

Positive synergies—winning strategies for the environment, equity and human development

In facing the challenges laid out in chapters 2 and 3, a host of governments, civil society, private sector and development actors have sought to integrate environmental and equity concerns and promote human development—win-win-win strategies. An example at the global level is the 1987 Montreal Protocol, which bans ozone-depleting chemicals, thereby benefiting sustainability (through protection of the ozone layer), equity (through technology transfer to developing countries) and human development (through positive impacts on health).¹

This chapter showcases local and national strategies to address environmental deprivations and build resilience, thereby demonstrating positive synergies. An important backdrop to this discussion is the need for healthy ecosystems and the services they provide, especially for the poor. Ecosystems build the foundation for water quality, food security, flood protection and natural climate regulation.²

Scaling up successful community and local initiatives is a prime focus. Key elements at the national level are policies that bring together social, economic and environmental concerns; coordination mechanisms aligned with budget frameworks; a culture of innovation; and strong institutions, alongside mechanisms that ensure accountability. Some countries have overcome siloed arrangements through medium-term plans that allow cross-sectoral coordination across government agencies and with development partners. Senior core ministries—such as finance and planning—are often critical, as are line agencies, especially working with other ministries. In Malawi the Ministry of Agriculture helped create demand for measures to reduce poverty and protect the environment, and in Rwanda the Ministry of State, Lands and the Environment garnered presidential and cabinet support for

integrating environmental concerns into the country's Economic Development and Poverty Strategy. And crucial at the local level are strong institutions, particularly those that pay attention to disadvantaged groups and promote community management.

The policy agenda is vast. This Report cannot do it full justice or cover all the challenges raised in the preceding chapters. Several recent global reports provide important details.³ The value added here is in identifying win-win-win strategies that successfully address the world's social, economic and environmental challenges by managing, or even bypassing, trade-offs so that the approaches are good not only for the environment but also for equity and human development more broadly. This effort provides concrete experience and important motivation for the forward-looking final chapter.

Scaling up to address environmental deprivations and build resilience

We begin by highlighting promising win-win-win routes in energy and in water and sanitation.

Energy

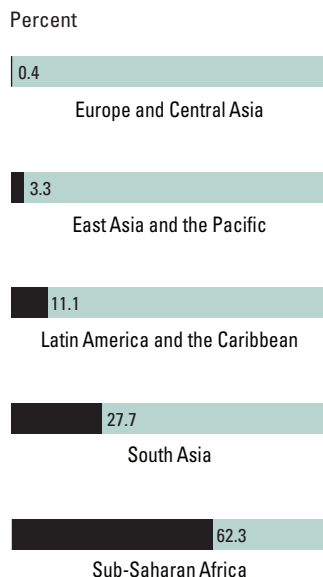
Energy is central to a range of services supporting human development, from modern medical care, transportation, information and communications to lighting, heating, cooking and mechanical power for agriculture. Equitable and sustainable development requires making energy available for all, controlling emissions and shifting to new and cleaner energy sources.

Addressing energy deprivations

Some 1.5 billion people, more than one in five, lack access to electricity, and 2.6 billion cook

FIGURE 4.1

Large regional differences in the share of multidimensionally poor people lacking electricity



Note: Excludes very high HDI countries.

Source: HDRO staff calculations based on data from the Oxford Poverty and Human Development Initiative.

with wood, straw, charcoal or dung.⁴ Major energy inequalities persist across regions, countries, gender and classes. Acknowledging that energy distribution cannot be considered apart from political and social exclusion,⁵ the 65th United Nations General Assembly proclaimed 2012 as the International Year of Sustainable Energy for All.⁶

One multidimensionally poor person in three (32 percent) lacks electricity, and there is a strong regional pattern to this deprivation (figure 4.1). More than 60 percent of the multidimensionally poor in Sub-Saharan Africa lack electricity, compared with less than 1 percent in Europe and Central Asia. Progress in electrification has been slow in Africa. Electricity generation capacity per person in Sub-Saharan Africa today is similar to levels in the 1980s but just a tenth that in South and East Asia. And rural electrification has stagnated at below 10 percent—while growing to 50 percent for developing countries as a whole.⁷

