosystems; (4) environmental dimensions of infrastructure and reconstruction; (5) crosscutting lessons; (6) coordinating and sequencing interventions; and (7) future outlook.

POST-CONFLICT ENVIRONMENTAL ASSESSMENT

In the immediate aftermath of conflict, among the first steps taken by domestic and international actors are to identify needs, define priorities, and determine the amount of financing that will be required for relief, recovery, and peacebuilding. Priorities and funding needs are often identified through needs assessments conducted jointly by domestic stakeholders and international organizations such as the UN, the World Bank, and the European Union.

For the first two to four years after conflict, needs assessments provide the basis for donor financing and influence the direction of reconstruction. It is thus imperative to ensure, from the outset, that needs assessments pay particular attention to natural resource management and environmental governance issues, in order to help prevent conflict relapse and support stabilization and peacebuilding. The inclusion of such issues provides a critically important basis for financing and reconstruction. If environmental and natural resource issues are neglected or marginalized in the needs assessment process, it may be years before they are addressed—and the country in question will miss a critical window of opportunity for reform.

At the outset of the reconstruction process, a rapid environmental assessment should be undertaken to identify the key impacts, risks, and opportunities that

must be integrated into the peacebuilding process and addressed within the first two years. Rapid assessments can then be followed by comprehensive assessments or by sector- or region-specific assessments designed to collect information that is more quantitative. Because post-conflict situations are fluid and politically complex—and involve winners and losers who have competing interests, needs, and agendas—one of the main challenges is to ensure that assessments are impartial and backed by sound scientific data.

In fragmented countries—where natural resource ownership, access, and allocation may be highly politicized, divided along ethnic lines, or both, and where certain stakeholders may be attempting to protect vested interests in such resources—international organizations typically lead environmental and natural resource assessments. Even where adequate institutions exist and rule of law applies, domestic authorities may lack the necessary scientific expertise and operational capacity to carry out assessments, and may call on the international community for assistance. International support may also be requested when a conflict causes transboundary environmental damage. Since 1999, international organizations such as the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), and the World Bank have been asked to oversee the design and implementation of more than thirty post-conflict assessments, which have been conducted in cooperation with domestic partners.

The cases in this book that address environmental assessment reveal eight key lessons—highlighted in the following sections—about (1) the scope and approach of effective post-conflict environmental assessments, and (2) the importance of integrating environmental governance and natural resource management into reconstruction plans and peacebuilding strategies.

Direct and indirect pathways of environmental damage

Post-conflict environmental assessments conducted since 1999 have revealed that conflict can damage or affect natural resources and the environment through many pathways, both direct and indirect (UNEP 2009a; Jensen 2012*; Conca and Wallace 2012*; Briggs and Weissbecker 2012*). The six principal pathways for direct environmental damage that have been identified are as follows:

- Toxic hazards from the bombardment of industrial sites and urban infrastructure.
- A legacy of weapons, landmines, unexploded ordnance, and depleted uranium munitions.
- Human displacement.
- The use of extractive industries to fund conflict.
- The loss of water supply, sanitation, and waste disposal infrastructure.
- Direct targeting of natural resources, particularly as part of scorched-earth military tactics.

For the safety of local populations and international workers in post-conflict situations, assessments must evaluate the short- and long-term risks to human health and recommend mitigation measures (Burger 2012*; Briggs and Weissbecker 2012*).

It is also essential to understand indirect pathways to environmental damage, two of which are particularly relevant. First, violent conflict and the loss of economic opportunity may compel affected populations to engage in unsustainable coping mechanisms or survival strategies, such as overharvesting or the liquidation of natural resources. In some regions of Afghanistan, for example, residents removed as much as 99 percent of the forest cover to sell as charcoal, or so that the land could be used for agriculture and grazing (Jensen 2012*). In many cases, economic activity shifts from a formal to an informal basis, operating outside government regulation. And conflict economies often emerge that consist of several distinct but intertwined segments: the remains of the formal economy, the international aid economy, the informal economy, and the criminal economy (Conca and Wallace 2012*). Second, violent conflict disrupts state and local institutions and initiatives, undermining the enforcement of laws and the protection of resource rights. Conflict thus leads to poor resource governance; loss of capacity; abundant space for illegality, corruption, and land grabbing;[2] and the collapse of positive resource management practices (Conca and Wallace 2012*). The impacts of conflict on land tenure have significant implications not only for future land and resource use but also for livelihoods and commercial investments (Unruh and Shalaby 2012*). Though there is little question that violent conflict often causes tremendous direct damage to the environment, in many cases, indirect impacts cast a darker shadow because of their capacity to undermine institutions, disrupt livelihoods, affect land and resource tenure, alter social practices, and change economic systems (Carius and Maas 2012*; Conca and Wallace 2012*; Jensen 2012*; Unruh and Shalaby 2012*; Lonergan 2012*).

Assessing natural resource risks and opportunities—and building governance capacity to address them

In addition to evaluating the direct and indirect environmental damage caused by conflict, assessments should take into account the specific role natural resources played in the conflict itself and in the national political economy. In particular, assessments should attempt (1) to understand how the mismanagement of natural resources triggered, sustained, fueled, or financed conflict, and (2) to identify the key actors that shape resource governance (Liljedahl et al. 2012*; Jensen 2012*). Such efforts should also include an analysis of the risk of potential conflict relapse from new sources of conflict, such as those that might emerge from tensions over extractive industries, renewable resources, or land.

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[2] Land grabbing is the illegal or coerced seizure of land in the absence or against the will of the owner or legitimate landholder, whether or not the land is held under statutory law.

An analysis of relapse risk typically focuses on specific conflict drivers and risk factors, including the following (Nanthikesan and Uitto 2012*; UNDG 2012):

- The sharing of resource wealth and its attendant benefits.
- Transparency with regard to resource contracts, payments, and the potential social and environmental impacts of the extraction process.
- Increasing competition over scarce resources.
- Environmental degradation.
- Tensions over land tenure and resource rights.
- Stakeholder and civil society participation in decision making.
- Transboundary dynamics.
- National and local capacity for resolving disputes and grievances.

Where extractive resources provide a substantial part of a country's revenues, or where large portions of the population depend on land and renewable resources, there is particular vulnerability to conflict relapse in the absence of improved governance.

Once the risks of conflict relapse have been identified, an assessment must be undertaken to determine how the environment and natural resources can support peacebuilding and national development priorities—such as reconciliation and political inclusion, good governance, revenue generation, the restoration of basic services, economic recovery, and the creation of jobs and livelihoods for all, including returnees and excombatants. Demonstrating, through such an assessment, how natural resources underpin peacebuilding priorities can help build a stronger case for strengthening national resource management and environmental governance capacity at the outset of reconstruction. Assessments conducted by UNEP in the Central African Republic, the Democratic Republic of the Congo, and Sierra Leone, for example, demonstrated how natural resources could support national peacebuilding priorities associated with human development, livelihoods, and governance, thereby paving the way for the integration of natural resource management into peacebuilding and reconstruction (UNEP 2010, 2011a; Jensen, Halle, and Lehtonen 2009; Brown et al. 2012*).

The final step, once conflict relapse risks and resource-related peacebuilding opportunities have been identified, is to assess national and local capacities to address them. Such an assessment must reach beyond formal state institutions to engage the social and local context in which most resource governance actually occurs. Among the specific factors that must be assessed are the quality of institutions, the legal and policy framework, coordination mechanisms, financial and operational resources, technical expertise, and the capacity of civil society to participate in decision making and monitor compliance with relevant laws. Finally, the assessment should identify ongoing international support to the environmental and natural resource sectors and inventory all international environmental agreements the country has ratified (Conca and Wallace 2012*).

Emerging areas for post-conflict environmental assessment

Post-conflict assessments conducted by international organizations or agencies have given insufficient attention to four emerging areas. First, the assessments have failed to reflect the complexity of post-conflict economies, which typically include several distinct but intertwined segments: the remains of the formal economy, the international aid economy, the informal economy, and the criminal economy. Each of these segments has a different relationship to natural resources, and it is essential to understand not only how they are embedded in transnational commodity chains, but also how private sector interests exploit weak governance to accelerate extraction and minimize payments for resource concessions (Conca and Wallace 2012*). The linkages between post-conflict economies and national, regional, and global criminal networks, and the ways in which these networks drive insecurity, corruption, and violence, must also be carefully considered. By failing to address the different segments, peacebuilding strategies risk overemphasizing one while ignoring others; there is also a danger of implementing initiatives that work at cross-purposes to each other or to peacebuilding goals.

Second, post-conflict environmental assessments have generally failed to address the differential effects of conflict on men and women, particularly with respect to (1) gender-specific risks from and impacts of conflict-related environmental degradation; (2) gender-specific impacts with respect to resource access, benefits sharing, rights, and ownership; (3) opportunities for women's participation and empowerment in decision making regarding natural resources; and (4) the risk of gender-based violence that is linked to resource use. Conflict often precipitates the breakdown of cultural norms and structures: communities are displaced, combatants violate the social compact, and traditional power structures are thrown into upheaval. But such changes affect men and women in quite different ways; to improve the design and implementation of recovery programs, it is essential to take such differences into account (Benard et al. 2008).

Third, assessments must consider the potential for (1) negative interactions between different peacebuilding priorities, and (2) unintended harm to natural resources caused by peacebuilding interventions (Nanthikesan and Uitto 2012*; Unruh and Shalaby 2012*; Carius and Maas 2012*), both of which can lead to serious repercussions. Conflict-affected settings differ profoundly from peaceful ones, but little is known about the ways in which peacebuilding priorities interact, particularly when they rely on or compete for the same natural resources. To date, efforts to address such interactions have been largely unplanned and inadequately thought through. For example, efforts to expand and improve roads in Afghanistan, which has a weak system for protecting land rights, failed to consider the potential effects on land and livelihoods; one result was extensive land grabbing, as land values increased near the new roads (Unruh and Shalaby 2012*). Assessments should begin to systematically identify where potential interactions between priorities or unintended environmental harm could occur.

Finally, assessments should address the vulnerability of the environment and natural resources to natural hazards and climate change. In particular, it is critical to determine how changing precipitation patterns, rising sea levels, and increases in the frequency and intensity of extreme weather might undermine livelihoods, reduce the productivity of key economic sectors, disrupt human health, and alter settlement and migration patterns (Matthew and Hammill 2012*). Assessments should also identify specific measures that can enable fragile societies to (1) better cope with the additional stress of climate impacts, and (2) build national and local capacity to better manage climate and disaster risk.

Dealing with complexity, uncertainty, and the future

Many forces can affect the resource base during post-conflict recovery: the resurgence of economic development; the return of refugees and internally displaced persons; population growth; the award of major resource concessions; increasing resource scarcity; and resource consumption resulting from reconstruction work. Climate change, which is likely to drastically alter regional and local environments and to redraw political, economic, and social maps, will further complicate the analysis of post-conflict situations (Matthew and Hammill 2012*). Finally, other influences, such as changes in global markets and regional politics, can also transform the post-conflict context (Carius and Maas 2012*).

Although standard post-conflict environmental assessments are useful for understanding impacts, risks, and opportunities, they provide only a snapshot of conditions at a given moment. In other words, they attempt, with limited information, to rationalize and simplify a high degree of complexity. To account for the dynamic nature of natural resources and the rapid change that characterizes post-conflict situations, however, practitioners' analytical tools must be increasingly forward looking (Carius and Maas 2012*).

After a major conflict, it takes at least a generation for the social contract to be renewed and for reconciliation to occur (Lederach 2005). Thus, it is imperative to outline, discuss, and attempt to understand the likely shape of the world in which reconstruction will occur. To address the challenges posed by a dynamic environment requires scenario-based approaches that incorporate realistic projections of likely changes and their effects. Actively integrating stakeholders into such a process is crucial and can improve both their awareness of environmental concerns and their sense of ownership. Discussions of the future also require great sensitivity: stakeholders who anticipate that they will be adversely affected by coming changes may take immediate steps to attempt to interfere with the changes (Carius and Maas 2012*).