Electrification can reduce poverty by increasing productivity, employment and time spent in school and reducing environmental pressures. For instance, in South Africa electrification is associated with a 13 percent greater likelihood of women participating in the labour market,⁸ while in Viet Nam it increased income, consumption and schooling outcomes.⁹ Bhutanese villagers attest enthusiastically to the difference electricity makes in their lives, citing the ability to work in the evenings and cook without wood, which reduced respiratory problems and time spent fetching fuel.¹⁰

Expanding energy access and mitigating climate change can be presented as trade-offs. For instance, the World Bank's recent \$3.75 billion loan to South Africa to build one of the world's largest coal-fired plants will expand access, but the project raised concerns about greenhouse gas emissions and environmental degradation as well as carbon lock-in when the longevity of infrastructure prolongs the use of obsolete technologies.¹¹

But the prospect of win-win-win options enables us to go beyond trade-offs. Recent *World Energy Outlook* estimates indicate that providing everyone with basic modern energy

services would increase carbon dioxide emissions only 0.8 percent by 2030.¹² Off-grid and decentralized options are important and technically feasible. While difficult to quantify, the number of rural households already served by renewable energy is estimated in the tens of millions, through such schemes as micro-hydropower in villages and county-scale mini-grids, an important source of energy in Brazil, China and India.¹³

There have been some successes in extending energy access to the poor, including through decentralized energy systems. The challenge is to make such innovations happen at a scale and speed that will improve the lives of poor women and men now and in the future.¹⁴ Governments can do more to support entrepreneurship and capital acquisition for alternative energy startups.¹⁵ As Latvia and other countries have shown, the right legal framework can boost growth in the nonrenewable energy sector and limit emissions from traditional energy sources.

Increasing efficiency is important too. And innovations are proceeding, from improved stoves—which have reduced fuelwood requirements some 40 percent in parts of Kenya and dramatically cut pollution levels and improved child health in Guatemala¹⁶—to more energy-efficient buildings—which can reduce heating and cooling loads.¹⁷

Making energy cleaner

Any long-run strategy for broadening energy access must include actions to promote cleaner energy.¹⁸ There are encouraging signs. By 2010 more than 100 countries—up from 55 in 2005—had enacted some policy target or promotion policy for renewable energy, including all 27 EU members. Many countries specify a target share of renewables in electricity production, typically 5–30 percent, but within a range of 2 percent to 90 percent.

In several countries renewables constitute a rapidly growing share of total energy supply. The share is 44 percent of energy in Sweden, one of the better performers identified in chapter 2. As of 2008 Brazil produced almost 85 percent of its electricity from renewables, and Austria 62 percent. And hydropower accounts

for close to 70 percent of electricity generated in Sub-Saharan Africa (excluding South Africa).¹⁹

According to the Renewable Energy Policy Network for the 21st Century, global energy supply reached a tipping point in 2010, as renewables accounted for a quarter of global power capacity and delivered almost a fifth of electricity supply²⁰ (see statistical table 6). Virtually every renewable technology has seen consistently strong growth. Some highlights:

- *Wind.* Despite the 2008 global economic crisis, new wind power installations reached a record 38 gigawatts in 2009, a 41 percent increase over 2008 and equivalent to nearly a quarter of total global installations.
- *Solar.* Grid-connected solar photovoltaic systems have grown at an annual average of 60 percent over the past decade, increasing 100-fold since 2000, with major expansions in the Czech Republic, Germany and Spain. Unit prices have declined sharply—some dropping 50–60 percent, to less than \$2 a watt. Generous feed-in tariffs are one reason. An estimated 3 million households in rural areas get power from small solar photovoltaic systems, and an estimated 70 million households worldwide have solar hot water heating.