Once a few distinct scenarios have been established, a process known as "backcasting" comes into play, in which pathways that can potentially link the current situation to a desirable future are identified; the next step is to determine what specific events must occur in order to realize a desirable scenario, what the potential obstacles might be, and how to overcome those obstacles (Carius and

Maas 2012*). In the case of the Iraqi marshlands, for example, one of the authors, working in consultation with Iraqi experts, developed three scenarios to identify the factors that needed to be addressed to reach each outcome. The exercise revealed that one of the scenarios was impossible because of ongoing development efforts and political issues in the wider region. The analysis not only helped stakeholders to understand what was possible but also enabled them to rally around a common vision (Lonergan 2012*).

The limits of predominantly technical approaches to environmental assessment

Post-conflict assessments, such as those undertaken by UNEP, are generally based on the assumption that those who are conducting the assessments are impartial and functioning in a depoliticized environment. Thus, international organizations act as honest brokers, conducting scientific assessments on the basis of field sampling, laboratory analyses, satellite images, secondary data, and stakeholder interviews. If the UN or the European Union is to work effectively with governments and other stakeholders in war-torn societies subject to competing agendas, there may be little alternative to this approach. Indeed, impartiality has been the core source of added value in UNEP's approach since the outset, and a principal factor in the broad level of support its assessment reports have received.

Nevertheless, it is important to recognize the trade-offs involved in a predominantly technical approach to assessment. In societies that have been affected by violent conflict, different actors will bring different realities and "ways of knowing" to the table. Large segments of the population may find the discourse of modern science inaccessible—and may regard "facts" as political matters. Under such circumstances, efforts to depoliticize knowledge may make it more feasible to work under complex and difficult circumstances; nevertheless, technical approaches risk reducing the extent to which the intended beneficiaries of peacebuilding interventions understand and take ownership of assessment results. Moreover, focusing almost exclusively on what can be quantified may prevent questions of resource governance and equity from being addressed (Conca and Wallace 2012*; Nanthikesan and Uitto 2012*).

As the UN embarks on the use of new models of post-conflict environmental assessment—which call for partnerships that extend beyond a country's environmental ministry, and a focus on cooperation grounded in shared environmental knowledge—the potential value of broadening the approach to assessment will likely come to the foreground. If environmental assessments are to serve not only as resource management guides but also as confidence-building tools, the task of widening the audience for the assessments becomes central (Conca and Wallace 2012*). It may not be a coincidence that UNEP's most successful post-conflict assessment, which was conducted in Sudan, included more than six months of consultation with stakeholders (Jensen 2012*).

Using a tailored approach to stakeholder consultation and national ownership

In the typical post-conflict situation, historical data are lacking, environmental monitoring is sporadic, and interagency coordination (assuming that agencies exist and are functioning) is poor to nonexistent. And even where monitoring capacity exists, large-scale environmental assessments require access to information, data exchange, and institutional transparency in settings often dominated by suspicion and exclusion (Conca and Wallace 2012*; Anand 2012*).

To overcome such challenges, international agencies or organizations are often asked to lead impartial assessments. But maintaining an impartial and scientific approach to the assessment process, while simultaneously securing stakeholder buy-in and creating a sense of national ownership, creates difficulties of its own. The cases featured in this book suggest a number of ways to overcome this problem.

First, to build credibility, create a sense of national ownership, and enhance transparency, assessments should employ both international specialists and representatives of government and civil society (Jensen 2012*). When this model is used, however, it is essential to clarify—from the outset, and in writing—both the scope of the work and the participants' roles and responsibilities; it is also necessary to define the role of the assessment in relation to national priorities and follow-up plans. In the post-conflict environmental assessments in Afghanistan and Sudan, for example, experts from across the UN system and from domestic and international nongovernmental organizations took part in the assessment process and continued to play key roles in implementing the recommendations (UNEP 2003, 2007a).

Second, to maximize the transparency of the assessment process and help all parties agree on a common set of analytical techniques, it is useful to divide field samples among the principal parties in the conflict and have them conduct independent analyses (UNEP 2009b). Environmental science, including field sampling, has proved to be a powerful means of putting facts on the table and preventing politicization. UNEP assessments conducted in both Gaza and Lebanon used this approach (Jensen 2012*).

Third, one of the best means of securing stakeholder buy-in is to conduct extensive consultations at each step of the assessment process: from determining the initial scope of the assessment, to implementing the assessment plan, to creating the final assessment report. Engaging stakeholders in highly participatory processes such as workshops and public meetings demonstrates that their voices are being heard, strengthens their sense of ownership in the process, and increases their acceptance of analytical findings and recommendations (Carius and Maas 2012*). UNEP's assessment in Sudan, for example, included six months of consultation that was crucial to the project's success: it validated the fieldwork, ensured that the study was attuned to local issues and needs, and paved the way for national endorsement of assessment outcomes. As part of the process, UNEP also worked closely with the Government of National Unity and the government

of Southern Sudan to align UNEP's assessment activities with the National Plan for Environmental Management (Jensen 2012*).

Fourth, for consultation to succeed, it is critical to identify the needs of target audiences and determine how best to engage them and present findings. Engaging audiences by means of stakeholder workshops, discussing findings with the participants, and developing comprehensive reports that reflect results and priorities in terms that are accessible to the target audience not only helps to ensure that an analysis is perceived as legitimate but can also support the development of a sense of ownership (Carius and Maas 2012*).

Finally, although international agencies, donors, and nongovernmental organizations may take a lead technical role in identifying needs, national actors should ideally be responsible for assigning priorities to those needs. The assignment of priorities should occur at the national level, through approaches that are designed to secure inputs from a wide range of stakeholders. International actors can support such efforts by convening workshops on priorities, sharing experiences and best practices from other post-conflict countries, and ensuring the participation of key stakeholders; they should also help to ensure that the process is run in a fair, open, and transparent way, and that wide national buy-in is achieved. Once priorities have been identified, the utility of post-conflict environmental assessments is significantly increased if the national government and its international partners develop a detailed action plan. Dedicated efforts must then be made to communicate the action plan to key donors and to fully integrate it into the relevant post-conflict policy frameworks.

Attuning assessments to context and policy processes

The cases featured in this book demonstrate that post-conflict environmental assessments can be an effective tool for identifying critical environmental needs and integrating them into relief, recovery, and peacebuilding policies and processes. A key lesson derived from such efforts is that the most successful assessments are tailored to the particular post-conflict context and to the political and policy processes they are meant to inform. In particular, assessments that are (1) designed to directly inform an ongoing policy process, and (2) written in terms that the target audience can understand have a greater impact than stand-alone assessments (Jensen 2012*). The structure and language of the environmental, conflict, and peacebuilding assessments conducted by UNEP in the Central African Republic and Sierra Leone, for example, were tailored to inform a larger peacebuilding strategy (UNEP 2010; Jensen, Halle, and Lehtonen 2009). In Iraq, in contrast, the environmental needs assessments were not properly aligned to the policy process; as a result, the final needs assessment document did not fully reflect the needs of the policy process (UN and World Bank 2003).

With respect to policy change, mobilization of financial resources, and media coverage, four principal factors have determined the overall impact of UNEP's post-conflict environmental assessments (Jensen 2012*):

- The amount of funding and time available for the assessment.
- The overall level of national ownership and stakeholder buy-in.
- Clearly identifying priority needs and developing a detailed budget to meet those needs.
- The ability to secure early and sustained financial and political support from donors.

In all cases, trade-offs must be made between the assessment budget, the timing of the assessment, and the scope of the assessment. Trade-offs must also be made between speed and comprehensiveness, qualitative and quantitative approaches, and degree of national ownership. The cases in this book suggest that a rapid but broad assessment that will render information available as soon as possible is essential to early post-conflict policy formation and priority setting. Ideally, however, such rapid assessments should be followed by more comprehensive ones that can inform on-the-ground programming (Jensen 2012*; Conca and Wallace 2012*).

All assessments must be designed to take context into account, including the duration, intensity, geographic distribution, and root causes of the conflict; the weapons technology and military tactics used; and the nature of both the conflict economy and the current political economy. As post-conflict environmental assessments continue to mature, it will become increasingly important to tailor the format and findings to the needs of specific post-conflict policy processes and frameworks, such as humanitarian appeals, early recovery plans, national development plans, peacebuilding strategies, poverty reduction strategies, UN common country assessments, and UN development assistance frameworks (Jensen 2012*; Carius and Maas 2012*).

Evaluating the cost of addressing environmental damage and assigning priorities to needs and economic opportunities are becoming standard elements in post-conflict assessments. In particular, it is essential to conduct a detailed economic analysis of the financing required for a two- to three-year period and to identify the principal actors who are responsible for follow-up. Costing was one of the core features of the assessments that UNEP and the World Bank conducted in Somalia in 2005, and of those conducted in Lebanon after the 2006 conflict with Israel (UN and World Bank 2007; UNDP 2007; World Bank 2007; UNEP 2007b; Jensen 2012*); it was also a major component of the environmental assessments undertaken for the Democratic Republic of the Congo and Sudan (UNEP 2007a, 2011a).

Improving coordination and the use of outside capacity

Many different agencies within the UN system are potential sources of expertise and information on the environment and natural resources. For example, UNEP typically focuses on renewable resources, biodiversity, environmental quality, and transboundary dynamics; UN-HABITAT (the United Nations Human Settlements Programme) on land and urban settlements; the Food and Agriculture

Organization of the United Nations on agriculture, forests, and fisheries; the World Health Organization (WHO) on health and chemicals; the United Nations Industrial Development Organization on industry; UNICEF (the United Nations Children's Fund) on water and sanitation; and the United Nations Development Programme (UNDP), in partnership with the World Bank, on governance and extractive industries. Yet in many cases, agencies have conducted full or sector-specific environmental assessments without fully coordinating such efforts with other agencies or sharing findings. UNEP, UNDP, and the World Bank, for example, all conducted independent environmental assessments in Lebanon, sharing only limited amounts of field data (Jensen 2012*).

UNEP has conducted the majority of post-conflict environmental assessments, but there are few mechanisms in place to obtain assistance from thematic or regional experts from other UN agencies or to request access to country-specific information held by resident agencies. Similarly, mechanisms that would enable UNEP to draw on civilian capacity and expertise from outside the UN system need strengthening.

To take advantage of the potential both within and outside the UN system, a more strategic approach is required that would both coordinate more fully with an expanded set of international peacebuilding actors and engage a wider set of domestic stakeholders (Conca and Wallace 2012*).

REMEDIATION OF ENVIRONMENTAL HOT SPOTS

In addition to causing loss of life and destroying homes, industries, and public infrastructure, many conflicts create a legacy of chemical contamination, hazardous waste, landmines, and unexploded ordnance, all of which can pose significant risks to human health and disrupt recovery efforts. While the cost of remediating such hot spots may be high, it is outweighed by the benefits of protecting human health and restoring the quality of critical resources such as land and water (Briggs and Weissbecker 2012*).

A number of post-conflict countries or regions, including Cambodia, Iraq, Lebanon, Serbia, and Sierra Leone, have had to remediate environmental hot spots created by conflict. In many cases, the countries or regions lacked sufficient technical capacity to safely identify and dispose of hazardous materials; as a result, international actors have played an essential role, not only in identifying hot spots but also in designing and implementing remediation plans.