Since 2004 global renewable energy capacity for many technologies has grown 4–60 percent a year, spurred by new technology, high and volatile oil prices, climate change concerns, and local, national and global policy developments.²¹

Developing countries are adopting renewable energy and now have more than half of global renewable power capacity. China leads the world in several indicators of market growth, including wind power capacity and biomass power, while India stands fifth in wind and is fast expanding such rural renewables as biogas and solar. Brazil produces much of the world's sugar-derived ethanol and is adding new biomass and wind power plants.

The continuing roll-out of renewable energy sources will require large private investments, but corruption and lack of regulation can slow the momentum. A recent

Transparency International study, for example, reported that almost 70 percent of potential energy investors in North Africa consider regulatory risk, including corruption, a serious impediment to investment.²² Technical limitations must also be overcome. For example, intermittency raises capital costs for wind and solar power and requires supplementation by other sources. Improved storage technologies are also needed.

Currently, more than 90 percent of clean energy investments are in the G-20 countries.²³ To expand equity and sustainability in clean energy globally, concerted efforts are needed to improve conditions in other countries that would enable future investments.²⁴ In the next chapter we call for addressing perverse incentives and market distortions, reducing risks and increasing rewards, and increasing accountability in global environmental governance. Beyond facilitating greater access and lowering emissions, clean energy can create new industries and jobs. Installing 1 megawatt of wind turbine capacity creates an estimated 0.7–2.8 times the permanent employment of a comparable natural gas combined-cycle power plant; installing 1 megawatt of solar capacity creates up to 11 times more.²⁵ An estimated 3 million people worldwide already work in renewable energy industries, about half of them in biofuels.²⁶

Reining in global emissions

Policies to cut emissions nationally entail both potential advantages and concerns about equity and capacity.

Table 4.1 lists illustrative policy instruments to cut carbon dioxide emissions and their key equity effects. Typically, instruments must be combined to deal with the broad range of market failures.

Pricing can powerfully affect behaviour. An obvious candidate is the reduction of fossil fuel subsidies, which are expensive (amounting to about \$312 billion in 2009 in 37 developing countries)²⁷ and encourage consumption. The Organisation for Economic Co-operation and Development estimates that phasing out the subsidies could free fiscal resources and reduce global greenhouse gas emissions 10 percent by

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2050—more than 20 percent in oil-exporting countries.²⁸ Similarly, subsidized electricity prices for agriculture often encourage greater groundwater extraction, risking over-exploitation.²⁹ These types of perverse subsidies favour medium and large producers over smaller farmers because smaller farmers rarely pump water and instead use wheels, surface water or rainfall.³⁰

TABLE 4.1
Key equity aspects of a menu of instruments to reduce carbon dioxide emissions