It is critically important for the designers of remediation programs to identify all the ways in which a site may have been (or could be) contaminated. Thus, in setting the scope of a remediation program, project leaders must address three major questions (Thummarukudy, Brown, and Moosa 2012*):

- What causes of contamination, both preexisting and conflict-related, should be addressed during remediation? (Some level of environmental contamination often predates the conflict.)

- What level of remediation and restoration should the project achieve? (For example, should the goal be to return to natural conditions, to pre-conflict conditions, or to some other condition?)
- What new or existing sources of pollution may recontaminate the site?

The following six subsections highlight lessons from the case studies that address post-conflict remediation of environmental hot spots—severely polluted areas that pose a threat to human health, the environment, or both.

Addressing environmental hot spots: An immediate need

Addressing the risks associated with environmental hot spots should be a humanitarian priority—both to protect human health and to prevent the further degradation of crucial resources such as drinking water and fertile land (Briggs and Weissbecker 2012*; Thummarukudy, Brown, and Moosa 2012*). Left unattended, the risks associated with contamination can undermine public confidence in government. At the same time, the rapid remediation of environmental hot spots can serve as an early and visible peace dividend, and should therefore be considered as a possible quick-impact peacebuilding project (Tamer-Chammas 2012*; Thummarukudy, Brown, and Moosa 2012*).

When it comes to chemical contamination, the main lesson is that cleanup costs tend to increase with time, as contaminants migrate through the soil and spread to groundwater, as occurred in Serbia. Chemicals that remain on the surface, in contrast, can be remediated more easily and at a lower cost. Thus, rapid assessments should be used to identify hot spots as soon as possible—and, once they are identified, domestic agencies and organizations and the international community should assign priority to their remediation (Thummarukudy, Brown, and Moosa 2012*).

When environmental assessments identify acute environmental risks from contaminated sites, public-awareness campaigns are also needed to alert residents to risks; to inform them of safe practices; and to prevent the spread of misinformation and panic. After the escalation of hostilities in Gaza in late 2008 and early 2009, for example, the public was alerted to the risk of drinking contaminated water and consuming contaminated vegetables (UNEP 2009b). Finally, where public health is at risk, changes in environmental quality and public health should be monitored, both during and after remediation (Briggs and Weissbecker 2012*; Burger 2012*; Thummarukudy, Brown, and Moosa 2012*).

It is important to note that in post-conflict situations, remediation is often only one small step in a much longer and larger process that encompasses both environmental restoration and improved governance of natural resources. In many cases, the cleanup of environmental hot spots can be a starting point for increasing environmental awareness, building public support for environmental protection and management, and catalyzing greater political interest in the broader environmental challenges facing the country (Thummarukudy, Brown, and Moosa 2012*).

Using a full-life-cycle approach to hazardous waste

Regardless of whether hazardous waste is generated by military or peacekeeping operations, there is no quick fix. From the outset of a remediation project, the complete hazardous waste life cycle must be taken into account: from collection to storage, transport, treatment, and final disposal. Because many post-conflict countries lack sufficient expertise and capacity to treat and dispose of hazardous waste, storage is often used as a temporary solution. Experience suggests, however, that this approach can create more problems in the long run:

- Poor storage of hazardous waste creates secondary contamination sites, thus compounding health risks. Examples of improperly stored hazardous waste include oil waste in Lebanon and asbestos in Gaza (UNEP 2006, 2007b).
- Storage sites are seldom secure, and storage methods are rarely in accordance with international best practices (Thummarukudy, Brown, and Moosa 2012*).
- Local waste management contractors in some countries, including Afghanistan, have illegally dumped hazardous waste instead of storing it (UNEP 2012).
- The temporary storage of hazardous waste often triggers an "out of sight, out of mind" reaction; as a result, donor support wanes when immediate risks are mitigated. Instead of continuing to address the full cost of treatment and disposal, donors may leave the problem to national authorities, who generally lack the necessary resources and expertise.

The case studies featured in this book also show, however, that it is seldom feasible to build a hazardous waste treatment and disposal facility in a post-conflict setting. First, as many as ten years may be required to create adequate capacity for regulation, operation, monitoring, and enforcement; second, competing priorities are likely to render management and maintenance costs unaffordable. The best solution is a regional one: to the extent possible, neighboring countries with internationally accredited treatment and disposal facilities should be used. Where there are no regional facilities, international ones should be sought.

Hazardous waste that crosses international borders must comply with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and related regional agreements (such as the Bamako Convention, which bans the import of hazardous waste into Africa and controls the transboundary movement and management of hazardous waste within Africa).[3]

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[3] For the text of the Basel Convention and additional information, see www.basel.int. The text of the Bamako Convention is available at www.africa-union.org/root/au/documents/treaties/Text/hazardouswastes.pdf.

And where local contractors are used to transport hazardous waste to treatment or disposal sites, chain-of-custody systems (including monitoring and enforcement) should be implemented to prevent illegal dumping.

In addition to generating hazardous waste, many conflicts—in particular, short-duration, high-intensity conflicts—generate significant amounts of rubble and debris. For example, during the escalation of hostilities between Israel and Hamas in late 2008 and early 2009, the destruction of buildings and infrastructure in Gaza generated an estimated 600,000 tons of rubble and demolition waste (UNEP 2009b). After the 2008 conflict in Lebanon, waste estimates initially ranged from 2.5 to 3 million cubic meters, but the actual volume of waste removed was 5.75 million cubic meters (Tamer-Chammas 2012*).

In many cases, debris and rubble can be recycled and used to construct buildings or roads. To avoid creating new contamination and health risks, however, care must be taken to screen for and remove any hazardous materials, such as asbestos. In Lebanon, 65,000 tons of rubble were screened and safely recycled for reconstruction—an example of good practice; unfortunately, most of the rubble was disposed of illegally, without environmental safeguards, or both (Tamer-Chammas 2012*).

Assigning priority to cleanup sites

Because post-conflict cleanup may exceed available financing (Jensen 2012*), it is often necessary to assign priority to particular sites (Thummarukudy, Brown, and Moosa 2012*). To support this process, a transparent decision-making framework should be developed that will allow stakeholders to rank sites on the basis of priority. The rankings should be informed, however, by technical findings based on the source-pathway-receptor approach, which identifies and determines the significance of the risks posed to possible receptors through specific pathways (air, soil, food, and water).

The source-pathway-receptor approach should be adapted to post-conflict situations in three ways. First, sites containing highly toxic chemicals may be assigned priority, regardless of the presence or absence of a pathway, because they could be targeted by those who oppose the peace process. In Iraq, for example, Qadissiya was an abandoned industrial site that contained 150 drums of highly toxic sodium cyanide; Suwaira, another abandoned industrial site, contained twenty-seven drums of chlorophenyl mercury, another highly toxic compound (Thummarukudy, Brown, and Moosa 2012*). To ensure that the chemicals were not used by insurgents, these sites were assigned priority for cleanup. Second, because security conditions may prevent access to certain sites, such conditions should be included in the ranking criteria. Third, if the remediation of particular sites could directly contribute to peacebuilding outcomes, that information should be factored into the ranking criteria. Examples of such sites include those where government authority and credibility need to be restored, or where divided communities could collaborate on cleanup.

Remediation design: Flexibility, capacity building, and improved practices

Where practicable and affordable, remediation should comply with domestic or international standards. In exceptional cases, where the costs of full cleanup may be prohibitive, a risk analysis may indicate that a lower standard can safely be used. Although assessment and remediation efforts should draw on existing approaches, implementation must be sufficiently flexible to adapt to the particular situation, including evolving security conditions. A one-size-fits-all approach and strict adherence to a specific and inflexible framework should be avoided (Thummarukudy, Brown, and Moosa 2012*).

In addition, priority should be given to solutions that use locally appropriate technology and maximize employment opportunities. For example, in the cleanup program for environmental hot spots in Serbia, 75 percent of all contracts were awarded to local companies or institutions that employed local experts and used local technologies (Thummarukudy, Brown, and Moosa 2012*), thereby contributing to capacity building and supporting the generation of local income, employment, expertise, and technological innovation.

Ideally, cleanup should not focus solely on reversing environmental harm but should jump-start long-term environmental restoration and lay the foundation for environmentally sound site management. To achieve these goals, cleanup operations at industrial sites may need to be accompanied by technology upgrades and training in cleaner production methods (Thummarukudy, Brown, and Moosa 2012*).

Where trade-offs need to be made between the costs and benefits of various levels of risk reduction, key stakeholders should participate in decision making. In addition to increasing community ownership of the remediation effort, stakeholder involvement can build trust between communities, local and national government agencies, and international actors.

Depleted uranium: A precautionary approach

Like other heavy metals, depleted uranium (DU) is toxic when inhaled or ingested (Burger 2012*). If certain uranium compounds accumulate in the kidneys, severe poisoning can result within hours or days. Although DU's chemical toxicity is usually considered a greater danger than its radioactivity, the long-term health risks of low-level radiation are still uncertain; thus, DU-contaminated sites require a precautionary approach. In practical terms, this means that DU munitions (including penetrators), fragments, and dust should be treated as hazardous and radioactive waste, and should be managed according to the standards set by the WHO and the International Atomic Energy Agency. At attack sites, visible DU penetrators should be collected, removed, and properly disposed of; DU dust that has contaminated buildings or vehicles should be removed and properly disposed of; and groundwater should be systematically monitored. In addition, public information campaigns should be undertaken to raise community awareness of

(1) the health hazards associated with the remnants of DU weapons, and (2) procedures for the safe handling, storage, and disposal of DU by local authorities; community members should also be provided with contact information for relevant authorities. More broadly, financial responsibility for cleanup costs associated with the use of DU should be the subject of international dialogue.

The potential environmental impacts of new generations of weapons, such as dense inert metallic explosives, have yet to be studied in the post-conflict context. Additional research is needed on potential risks and remediation options.

Land tenure and the remediation of contaminated or mined land

A number of specific challenges to land tenure need to be taken into account during the remediation of contaminated or mined land (Shimoyachi-Yuzawa 2012*; Tamer-Chammas 2012*). First, under customary tenure regimes, tenure rights or access rights may be lost when land is not used productively for a few years. Second, in many post-conflict situations, both ownership records and traditional land use practices may have been lost or destroyed. As a result, when land becomes available after remediation or demining, questions may arise about ownership, access, and use. In particular, it is common for elites to engage in land grabbing, leading to new tensions and conflicts within communities.

To prevent land grabbing and ensure that land is returned to those who previously held rights to it, land tenure should be addressed at the outset of the remediation process, and remediation projects should be linked to overall land management programs, including registration and titling. In Cambodia, for example, land titling was addressed from the beginning of the demining program; moreover, a community-based, bottom-up process was used for the annual selection of the areas that would be demined (Shimoyachi-Yuzawa 2012*).

RESTORATION OF NATURAL RESOURCES AND ECOSYSTEMS

In combination, violent conflict and the coping strategies of local populations can cause extensive damage and degradation to natural resources and the environment. Moreover, such harm is often in addition to long-term environmental degradation from pre-conflict unsustainable practices. Because resources such as arable land, water, wetlands, and forests are essential to livelihoods, basic services (including water, sanitation, and energy), and economic development, restoration of the natural resource base can support a range of peacebuilding priorities. Moreover, restoration can build confidence both in the government and in the value of peace. Examples of successful restorations that have supported peacebuilding include the Mesopotamian marshlands in Iraq; pastures and woodlands in Afghanistan; forests in Haiti; and orchards and other agricultural areas in Lebanon (Lonergan 2012*; Shovic 2005; Gingembre 2012*; Tamer-Chammas 2012*).

Communities in severely degraded environments are usually aware of the need for restoration, but they often lack the necessary capital, technology, and expertise to identify and implement viable alternatives. In post-conflict situations, where the need for restoration is even more acute, external actors must play a key role in restoration efforts.

Successful restoration programs typically require five to ten years of technical and financial support, which must be provided in a way that builds local capacity, provides incentives for local ownership, demonstrates improved quality of life, and facilitates eventual independence and sustainability. Learning by doing, innovating, and adapting projects in response to real-time evaluations and lessons learned are also essential to success. Although the tangible benefits of restoration may not materialize for several years, it is nonetheless important to incorporate metrics from the outset that will make it possible to assess progress toward restoration goals. Evaluation is particularly important to justify renewed support from donors who must make funding decisions within time frames that are shorter than those associated with the completion of a restoration project. The three subsections that follow highlight lessons from the case studies that focus on restoration in post-conflict situations.

Facing the challenges of large-scale restoration projects

Restoration programs in post-conflict countries can be overwhelmingly complex. In addition to meeting formidable technical challenges, such efforts face a number of other difficulties, including insecurity, political change, corruption, lack of institutional capacity, competing forms of land use, transboundary management issues, and the necessity of ensuring community ownership of the project (Gingembre 2012*; Tamer-Chammas 2012*; Lonergan 2012*).

The case studies suggest that post-conflict resource restoration is gradually evolving from a purely technical and isolated endeavor to a more comprehensive and integrated effort. For example, in recognition of the importance of community ownership, many restoration projects are specifically designed to empower local communities, to build institutional capacity for long-term management, and to link natural resource restoration to income generation. Despite evolving in a positive direction, however, restoration still faces several implementation challenges, including the lack of long-term funding and follow-up; the absence of mechanisms to ensure that key lessons are shared; and a lack of coordination among different projects located in the same area.

While the restoration of the Iraqi marshlands may be unique in terms of scale, it offers an excellent example of how scenarios can be used as a means of guiding natural resource restoration. First, possible future scenarios for the marshlands were defined, and then backcasting was used to determine the political and technical pathways that would be needed to achieve each scenario. Ultimately, ten socioeconomic, political, and technical issues were identified that would need to be addressed as part of the restoration process (Lonergan

2012*). Thus, scenarios were used to identify the key challenges of ecosystem restoration.

In Haiti, restoration projects needed to tackle a number of issues simultaneously, including governance, economic and social development, disaster risk reduction, land tenure, agricultural productivity and food security, energy and water access and management, and conflict resolution. One encouraging development is that many large donors in Haiti—such as the Inter-American Development Bank, the U.S. Agency for International Development (USAID), the Canadian International Development Agency, UNDP, and UNEP—are rehabilitating larger, more vulnerable geographic areas on a ridge-to-reef basis, throughout entire water catchment areas. Nevertheless, a review of the restoration projects in Haiti also found that only six of the forty-three projects included a cross-border element with the Dominican Republic, despite the interdependence of the two countries' ecosystems, their shared vulnerability to natural disasters, and the need to improve relations. A likely explanation is that transboundary projects typically require more coordination and negotiation than domestic projects, as well as strong commitment from the two governments, from their implementing agencies, and from communities in both countries. Likewise, climate change adaptation strategies were found to have been systematically ignored (Gingembre 2012*). This is a critical concern: implementing restoration projects without considering climate risks fosters maladaptation, increasing vulnerability to climate-related hazards, especially over the long term, and undermining or reversing development gains and the benefits of restoration (Matthew and Hammill 2012*).

All the restoration case studies point to land tenure as a crucial piece in the restoration puzzle. Land tenure disputes are among the most common problems facing restoration projects; in fact, tenure insecurity—where landholders constantly face dispossession—often prevents long-term investment in restoration and sustainable management. In Haiti, for example, informal land tenure arrangements are more important than formal titles, which are more expensive and less flexible. Thus, investment decisions are based on the duration of access to a plot, regardless of formal tenure; duration of access depends, in turn, on social capital and position. Uncertainty about the duration of access to land acts as a disincentive to restoration investments and sustainable management (Smucker et al. 2005).

Determining the degree of restoration

Although restoring an ecosystem or natural resource to its "natural" or pre-conflict condition may be technically possible, numerous political, social, and economic barriers often constrain restoration options. These include lack of institutional capacity, time, resources, or political will; established land use patterns and practices; and the absence of viable livelihood alternatives. All these elements were in play, for example, with the Iraqi marshlands (Lonergan 2012*).

If the long-term goal of a specific restoration project is to fully restore the proper functioning of the ecosystem, the feasibility of this intention should be evaluated in detail. At the time of writing, such evaluations were being conducted for severely degraded watersheds in Haiti, where watersheds were being grouped into at least three categories: functional, functional but at risk, and nonfunctional. Once a watershed is nonfunctional, the effort, cost, and time required for recovery increase dramatically. Therefore, Haiti's nonfunctional watersheds were being restored only when such efforts were not at the expense of at-risk watersheds, or when restoration was needed as an investment in disaster risk reduction.

In some cases, the investment required to achieve full restoration may be too high, and limited funds could be better spent on more immediate needs. Stakeholders—including community members, technical experts, and funding agencies—must then discuss what level of restoration is possible and conduct a scenario-based analysis of alternative conditions and land use options. In many cases, communities assign priority to restoration projects that contribute directly and immediately to livelihoods recovery, job creation, and reconciliation, rather than to broader goals of ecosystem recovery.

Careful consideration should also be given to potential threats from climate change and to the "climate-proofing" of restoration projects (Matthew and Hammill 2012*). At a minimum, such efforts would include systematic use of climate data to inform early peacebuilding decisions (regarding land use planning, resource prospecting, and investment, for example) that commit post-conflict countries to long-term development pathways. Efforts to address the risks of climate change also require greater emphasis on early warning, and on tools and strategies to reduce disaster risks and resolve disputes over increasingly scarce resources.

Keys to success: Community ownership and an overarching national framework

The case studies demonstrate that successful restoration of damaged or degraded natural resources can be critical to revitalizing livelihoods and providing visible peace dividends. Such results can be achieved, however, only when restoration programs are led and owned by the affected communities, with the support of local authorities. In practical terms, communities must help identify the challenges they face, find solutions, choose methodologies, and organize project activities. Moreover, affected communities must be involved at every stage of the project, from needs assessment to project design, implementation, monitoring, and evaluation.

Participation is most effective when stakeholders (1) have sufficient opportunity to contribute, (2) can openly express their aspirations and concerns throughout the decision-making process, and (3) can participate without being discriminated against on the basis of racial or ethnic background, religion,

socioeconomic group, or gender. Successful participation requires clearly defined roles and responsibilities for community members. It also requires an accountable process, under which (1) affected populations can register complaints if participation is inadequate, and (2) the decision-making process will be suspended until adequate participation is achieved. Financial and material contributions from communities need to be agreed upon beforehand—through partnership agreements, for example. Generally, strengthening existing local structures—instead of creating new, ad hoc structures—results in greater community acceptance; it also increases the long-term sustainability of restoration projects (Gingembre 2012*).

Given the timescale of restoration efforts (often between ten and twenty years), local processes should have national-level political backing and should be clearly linked to a national restoration framework. At the national level, policies and the legislative framework need to support community-based natural resource management (CBNRM) and to render CBNRM attractive to local communities.

In most post-conflict countries, there are thousands of rural development projects that contain elements of environmental restoration, but there is little coordination between them, or between local actors and the national government. If such projects are linked to an overarching national-level program, restoration is more likely to be well coordinated, coherent, and successful at the national scale. For instance, Afghanistan's National Solidarity Programme (ANSP), which supports small-scale rural development projects in 22,000 villages in Afghanistan, offers a good example of community-level restoration and rural development projects that were brought under a single framework. The ANSP also established a social and environmental management framework, which was designed to strengthen the positive environmental and social outcomes of rural development projects, while preventing environmental degradation resulting from either individual subprojects or their cumulative effects (ANSP 2010).

International agencies and organizations use three main criteria for selecting communities for restoration projects (Gingembre 2012*; Lonergan 2012*):

- The community must demonstrate a commitment to and ownership of a specific restoration vision.
- The community must have the capacity to handle project finances and administration and to ensure that community members meet project commitments.
- The community must match external financing with in-kind resources, such as labor and management time.

Restoration projects are complex, long-term endeavors that typically require flexibility, innovation, and adaptive management. In post-conflict countries, insecurity, community division, ethnic or religious strife, the erosion of rule of law, and weak governance institutions impose significant complications. Because

of the complexity of the projects and the significant challenges they face, it is essential at the outset of a national environmental restoration program to assign priority to secure areas, within which approaches can be pilot tested and key lessons identified before decisions are made about whether and how to extend restoration efforts. Projects may take three or four years to yield tangible benefits—but once success can be demonstrated in more secure regions, projects in insecure areas can be considered.

ENVIRONMENTAL DIMENSIONS OF INFRASTRUCTURE AND RECONSTRUCTION

Armed conflict often damages public infrastructure and interferes with basic services (including waste collection and disposal, and the provision of water and energy) for years. In addition to being a visible and painful reminder of conflict, a lack of basic services can also foster feelings of marginalization and resentment and undermine livelihoods, worker productivity (and thus economic development), and well-being (Anand 2012*). Finally, in combination with other factors, lack of services may strengthen grievances, which can then be taken advantage of by groups seeking to undermine the peace process.

As a result of the conflict in Lebanon, extensive damage was inflicted on the country's water and sanitation infrastructure: rivers were polluted by industrial facilities and demolition waste; and water tanks, transmission lines, pumping stations, artesian wells, and water treatment systems were heavily damaged or destroyed. Because the conflict had effectively brought water and sanitation services to a halt, restoration of those services was assigned priority during the post-conflict period. Direct expenditures for early recovery and reconstruction were estimated to be US$2.8 billion, of which the government of Lebanon was to cover US$1.75 billion (Tamer-Chammas 2012*).

In many post-conflict countries, investing in water, waste, and energy infrastructure and restoring basic services may be one of the principal means of providing visible peace dividends, rebuilding public confidence in government, creating jobs, and encouraging the return of displaced persons. In fact, "the condition of infrastructure is often a barometer of whether a society will slip further into violence or make a peaceful transition out of the conflict cycle" (Mashatt, Long, and Crum 2008, 1). Meeting reconstruction needs typically involves a flurry of rebuilding and a massive injection of foreign capital: according to estimates, post-conflict countries receive between six and twenty times more aid per capita for reconstruction than is awarded in course of regular development assistance (IMF 2002; Jensen 2009). Although post-conflict aid may be high on a per capita basis and in relation to the size of the recipient economy, it often declines rapidly once the initial emergency phase is over (IMF 2002; Jensen 2009).

A World Bank analysis of post-conflict investment patterns revealed that telecommunications investments, particularly in mobile networks, materialize

soon after the end of conflict (Schwartz, Hahn, and Bannon 2004). Electricity generation and distribution projects are often completed approximately three years after conflict and increase in frequency after year five. Private investment in water and transportation tends to come much later than investments in other basic services. Within the transport sector, seaports receive the majority of private investment.

The pressures to meet humanitarian needs and rapidly rebuild can place high demands on essential natural resources such as water, wood, sand, gravel, iron, and petroleum. Indeed, depending on the rate of reconstruction, a single year of post-conflict redevelopment can consume the same amount of resources that, under normal circumstances, would be used over a much longer period (Bouma 2012*). To ensure that reconstruction (including infrastructure projects) does not create environmental impacts that could compound poverty or become a new source of tension, reconstruction plans, programs, and projects should be subjected to environmental impact assessment.

Infrastructure repair and reconstruction involve trade-offs in relation to natural resources (Anand 2012*). The dilemma is whether to focus on infrastructure that will aid in the rapid extraction and exportation of natural resources, so that the country can earn much-needed foreign exchange to pay for recovery—or, alternatively, to focus on services that have a more significant impact on the dimensions of human development that are not directly related to immediate income generation, such as education. When state institutions are controlled by nonstate entities whose goal is to extract income from natural resources, however, infrastructure investments may be designed to facilitate resource extraction and sale, rather than to serve the broader needs of the populace (Verstegen 2001; Bardhan 2004; Addison and Bruck 2009).