Policy instrument	Examples	Key equity aspects	Other considerations
Cap-and-trade permits	<ul style="list-style-type: none"> • EU trading scheme 	<ul style="list-style-type: none"> • If permits are given away, this favours incumbent firms and does not raise revenue 	<ul style="list-style-type: none"> • Potentially high monitoring and enforcement costs • Carbon permit prices can be volatile.
Emissions targets	<ul style="list-style-type: none"> • Voluntary targets of European Union, Indonesia and the Russian Federation to reduce emissions 	<ul style="list-style-type: none"> • Depends on pattern of consumption and production 	<ul style="list-style-type: none"> • If electricity is generated with fossil fuels, targets will cause prices to rise • Poor people spend a larger proportion of their income on energy
Taxes or charges	<ul style="list-style-type: none"> • Fuel and coal taxes • Motor vehicle taxes 	<ul style="list-style-type: none"> • Depends on pattern of consumption and production 	<ul style="list-style-type: none"> • Fiscal revenue potentially as high as 1–3 percent of GDP in Organisation for Economic Co-operation and Development countries by 2020^a
Subsidies for renewables	<ul style="list-style-type: none"> • Hybrid cars • Subsidies for electric vehicles 	<ul style="list-style-type: none"> • Depends on purchase patterns, but unlikely to be progressive; could be targeted (means tested) 	<ul style="list-style-type: none"> • Potentially expensive; more than \$7,000 per vehicle in Belgium, Canada, China, the Netherlands, the United Kingdom and the United States
Subsidy cuts	<ul style="list-style-type: none"> • Fossil fuels • Electricity for irrigation 	<ul style="list-style-type: none"> • Eliminating subsidies would create substantial fiscal and environmental benefits 	<ul style="list-style-type: none"> • Fossil fuel subsidies cost around \$558 billion in 2008 and \$312 billion in 2009 • Complete phase-out by 2020 could reduce emissions 20 percent in non-European countries, the Russian Federation and the Arab States
Performance standards	<ul style="list-style-type: none"> • Limits on car emissions • Energy efficiency standards 	<ul style="list-style-type: none"> • May raise costs and limit access of the poor 	<ul style="list-style-type: none"> • Does not allow firms to reduce emissions at the lowest possible cost
Technology standards	<ul style="list-style-type: none"> • Building and zoning codes 	<ul style="list-style-type: none"> • Care needed to avoid cost increases that are prohibitive for the poor 	<ul style="list-style-type: none"> • Importance of appropriate technology
Better information	<ul style="list-style-type: none"> • Public awareness campaign • Emission and energy use disclosure requirements 	<ul style="list-style-type: none"> • Ensure outreach and accessibility to disadvantaged groups 	<ul style="list-style-type: none"> • Group identity of users matters

a. At \$50 per tonne of carbon dioxide equivalent greenhouse gas emissions.

Source: Based on OECD (2010c).

But the optimal policy here, as elsewhere, depends on context. Careful investigation and targeted compensation are needed where the affected goods and services account for a large share of family spending. Redistribution can be implemented through social transfers or, if the tax base is broad enough, through tax cuts for the poor. To compensate for lower oil subsidies, Indonesia implemented a cash transfer scheme in late 2005 targeting 15.5 million poor and near-poor households (some 28 percent of the population). To offset higher energy prices, Mexico supplemented its conditional cash transfer programme in 2007. And Iran replaced oil-based subsidies on fuel, food and other essentials with a transitional monthly \$40 cash grant to 90 percent of the population in 2010, leading to a drop of 4.5 percent in gas consumption and 28 percent in diesel consumption.³¹

Several large developing countries have committed to deep carbon cuts. For example, in 2009 China set a goal of lowering carbon intensity 40–45 percent from 2005 levels over the next decade, later announced further short-term targets and is supporting renewable energy through subsidies, targets and tax incentives.³² In 2010 India announced voluntary targeted reductions of 20–25 percent in carbon intensity.

These new commitments are important steps in the transition to a lower carbon economy. As we saw in table 2.1 in chapter 2, falling carbon intensity of production globally lowered total emissions growth between 1970 and 2007 well below what it would have been otherwise.

But the announcements must be put in perspective. Reduced carbon intensity can run alongside rising greenhouse gas emissions if economic growth continues apace. Despite increased energy efficiency, US emissions have continued to grow—more than 7 percent from 1990 to 2009.³³ China was already reducing carbon intensity at 1.4 percent a year over 1970–2007, but rapid economic growth meant that total emissions still grew 5.9 percent a year. The new target would more than double the rate of carbon intensity reduction to 3.8 percent a year, but again that does not mean that China's total emissions will decline. In fact, if China's economic growth through

2020 exceeds 3.9 percent (as predicted), its total emissions would continue to rise; if the economy continues to grow at the 9.2 percent annual rate of the past decade, total emissions would increase 2.8 percent a year.