The rebuilding of Japan's infrastructure and economy after World War II highlights many resource-related pressures and opportunities. Faced with energy shortages that threatened its post-war recovery, Japan developed the Priority Production System, which focused on managing domestic coal and steel production (Nakayama 2012*). The endeavor was inherently unsustainable, but it was sufficient to rebuild the country's infrastructure, jump-start its economy, and provide thousands of jobs for excombatants and returning Japanese civilians. After the system had been in place for ten years, however, the number of coal mines and miners fell rapidly—leading to unemployment and social unrest, and necessitating adjustments to Japan's economic strategies. Although the use of domestic coal was unsustainable, it allowed Japan to exploit its domestic coal reserves until it could secure other energy resources and shift its economy to other sectors.

The following five sections highlight the lessons learned since the early 1990s regarding (1) the planning and implementation of reconstruction programs, and (2) the delivery of energy, water, sanitation, and waste infrastructure in ways that are conflict sensitive and avoid creating new sources of environmental damage.

Delivering conflict-sensitive and sustainable infrastructure reconstruction

The repair and reconstruction of the infrastructure needed for energy, water, sanitation, and waste is a key element in peacebuilding and in the restoration of governmental legitimacy (Mott MacDonald 2005). Such projects also contribute to the sense that normal life has returned, and can serve as important platforms for reconciliation (Tamer-Chammas 2012*). Finally, infrastructure projects provide both direct benefits (restoration of services) and significant opportunities for employment. These two outcomes can be a source of conflict, however, if they are not equally distributed. Thus, international agencies and organizations must bear in mind that unless infrastructure investments are informed by an understanding of the original conflict as well as current tensions (that is, they are conflict sensitive), they have the capacity to do harm as well as good.

Thus, the principal challenge in selecting infrastructure projects is to meet immediate needs while ensuring longer-term sustainability, conflict prevention, and peace consolidation. In practical terms, this means that infrastructure provision must be (1) conflict sensitive, and (2) based on an analysis of local management capacities, the needs of key stakeholders and user groups, and options for the sustainable management of natural resources (Anand 2012*; Carius and Maas 2012*). In the absence of deliberate precautions, interventions risk intensifying the inequalities that may have been among the original causes of the conflict, or weakening developing ties among conflicting communities (Nanthikesan and Uitto 2012*). In short, infrastructure reconstruction should not be intended to simply rebuild what was destroyed, without consideration of equity or sustainability. The primary considerations that must be addressed are how the infrastructure will be governed and maintained, how the benefits will be shared, how natural resources will be managed, and how reconstruction can contribute to peacebuilding.

The assumption on the part of donors that infrastructure will benefit all or most of society equally—and that nationwide economic development and access to services will result—is particularly problematic. Societies affected by or emerging from conflict are highly fragmented, lawless, desperate, and rife with grievances, and their history is one of impunity, power struggles, subjugation, and exploitation. Infrastructure reconstruction thus occurs in an environment where seeking advantage and protecting oneself (or one's group) by any means has become the norm (Unruh and Shalaby 2012*).

Approaches that focus on simply rebuilding the services that existed before the conflict, or that target areas where there is a significant willingness to pay, tend to neglect the poorest and most vulnerable segments of the population and reinforce existing inequalities (Anand 2012*; Pinera and Reed 2013). Following the 2008 conflict in Lebanon, UNDP implemented a US$2 million project in 143 communities in southern Lebanon, funding initiatives that targeted quick repair of water and wastewater networks, cleanup and rehabilitation of sewage systems, and the reinstallation of streetlights. To foster equity and prevent conflict, UNDP

chose not to simply restore and improve preexisting infrastructure; instead, it included nearly all municipalities in the project, including those that had not previously had such services (Tamer-Chammas 2012*).

The role of infrastructure investment in peacebuilding is an emerging area of study; nevertheless, anecdotal evidence from Iraq suggests that infrastructure investment supports stability and prevents conflict at the local level (Barwari 2012). Such investment should not be undertaken exclusively in hotbeds of insurgency, however, as doing so fosters the view that only violence attracts donor attention and investment and creates a perverse incentive to engage in violence. Investments should be strategic—that is, balanced across different types of communities and among urban and rural environments throughout the country (Anand 2012*).

Addressing the unintended consequences of infrastructure projects

Practitioners and donors alike must reexamine the commonly held assumption that reconstruction projects in conflict-affected countries will produce outcomes similar to those produced in stable settings (Unruh and Shalaby 2012*). Conflict-affected settings differ profoundly from peaceful ones, and one area that merits further study concerns the ways in which infrastructure reconstruction interacts with other peacebuilding priorities and with conflict dynamics.

One of the most critical issues raised by the case studies in this book is access to and ownership of land and natural resources that may be needed for, or may be negatively affected by, major infrastructure projects. Resolution of land use disputes and compensation for damage or lost access are often essential prerequisites to infrastructure development (Brookings Institution and University of Bern 2007; Solomon et al. 2009). In Lebanon, for example, land tenure is among the principal factors undermining reconstruction and peacebuilding efforts. In rural areas, land tenure is affected by monopolistic landowning patterns; corrupt land administration practices; unclear or overlapping land rights (caused by legal ambiguity and customary practices); land encroachment and illegal settlers; and zoning difficulties (resulting from the failure to survey land) (UN-HABITAT 2008). Reconstruction cannot proceed on a sustainable basis until these issues are addressed.

In Afghanistan, road reconstruction and land rights are both priorities in peacebuilding plans, but they are being addressed in isolation; moreover, interactions between the two categories of activity are having undesirable consequences. Land tenure in Afghanistan is rife with problems: the country lacks any nationally legitimate, workable approaches to tenure; instead, tenure is based on confusing and highly divisive statutory, customary, ad hoc, Islamic, and warlord-derived laws or regulations (IWPR 2008; Alden Wily 2003). Tenure security is virtually nonexistent—and warlords, militias, and other powerful interests engage in extortion, asset stripping, and land grabbing with impunity (Alden Wily 2003).

Nevertheless, a number of major road reconstruction programs failed to attend to the complexity of land tenure. For example, U.S. reconstruction efforts took into account twenty-three Afghan laws relevant to road reconstruction but ignored customary land law and tenure, national land laws, and national environmental laws (U.S. DOD 2009).

A number of factors—including corruption; increases in land values after road reconstruction; the weakness of customary and statutory tenure systems; increasing access to land; and the absence of landowners, tenants, and their relatives or heirs—can lead to a surge in land grabbing near infrastructure projects. In Afghanistan, for example, the nine provinces most subject to land grabbing all border the reconstructed Ring Road (Unruh and Shalaby 2012*). The discovery of large mineral deposits in Afghanistan will likely lead to more road construction, to facilitate exploitation; one result will be a serious risk of speculative land seizure, both above mineral deposits and along new access roads (Risen 2010).

The interaction between different peacebuilding priorities in Afghanistan also highlights another concern: namely, the disconnect between international donors, which are focused on projects' economic and social benefits, and local communities, which are subject to changes in sociopolitical patterns as a consequence of new infrastructure. As noted earlier, donors' expectations of the effects of infrastructure construction are based largely on their effects in stable settings. But conflict-affected communities worry about speculation; land grabbing; control of agricultural production; rent seeking; the recruitment of indentured labor; and increased access to villages susceptible to exploitation by corrupt government officials, foreign troops, or the Taliban (Unruh and Shalaby 2012*). Thus, there is a critical need to examine both the intended and unintended consequences of infrastructure, and to increase the extent to which project proponents are accountable to the beneficiaries of infrastructure projects (Nanthikesan and Uitto 2012*).

Reconstruction and environmental assessment

Although environmental impact assessments (EIAs) can identify and help to mitigate the potential impacts of reconstruction, they also face a number of challenges in post-conflict environments, including a lack of baseline environmental data, poor community-level participation, inconsistent monitoring, and noncompliance with mitigation plans (Anand 2012*). The principal obstacle that EIAs face, however, is the commonly held perception that environmental reviews slow recovery and hinder the timely delivery of peace dividends to conflict victims. When this misperception is combined with political interests and the demand for quick recovery, environmental reviews may be ignored or simply not conducted, which not only results in further environmental damage and greater hardship for conflict-affected populations, but also potentially sows the seeds for future conflict (Kelly 2012*).

The work of donors such as USAID offers a number of lessons on the conduct of EIAs in post-conflict countries. USAID-supported projects demonstrate

that EIAs can, in fact, be streamlined and effectively applied in post-conflict countries without causing significant approval delays (Kelly 2012*). The four strengths of the USAID environmental-review process are as follows:

- A clearly defined process, well-trained staff, and internal compliance mechanisms.
- Flexibility regarding the amount of information needed for a review.
- Continuous monitoring and review of environmental issues during project implementation.
- The use of standard references and forms to guide the review process and help implement project activities in an environmentally sound manner.

The USAID review process also focuses more on the type of activity, such as school repair, rather than on specific activities, such as repairing particular schools on the basis of damage reports. This lack of precision is common during transitions from conflict to recovery (Kelly 2012*).

The USAID approach to expedited environmental reviews has two principal limitations. The first is a primary focus on the effects of activities on the environment, and a failure to address the potential social, economic, security, and political consequences of those effects. Ideally, such broader impacts should be assessed during an environmental review, particularly for the purpose of evaluating indirect and cumulative impacts and cost-benefit trade-offs. The EIA for road building in Afghanistan, for example, did not cover the impact of road repair on land tenure or illicit activities, such as timber harvesting (Unruh and Shalaby 2012*). Expanding the USAID process to consider such linkages would reduce the unanticipated and unintended negative outcomes of international assistance and could help build a stronger case for mitigation of harmful side effects (Kelly 2012*).

The second limitation is that the agencies undertaking EIAs for reconstruction projects have not systematically collaborated with local organizations, nor have they necessarily observed local regulatory requirements. As a result, opportunities were lost to strengthen conflict-affected governments through capacity building and knowledge sharing in the environmental reviews presented in this book. Moreover, it was unclear to what extent target populations were consulted during the development of the environmental reviews or about the environmental trade-offs incorporated into the final versions of the reviews. Consultation with intended beneficiaries is a core principle of development assistance and should be part of the environmental-review process even in conflict-affected countries (Kelly 2012*).

Despite these concerns, the expedited environmental-review processes developed by USAID could serve as a good model for other donors and aid agencies working in post-conflict countries. A uniform process, based on the USAID approach, would give all providers of assistance a consistent approach to identifying and addressing the potential adverse environmental impacts of projects. A common process could also lead to the more effective use of staff

(who could, for example, serve several projects and organizations at the same time), and to more opportunities to involve national- and local-level government, as well as civil society, in the review and monitoring of peacebuilding assistance.

Strategic environmental assessments: An alternative to EIAs

Despite the potential benefits of EIAs, a number of factors—including weak governance, inadequate legal frameworks, insufficient technical skills, and limited baseline data—may prevent national authorities in post-conflict countries from undertaking them. In Afghanistan between 2004 and 2006, for example, only six environmental impact statements were provided to the National Environmental Protection Agency, and these were submitted only for information and comment, rather than for approval—despite the fact that approval was required by law (Bouma 2012*). In Ethiopia, the EIA system has developed more as a result of donors' demands than in response to the desires of decision makers. As a result, EIAs are conducted through a top-down process that often lacks national ownership and consistent application.

Between coordinating aid and learning to understand their institutional responsibilities, post-conflict governments are often overwhelmed, and an EIA process is rarely a priority. Furthermore, it can take ten years or longer to develop a functional, project-based EIA system that is fully integrated into the fabric of governance and applied as a decision-making tool. Given these constraints, alternative approaches are needed in post-conflict countries (Bouma 2012*).

One alternative to conducting a project-level EIA is to conduct strategic environmental assessments (SEAs) at the sector or program level. The primary reason to undertake SEAs is to identify the programs or sectors that have the potential to cause the greatest environmental impact, so that practitioners can focus on a broad set of preventive and mitigation measures. At the very least, the key programs or sectors, the key actors, and the proportion of projects that may have an environmental impact can be identified. Transforming this information into changes in plans, policies, and programs has been more challenging, however (Bouma 2012*).

Two characteristics of the SEA process are worth noting. First, SEAs use a variety of approaches and methods; second, a good SEA is tailored to the context in which it is applied. In practical terms, this means that the design of an SEA process can take into account the existing post-conflict institutional capacity and legal framework; it can also incorporate the option for adjustments as capacities increase or laws change (Bouma 2012*). As the principal form of reconstruction capital for the first three to five years after conflict, official development assistance (ODA) could benefit significantly from a process that helps to identify potential cumulative environmental impacts within and across the main ODA sectors; a tailor-made SEA is just such a process.

One of the key lessons from the case studies is the importance of finding suitable entry points for the application of an SEA process (or a streamlined SEA-like process) to an ODA framework. In Afghanistan, Iraq, and Sudan, the entry points were a donor-assistance database, a UN multi-donor trust fund, and UN work plans, respectively (Bouma 2012*). Experiences with SEA in these three countries suggest that there are six main sectors in which significant environmental impacts can be expected: extractive industries, energy, water and sanitation, transportation, agriculture and livestock, and livelihoods recovery. The main impacts are related to waste disposal; the quality and quantity of surface water; and the sustainable use of natural resources such as forests, fisheries, and soil. Efforts to use the entry points referred to earlier to develop broad environmental safeguards in each sector have had mixed success, however. In both Afghanistan and Iraq, the governments adopted no general safeguards, and none of the projects with potential impacts were amended. In short, the political will to apply safeguards could not be sustained.

In Sudan, however, the 2008 SEA of the UN work plan had three major impacts (Bouma 2012*):

- The UN country team and its partners began to understand the potential environmental impacts of each sector and to more systematically incorporate environmental issues into project design from the outset.
- Groundwater monitoring finally became common practice for all water and sanitation projects across Darfur—an important sectoral safeguard.
- New approaches to mitigating the environmental impact of humanitarian response were initiated through a specific budget line (US$1 million from the Common Humanitarian Fund, known as the Green Pot).

The UN country team's heightened environmental awareness had a major influence on the approach taken during the drafting of the UN Development Assistance Framework (UNDAF) for 2009–2012 (Bouma 2012*). Development priorities were organized according to four main pillars: peacebuilding; governance, rule of law, and capacity building; livelihoods and productive sectors; and basic services. Detailed environmental outcomes were included for each pillar, together with budgets and lists of responsible organizations and their partners. The total budget for natural resource management projects was US$419 million, approximately 18 percent of the total UNDAF budget of US$2.3 billion.

If donor-assistance databases, UN multi-donor trust funds, UN work plans, and similar instruments are to be used as the entry points for conducting post-conflict SEAs in the future, several conditions need to be met:

- A consistent way to categorize environmental impacts needs to be established at the outset, along with a clear allocation of responsibility. Ideally, project proponents should be required to undertake the classification and to consider environmental issues at the earliest possible phase of project design. Only

when an insufficient number of proponents have the capacity to conduct the classification should third parties take responsibility.

- All projects—humanitarian as well as recovery and development—should undergo environmental screening. Systematic screening of all projects will help to identify the sectors that are most in need of environmental mitigation.
- Additional information should be incorporated into project information sheets—in particular, the geographic location. This would allow a more fine-scaled review of the geographic areas where projects are to be concentrated and a better analysis of potential impacts and cumulative effects.
- Domestic stakeholders need support to identify and mitigate the environmental risks inherent in particular sectors and to develop capacity for compliance monitoring. An SEA can be a starting point for mitigating sector-level environmental impacts, but a policy that includes project-specific EIAs should eventually be adopted. Capacity-building programs should keep longer-term EIA needs in mind as post-conflict SEA approaches are further developed (Kelly 2012*; Bouma 2012*).

Addressing the environmental implications of extractive industries and agribusiness

Post-conflict countries that are rich in land and nonrenewable natural resources often plan to use these assets to finance the recovery process; however, this approach can create unique challenges for both governance and peace consolidation. Pressure to kick-start economic growth through the use of natural resources can override the imperative to manage and mitigate the full social and environmental costs of such use. Ensuring that economic growth does not come at the expense of human rights and the natural resource base requires considerable skill and judgment, and the stakes are high: a misstep can increase the risk that conflict will resume. The challenge is to select the best possible investments, then monitor them to ensure that they are delivering the expected benefits while minimizing social and environmental costs.

In any post-conflict situation, improved governance of natural resources and the environment is a test of governmental stability and effectiveness (UNEP 2009a, 2010). It is thus essential to use natural resource management both to build confidence in the wider political process of peace consolidation and as an entry point for public participation in decision making. It is also critical to establish and maintain transparency and accountability with respect to contracts, payments, and the social and environmental impacts of agribusiness and the extractive sector (Brown et al. 2012*). EIA processes tailored to the industry in question can be indispensable tools for achieving these goals, particularly when combined with other instruments such as the Extractive Industries Transparency Initiative.[4]

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[4] For more information on the Extractive Industries Transparency Initiative, see http://eiti.org; see also Rich and Warner (2012) and Rustad, Lujala, and Le Billon (2012).

EIAs, environmental permits, and the use of environmental planning tools create valuable opportunities to identify potential harmful impacts from agribusiness and the extractive sector and to put social and environmental safeguards in place. The planning and approval phases are perhaps the only time in the life span of a multibillion-dollar investment when the government has significant leverage over the nature of a mine or plantation. Getting the process right is one of the principal ways that a government can influence the design, technology, scope, and financial models of large-scale developments, to ensure that the country receives long-term social and economic benefits and suffers minimal environmental or social damage.

In Sierra Leone, the application of EIA to the extractive sector yielded four major benefits (Brown et al. 2012*):

- Universally applied EIA processes help weed out poorly performing companies. Those that are either unable or unwilling to submit EIAs are excluded from bidding on concessions—and, according to legislation and evolving regulations, should cease operations. Ideally, if only those companies that are willing to invest time, energy, and resources in minimizing their environmental impacts are permitted to bid, there will be a race to the top—rather than a slump to the bottom.
- Environmental planning that is led by science and based on facts may have spillover benefits for other dimensions of governance: in particular, it can increase transparency with respect to contracts, payments, and impacts; strengthen confidence in political processes and in the legitimacy of government; and help to professionalize decision making. A fact-based environmental assessment that is subject to extensive review and consultation can also help to depoliticize disputes over natural resources; by stripping away the power dynamics that often characterize such disputes, a deliberative and science-based environmental assessment can help stakeholders identify and articulate a common vision for the role of natural resources in the future of the country.
- Stakeholder engagement in environmental assessment can help unify divided communities and create opportunities for different segments of society to communicate and cooperate. A participatory, inclusive approach can also help to predict and prevent potential conflicts over the management of natural resources and the distribution of the resulting revenues. Finally, stakeholder engagement can help to forge a common vision for how the country should exploit its natural resources and share the benefits of extraction.
- The successful application of EIA limits the negative environmental impacts of mining and agribusiness projects, thereby preventing conflict, protecting health and livelihoods, and reducing the likelihood that costly environmental remediation will be necessary.

Some companies and governmental decision makers still perceive EIAs as "green hand brakes" that are designed to protect the natural environment against the perceived perils of economic development (Brown et al. 2012*). When implemented properly, however, EIAs can actually increase the benefits of extractive industries and commercial agriculture, while minimizing negative social and environmental impacts. Investing in environmental assessment is cost-effective in post-conflict states because EIAs are catalytic interventions that have long-lived implications for governance and sustainable natural resource use. The timing and sequencing will depend on the specific case, but such interventions should be in step with increased investment activity in post-conflict countries.

The full benefits of EIAs can only be achieved, however, when capacity is sufficient to support sustained monitoring and enforcement by both national authorities and civil society. In Sierra Leone, for example, government support for EIAs throughout the extractive sectors hinged on political backing from the president. Without top-level support, the advances made toward the development of EIA law and policy in Sierra Leone would not have been possible.

CROSSCUTTING LESSONS

In addition to the specific lessons learned about assessment, remediation, restoration, and reconstruction, the case studies in this book also revealed a number of crosscutting lessons, which are described in the next five sections.

Using the environment as a platform for cooperation and reconciliation

Reconciliation between divided groups, communities, or countries is often a central peacebuilding priority. Identifying opportunities to rebuild severed relationships and strengthen the bonds of trust between conflict-affected parties is thus an immediate post-conflict task.

Environmental assessment, remediation, restoration, and reconstruction projects offer important platforms for promoting dialogue, cooperation, and confidence building between divided groups as well as different levels of government. In particular, peacebuilding programs should carefully consider the deliberate use of environmental projects as bridges to peace and arenas for political inclusion, relationship building, and reconciliation (Mott MacDonald 2005; Nanthikesan and Uitto 2012*; Conca and Wallace 2012*).

Potential risks from climate change or other transboundary environmental threats can also be used as the basis for dialogue between divided groups. Because these threats are to some extent abstract, external, and neutral, they can form the basis for discussions that are less politicized than those that address the post-conflict situation (Carius and Maas 2012*).

Building national capacity through assessment, remediation, restoration, and reconstruction

Despite the fact that the environment and natural resources underpin human health and livelihoods, environmental ministries in both developed and developing countries often lack effective governance and institutional capacity and are starved of financial resources, authority, and staff. Such problems are even more acute in post-conflict countries, where warfare may have destroyed records, led staff to flee, diverted resources, undermined the rule of law, and weakened governance institutions. Thus, ministries of the environment (and line ministries with environmental and natural resource management functions) often benefit from international support until they can develop sufficient capacity to function independently. Such support might include lending staff; providing equipment, technical and financial assistance; training; and mentoring. International partners may also assist environmental and natural resource management institutions to negotiate realistic and sustainable operational budgets—an often-overlooked task that, left unattended, can undermine the sustainability of capacity-building efforts. Finally, because capacity building is a long-term process, often requiring ten years or more if new institutions must be built from scratch, it is critical for international partners to provide support without replacing or undermining the authority of the national entity.

Although many initial capacity-building efforts focus on policy and legal reform, it is imperative to also use environmental assessment, remediation, restoration, and reconstruction as opportunities for capacity building. One way to do so is to include government staff in every step of each project, from design to financing, implementation, monitoring, and evaluation. Community-led restoration projects can also be good complements to national capacity-building programs, because they demonstrate the tangible benefits of resource management policies and sustainable land use practices. Such projects also help national policy makers and technical staff understand community-level needs for legal reforms that address ownership, access, management, and dispute resolution regarding natural resources.

Using natural resources as a basis for regional cooperation and economic integration

In some instances, the coordinated or shared management of natural resources has created a foundation for regional reconstruction and economic integration. For example, after World War II, shared natural resource management was the means of drawing together France and Germany—and, eventually, Belgium, Italy, Luxembourg, and the Netherlands as well (Bruch, Wolfarth, and Michalcik 2012*). In this case, coal and steel production was placed into the hands of a supranational authority, the European Coal and Steel Community—which evolved, over decades, into the European Union. In this example, shared management of natural resources

at the regional level led not only to economic cooperation but, ultimately, to deeper political cooperation.

Similarly, after the turmoil that gripped Central America in the 1980s, efforts to coordinate natural resource management and combat environmental degradation offered a politically neutral platform that enabled the various nations to work together (Bruch, Wolfarth, and Michalcik 2012*; King et al. 2013). Eventually, cooperation on environmental issues laid the foundation for regional reconstruction and integration efforts that continue to this day.[5]

If natural resources are to be successfully used as a basis for regional cooperation and reintegration, however, such efforts must be adapted to the context of the countries involved; in particular, the region in question must be defined logically from a political, cultural, and historical perspective (Bruch, Wolfarth, and Michalcik 2012*). Coordinated and time-bound donor support is another essential element.

Evaluation and monitoring: Emerging trends

Many evaluations are driven by the interests of agencies that wish to assess the effectiveness and efficiency of their interventions. In those cases, accountability is directed upward, to the agency and its funders—often the taxpayers in the donor country. But downward accountability—that is, to the people the interventions are intended to benefit—is equally if not more important (Nanthikesan and Uitto 2012*).

Many donors, facing pressure to report to their constituencies on the performance of their investments, want to be able to demonstrate tangible results, and are thus increasingly favoring quantitative approaches—in particular, impact evaluations, which attempt to attribute changes in conditions to specific interventions. But it is often impossible to isolate the effects of a specific intervention—particularly in post-conflict situations, where conditions change rapidly and are influenced by multiple actors and dynamics. With respect to natural resource management interventions, the post-conflict environment is unpredictable, and the effects of interventions will depend on organic community processes in which causality is not clear. Thus, a qualitative approach is essential to effectively evaluate natural resource–related interventions in post-conflict situations (Nanthikesan and Uitto 2012*).

The current donor emphasis on quantitative evaluation may be premature, and may crowd out efforts to achieve an in-depth understanding of conflict (OECD/DAC 2007). Rigorous alternative evaluation approaches exist and should be used. Because so much is still unknown about conflict, conflict prevention and peacebuilding evaluations in the coming years should focus on gathering evidence and learning from it, and on testing commonly held theories and

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[5] For an analysis of the cooperation among post-conflict Balkan states in the Sava River area, see Čolakhodžić et al. (2013).

assumptions about peace and conflict, rather than on establishing fixed, universal indicators of peace or conflict. Clarity regarding indicators (and whether they can be generalized in a useful way) may emerge in the process—but at this point, evaluations should steer clear of excessively specific indicators. Instead, the emphasis should be on improving collective understanding through the cumulative and comparative analysis of experience across contexts (Nanthikesan and Uitto 2012*).

Although joint evaluations have several disadvantages, including greater complexity and higher transaction costs, they are the best means of getting a full picture of peacebuilding dynamics. Among the advantages of joint evaluations are the following:

- They reveal not only the effects of individual efforts, but also of interactions among multiple efforts.
- They tend to be more objective, because the participation of multiple parties tends to reduce conflicts of interest and agency bias.
- Because they are not perceived to advance the perspective of any one actor, they have greater legitimacy.
- They make it easier to capture attribution, because multiple factors and projects can be considered as potential contributions to particular outcomes.
- They can strengthen downward accountability.
- When it comes to persuading policy makers or program managers to address findings and recommendations, joint evaluations are more effective advocacy tools.

Evaluation processes can be useful in highlighting critical programmatic gaps related to natural resources. For example, evaluations of UNDP programs in two post-conflict countries (Rwanda and Uganda) demonstrated that the programs failed to adequately incorporate the environment or sustainable development into economic development and poverty reduction strategies (Nanthikesan and Uitto 2012*). The evaluations also confirmed that in post-conflict situations in which most people depend on agriculture for sustenance, it is essential to address natural resource management and livelihoods. Moreover, in order to achieve sustainable benefits for conflict-affected populations, such considerations must not only be integrated into individual projects, but also into policies and long-term strategies. Finally, the evaluations provide further evidence that in addition to being a source of conflict, natural resources can be the focus of cooperation, provided that they are properly factored into post-conflict development visions.

Further developments in monitoring and evaluation can improve future project design and implementation. In Lebanon, interventions proposed for green recovery (such as promotion of sustainable cropping patterns) and for mitigating the environmental impacts of the conflict (such as sustainable management of demolition waste) were ignored. Since this pattern is all too common, evaluations should more systematically monitor the implementation of recommendations

(Tamer-Chammas 2012*). A related challenge is that organizations and funders generally categorize projects by sector; for example, governance or conflict mitigation projects have governance- and conflict-related indicators, and natural resource management projects have resource-related indicators. Depending on how a project is categorized, sector-based monitoring and evaluation may not capture its full impact (Brady et al. 2013). Since many post-conflict environmental and natural resource projects have various peacebuilding dimensions, such projects should be monitored and evaluated on the basis of broader, cross-sectoral indicators.

The importance of conflict sensitivity

In post-conflict countries, a number of factors combine to create significant complications for natural resource management and environmental governance; these include insecurity, community division, ethnic or religious strife, erosion of the rule of law, weak governance institutions, environmental variability, climate change, and the risk of natural hazards. Given the complexity of post-conflict situations, even the most benign interventions can disrupt access to natural resources; affect traditional land use practices; stir up latent conflicts; and contribute to political, social, and economic tensions (Matthew and Hammill 2012*). It is thus essential for all actors to adopt conflict-sensitive approaches to project design, implementation, and evaluation.

Conflict sensitivity requires an understanding not only of the context in which an intervention will be undertaken but also of the potential interactions between the intervention and that context; it is also necessary to act upon that understanding, in order to maximize positive impacts and avoid negative impacts (Ruckstuhl 2009). In particular, a systematic conflict analysis and monitoring process should consider how a policy, program, or project may affect resource availability and access; the governance of natural resources and the environment with respect benefit sharing, public participation, transparency, and access to information; and transboundary dynamics and pressures.

COORDINATING AND SEQUENCING INTERVENTIONS

In most post-conflict situations, the number of national and international organizations working on humanitarian relief, peacekeeping, and peacebuilding is staggering. In some of the more complex cases (such as post-conflict Sierra Leone), there may be well over 400 different governmental, international, and nongovernmental organizations on the ground. Although it is nearly impossible to ensure that all activities are well coordinated, lack of coordination can lead to a number of unintended consequences, including duplication of efforts and competition for scarce resources.

Various international assessment and programming tools can serve as platforms for setting priorities and coordinating assistance; examples include

the UN's consolidated appeal process, post-conflict needs assessment process, integrated mission planning process, and development assistance framework. Improved coordination is needed, however, across the UN system; between the UN system, donors, and domestic authorities; and between the national and subnational levels. Many actors complain about the high investment required to ensure full coordination, and the resulting diversion of resources from needs on the ground. At the very least, however, it is essential for all actors to share information regarding who is doing what and where, and to have a common vision of overall priorities and approach.

In addition to coordinating the activities of various actors, it is also necessary to properly time, prioritize, and sequence activities so that they support and build on each other. Given that the issues identified in needs assessments cannot all be addressed at once, the selection of priorities for post-conflict reconstruction is inherently complex. As noted earlier, peacebuilding priorities should be determined by national actors, with support and cooperation from international agencies and organizations.

One effort to improve programming for fragile states, including post-conflict countries, is the Busan New Deal.[6] Under the Busan New Deal, nineteen fragile and conflict-affected countries, their development partners, and international organizations agreed on a set of peacebuilding and state-building goals, as well as on new processes for periodically assessing fragility, monitoring progress, involving stakeholders, and building mutual trust. These goals and processes will be reflected in a country-specific compact, which is to be (1) developed in accordance with the views of a wide variety and a significant number of stakeholders, and (2) reviewed annually, through an inclusive process. The principal purpose of the compact is to ensure donor coordination and harmonization and to reduce duplication, fragmentation, and proliferation among programs. In recognition of differences in national context and level of fragility, and of the possibility that the compacts may need adjustment during the transition out of fragility, each compact will be tailored to the needs of the country in question (International Dialogue on Peacebuilding and Statebuilding 2011).

Although the UN's existing assessment and programming approaches do not fully account for the links between the environment, natural resources, conflict, and peacebuilding, the UN's approach is starting to shift. Specifically, the UN is developing a new understanding of security threats and sources of conflict that encompasses economic and social issues, including natural resources, the environment, and climate change. This new understanding has led to a number of high-level reports, policies, and resolutions that reflect the UN's growing commitment to addressing natural resource issues in post-conflict countries. For example, the 2010 *Progress Report of the Secretary-General on Peacebuilding in the Immediate Aftermath of Conflict* highlights natural resources as an area

[6] For more information on the Busan New Deal, see www.aideffectiveness.org/busanhlf4/about/new-deal-for-engagement-in-fragile-states.html.

of "increasing concern where greater efforts will be needed to deliver a more effective United Nations response" and calls on "Member States and the United Nations system to make questions of natural resource allocation, ownership and access an integral part of peacebuilding strategies" (UNSG 2010, 11–12). In mid-2012, in response to this call, the United Nations Development Group, through a process chaired by UNEP, adopted UN-wide guidelines on addressing natural resources in post-conflict transitional settings (UNDG 2012). The United Nations–European Union Partnership for Preventing and Managing Land and Natural Resource Conflicts also adopted a series of guidance notes on natural resources and conflict prevention. Finally, the Busan New Deal offers important new entry points for assessing and addressing the linkages between fragility, environmental degradation, and poor resource governance.

In post-conflict countries and fragile states, assigning the appropriate priority to natural resources and the environment, given competing needs, can be a challenge. Historically, human health and safety have been given the highest priority. In the absence of major health risks, however, natural resources have been given priority in peacebuilding if poor natural resource governance creates a significant risk of conflict relapse, or if natural resources played a substantial role in the onset, conduct, or financing of conflict. For example, natural resource management features prominently in the peacebuilding efforts of Sierra Leone and Sudan, where natural resources were significant drivers of conflict (Brown et al. 2012*; Jensen 2012*). Finally, natural resources and the environment may be assigned priority in peacebuilding contexts if they can be shown to directly support peacebuilding and state-building objectives such as economic recovery, restoration of governance and revenues, job creation, sustainable livelihoods, basic services, and reconciliation.

Table 1 highlights potential actions related to assessment, remediation, restoration, and reconstruction in the two principal stages of the peace process (immediate aftermath and peace consolidation). As noted earlier, there is no one recipe for resource management in post-conflict countries: approaches must be selected and timed to meet the needs of the specific context. Depending on context, some approaches may not be appropriate at all, or may be used in peacebuilding phases other than those suggested in the table.

FUTURE OUTLOOK

In post-conflict situations, which are often characterized by serious humanitarian and security concerns, national priorities are driven mainly by immediate peacebuilding needs, and by human welfare in particular. Given competing needs, assigning priority to natural resource management is often a difficult prospect, and environmental sustainability is rarely on the agenda. Nevertheless, natural resource management and environmental governance can become a national priority under three cases: when assessments clearly identify environmental impacts from conflict that threaten human health, livelihoods, and security; when assessments demonstrate

Table 1. Approaches to post-conflict assessment, remediation, restoration, and reconstruction

	Immediate aftermath	*Peace consolidation*
Assessment	Assess direct impacts of conflict on natural resources from Toxic hazards. Legacy of weapons, landmines, and unexploded ordnance. Human displacement. Use of extractive industries to finance conflict. Loss of water supply, sanitation, and waste infrastructure. Direct targeting of natural resources, particularly as part of scorched-earth military tactics. Assess indirect impacts of conflict on natural resources from Livelihood-coping mechanisms and survival strategies. Conflict economy (formal, international aid, informal, criminal). Resource tenure. Resource management institutions and capacity. Dispute resolution capacity. Assess conflict relapse risks related to natural resources, including Natural resources as conflict drivers. Mechanisms for wealth and benefit sharing. Level of resource scarcity and competition. Transparency of contracts, payments, and impacts. Public participation in decision making. Dispute resolution capacity. Transboundary dynamics. Assess peacebuilding opportunities related to natural resources, including Safety and security. Provision of basic services. Restoration of government functions and revenues. Reconciliation and political inclusion. Economic recovery and livelihoods.	Conduct thematic assessments of Risks from natural hazards and climate change. Long-term population and resource consumption trends. Priorities and feasibility of resource and ecosystem restoration. Sustainable livelihoods. Opportunities to maximize employment from resource value chains.

	Assess capacity to govern natural resources, including Laws, regulations, and policies. Institutional capacity for planning, spending, and implementation. Enforcement and coordination mechanisms. Financial and operational resources. Technical expertise. Capacity of civil society to monitor compliance with laws. Public participation in decision making.	
	Additional considerations to take into account: Differential impacts and resource access for men and women. Differential impacts and resource access stemming from age or ethnicity. Negative interactions between peacebuilding priorities. Mainstreaming conflict sensitivity in programming. Major vulnerabilities to climate change and natural hazards.	Additional considerations to take into account: New grievances over natural resources. Ongoing interactions between peacebuilding priorities (positive and negative). New resource pressures stemming from population growth and the return of displaced populations. Level of illegal resource exploitation and trade.
	Tools to be employed: Field sampling. Geographic information systems and remote sensing. Household surveys. Civilian capacity and expertise (international and national rosters). Gender-sensitive assessment approaches. Rapid or comprehensive versus thematic assessments.	Tools to be employed: Civilian capacity and expertise (local networks). Public consultation. Scenario analysis. Benchmarks and indicators. Cost-benefit analysis.
Remediation	Focus on hot spots whose remediation Will address direct and acute risks to human health and livelihoods. Offers visible peace dividends. Can strengthen public confidence in government. Can generate short-term employment.	Expand scope to address hot spots that Pose chronic risks to drinking water, arable land, and air quality. Were not directly caused by the conflict. Can help catalyze investments in cleaner production. Can form part of a broader cleanup, restoration, and job-creation program.

Table 1. (*cont'd*)

	Immediate aftermath	*Peace consolidation*
Remediation (*cont'd*)	In the design of hot spot remediation programs, take account of Priorities determined by the source-pathway-receptor model. The complete life cycle of the waste, from cleanup to final disposal. Land tenure and ownership issues. The need for parallel public-awareness campaigns. Other forms of ongoing site contamination. Opportunities to maximize the use of locally available labor and technologies. Hazardous wastes should be Treated with extreme caution, in accordance with international health and safety standards. Screened, sorted, and removed from rubble- and waste-recycling streams. Kept out of municipal landfills that lack specific capacity. Temporarily stored in secure sites until transport and final disposal can be conducted. During hot spot cleanup operations Provide operators with training and personal protective equipment. Design projects to provide maximum emergency employment. Secure the site and prevent valuable or hazardous materials from being looted. Monitor risks to staff and local populations. Regularly update residents on risk reduction measures and cleanup progress. Conduct site-specific monitoring of acute environmental risks until remediation targets are achieved. Implement measures to prevent land grabbing.	In the design of hot spot remediation programs, take account of Opportunities to use remediation projects to build mutual trust and cooperation between divided groups. Opportunities to involve local communities in decisions about hot spot remediation priorities. Parallel investments in restoring or establishing landfills that incorporate environmental safeguards. Hazardous wastes should be Handled with consideration for the full life cycle. Disposed of according to international best practice. Transported across international borders in accordance with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. During hot spot cleanup operations Provide more detailed training to operators, to create a technical basis and skill set for longer-term employment. Use remediation projects to increase political and public interest in resource governance. Use remediation projects to build environmental awareness and public support for projects that safeguard the environment. Establish environmental-quality monitoring programs in and around high-risk areas. Ensure that new investments at cleanup sites do not create new sources of pollution and contamination.

Restoration	Focus restoration programs on areas where • Direct, short-term benefits to livelihoods or disaster risk reduction can be achieved (for example, food, water, and energy security) within a single growing season. • Restoration projects will show rapid and visible peace dividends and strengthen public confidence in government. • The maximum amount of short-term employment can be generated. • Short-term investments can lay the foundation for longer-term recovery of sustainable livelihoods. • Local communities have a direct stake in restoration and have identified the restoration project as a priority. In the design of restoration programs, take into account • Land tenure and ownership issues. • Incentives and measures to control site access. • Varying implementation capacities among communities. • Future livelihood needs. • Conflict sensitivity. • Impacts that can be achieved within a single growing season.	Expand the scope of restoration programs to include areas where restoration yields both livelihood and ecosystem benefits (for example, reforestation, wetlands recovery, protected areas). In the design of restoration programs, take additional opportunities into account, including • Using restoration programs to build trust, cooperation, and reconciliation between divided groups. • Using restoration projects to reconnect and rebuild trust between communities, local authorities, and the national government. • Establishing transboundary cooperation around resource restoration. • Expanding the scope of restoration programs to larger geographic areas (including on a ridge-to-reef basis). • Developing short-term indicators to track progress against long-term goals. • Using scenario analysis to develop restoration options that reflect political, technical, and social constraints. • Incorporating disaster and climate risks.

Table 1. (*cont'd*)

	Immediate aftermath	*Peace consolidation*
Restoration (*cont'd*)	Design restoration programs to Provide maximum emergency employment. Be led and owned by communities (including through the provision of labor). Receive financing on an incremental basis, in accordance with the achievement of agreed-upon milestones.	Design restoration programs to Provide operators with more detailed training, to create a technical basis and skill set for longer-term employment. Address the need for corresponding legislation. Increase political and public interest in resource governance. Provide the legislative framework for decentralized, community-based natural resource management. Monitor the direct livelihood impact of successful restoration and disseminate lessons learned.
Reconstruction	Consider the following when conducting environmental assessments: Environmental impact assessments (EIAs) should be undertaken for all relief and reconstruction projects by international agencies or organizations acting in accordance with their internal policies and procedures, but with respect for domestic legislation. Where domestic EIA legislation or capacity does not exist, broad environmental and social safeguards can be adopted at the sector level to prevent reconstruction projects from causing major harmful impacts. Strategic environmental assessments of the main reconstruction sectors can also be conducted using entry points in official development assistance. Full-scale, ad hoc EIAs should be conducted for major infrastructure projects and major resource and agricultural concessions.	Consider the following when building national capacity to conduct environmental assessments: Moving toward requirements that all international assistance projects respect domestic EIA legislation. Gradually increasing EIA capacity in step with increasing government capacity, rule of law, and private sector investment. Building domestic authorities' capacity to monitor compliance with EIA plans and operating permits. Using EIAs for medium- to large-scale investments, as a means of building public confidence in the wider political processes of peace consolidation. Using EIAs as initial entry points for public participation in decision making.

	Conduct immediate repair of infrastructure In a conflict-sensitive way. With consideration for how benefits will be apportioned between (or perceived by) divided groups. So as to create immediate peace dividends. In response to local needs and priorities. With attention to land tenure and ownership issues. So as to link infrastructure repair to livelihoods recovery, through an integrated and stepwise approach.	Construct new infrastructure with Conflict sensitivity. Attention to the sustainable use of natural resources. Consideration for competition for scarce resources among different users and economic sectors. Attention to how the infrastructure will be governed. Attention to how the infrastructure will be maintained and financed by domestic authorities.
Crosscutting issues	Design and implement all assessment, remediation, restoration, and reconstruction projects in a conflict-sensitive way, and ensure that they are based on a theory of change that is grounded in how the projects are expected to contribute to peace and security. Integrate gender considerations across all assessment, remediation, restoration, and reconstruction work, taking account of the following: Gender-specific risks of and impacts from conflict-related environmental degradation. Gender-specific impacts with respect to resource access, benefit sharing, rights, and ownership. Opportunities for women's participation and empowerment in decision making regarding natural resources. The risk of gender-based violence that is linked to resource use. Where possible, use environmental assessment, remediation, restoration, and reconstruction as platforms for Cooperation and reconciliation between divided groups. Political inclusion. The restoration of relationships between levels of government and across ministries. Building confidence in government. Transboundary cooperation. Strengthening public confidence in government. Where possible, design environmental assessment, remediation, restoration, and reconstruction projects to contribute to capacity building of National and local governmental authorities. Host communities. Civil society.	

that conflict drivers or relapse risks are related to natural resource governance; or when assessments demonstrate tangible peacebuilding benefits from natural resources, such as economic and livelihood recovery, government revenues, job creation, and opportunities for reconciliation and political inclusion.

Immediately after the end of a conflict, a window of opportunity opens for rebuilding, establishing security, and consolidating peace. The parties to the conflict are often willing to reexamine conflict causes and development challenges and to collaborate in the design of new strategies to address them. And there may be unprecedented opportunities to transform or build institutions anew and to develop capacity on the basis of new principles and practices. In particular, this period offers opportunities to transform and rebuild institutions that are related to the management of natural resources in ways that would otherwise be politically difficult to achieve. Capitalizing on such early opportunities is particularly critical if the economy depends on natural resources, if resources contributed to the onset or financing of conflict, or if resources are undermining state-building efforts. Despite domestic and international efforts, however, a risk of conflict relapse may remain, particularly if conflict drivers are not sufficiently addressed and capacities for peace reinforced (UNDG 2012).

Natural resource governance is likely to contribute to peace consolidation if the power to make decisions about vital resources can be contested by different stakeholders without violence. Achieving this goal, in turn, requires (1) a government that is capable, accountable, transparent, and responsive to the wishes and needs of its population, and (2) a civil society that trusts the governing structures and processes, and is ready and able to engage with government to manage natural resources in a sustainable, profitable, equitable, and nonviolent manner. External actors can help build the capacity of conflict-affected and fragile societies to understand, manage, mediate, and respond to natural resource conflicts without violence, but the process must be led from within. A key challenge for the UN is to promote positive social transformation through the effective management of natural assets, while simultaneously mitigating the risks and potential impacts of violent conflict (UNDG 2012).

Despite the fact that natural resources are essential to most peacebuilding activities, the design and implementation of peacebuilding policies and programs have often failed to effectively analyze or address natural resources. This book draws attention to the important role that assessment, remediation, restoration, and reconstruction play, both individually and collectively, in the peacebuilding context. It highlights the importance of integrating natural resource management and environmental sustainability into peacebuilding processes and activities, and offers lessons on how to undertake that integration. Finally, it addresses some of the unique challenges of implementing assessment, remediation, restoration, and reconstruction projects in conflict-affected countries.

The most important peacebuilding work may take place before conflict even occurs—in the form of proactive, preventive measures. Investment in effective, equitable, and conflict-sensitive strategies for natural resource management may

lessen incentives for conflict, reduce the impact of conflict on people and the environment when conflict does occur, and strengthen the chances for durable peace (Conca and Wallace 2012*). At the time of writing, the Organisation for Economic Co-operation and Development list of fragile states included forty-five countries (OECD 2011). Approximately 95 percent of those countries contain transboundary waters at risk, biodiversity hot spots of global significance, or both (Wolf, Yoffe, and Giordano 2003; CI 2005); 67 percent contain World Heritage sites (UNESCO 2011); and 80 percent contain extractive resources of strategic significance to the global economy (USGS 2010; IEA 2011). Fragile states can be viewed as the final frontier in the global scramble to secure rights to remaining resource supplies in a world of increasing resource scarcity (Klare 2012). Understanding how to prevent natural resources from contributing to instability and conflict in fragile regions is a critical need, as is the provision of immediate technical and political support in the event of violence. Preventing the pillage and plunder of natural resources in fragile states and ensuring their sustainable, transparent, and equitable management will be one of the key challenges of the next decade.

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