Other countries have committed to reducing absolute emissions. Indonesia has announced a target of reducing carbon dioxide emissions 26 percent.³⁴ Similarly, the European Union, as part of its 20/20/20 plan to be met by 2020, committed to cutting greenhouse gas emissions 20 percent from 1990 levels, increasing renewable energy use 20 percent and reducing energy consumption 20 percent through improved energy efficiency.³⁵

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In sum, expanding access to modern energy for all and developing renewable energy sources are gaining traction, but involving the state, donors and international organizations is critical for investing in research and development and reducing disparities within and across countries. Moreover, strong efforts are needed to include the poor: if current trends continue, more people will lack access to modern energy in 2030 than today.³⁶

Water access, water security and sanitation

Chapter 3 told of the devastating impacts of lack of access to potable water. Addressing this inequity calls for managing water resources differently to serve a growing world population. Water security, defined as a country's ability to secure enough clean water to meet needs for household uses, irrigation, hydro-power and other ends, has win-win-win possibilities. In poorer countries the greatest needs are for household and agricultural uses. While the two uses are closely linked, particularly for rural communities, the policy implications differ.

Household water

A first step in increasing access to potable water is recognizing equal rights to water, regardless of ability to pay. Right-to-water legislation exists in 15 countries in Latin America, 13 in Sub-Saharan Africa, 4 in South Asia, 2 in East

Asia and the Pacific and 2 in the Arab States.³⁷ In July 2010 the UN General Assembly recognized the right to water and sanitation and acknowledged that clean drinking water and improved sanitation are integral to the realization of all human rights. In all countries, improving access to these facilities can be a key driver in poverty reduction.

And there is cause for optimism. Innovative approaches are under way in many countries.³⁸ Some highlights:

- *Providing affordable access.* Small-scale, needs-driven technologies can provide households with low-cost potable water. In Cameroon cheap biosand filters, developed in South Africa, are used to make water safe to drink.³⁹ In India the international nongovernmental organization (NGO) Water for People partnered with a local university to develop simple, locally manufactured filters that remove arsenic from the water at public wellheads in West Bengal.⁴⁰ Governments have the obligation to connect their populations to modern waterworks through public, private or civil society service provision, but encouraging these types of local innovations can relieve water deprivation even before larger water infrastructure projects can be implemented.
- *Supporting local communities.* Small grants can support local community efforts to manage water resources. The United Nations Development Programme's Community Water Initiative and other small grant programmes have worked with governments in Guatemala, Kenya, Mauritania and Tanzania to support community water projects.⁴¹

Agricultural water

Agricultural water problems range from lack of access to overexploitation. But again there is cause for optimism—in efficiency gains and real-cost pricing that moves away from often regressive subsidies. Even in a water-abundant country such as the United States farmers use 15 percent less water now than 30 years ago to grow 70 percent more food; the country has doubled its water productivity since 1980.⁴²

Expanding access to modern energy for all and developing renewable energy sources are gaining traction, but involving the state, donors and international organizations is critical for reducing disparities

Better access to safe water and sanitation can improve health directly and productivity indirectly and contributes to human dignity, self-respect and physical safety, particularly for women

Recognizing the problems of overexploitation of water and the need to ensure equitable access has led to promising new schemes. Several countries in the Arab States have water user associations that now operate and manage irrigation systems, establishing service levels and charges. In Yemen water-saving technologies and regulatory systems are designed in consultation with users to ensure that the technologies meet farmers' needs and that regulatory systems are equitable. And in Egypt pilot programmes have reduced public subsidies; increased the efficiency of water use, operations and maintenance; and reduced pollution.⁴³

Analysis of the distributional impacts of water investments is important. For example, irrigation investments can buffer weather shocks to smooth consumption over time, but the effects can be uneven. Recent analysis of large irrigation dams in India found that people living downstream were likely to benefit, while those living upstream were likely to lose.⁴⁴

Healthy, intact ecosystems, such as forest headwaters, are vital for sustaining the flow and quality of water for human use. An estimated one-third of the world's largest cities depend on intact protected forest areas for their water supply.⁴⁵ In Venezuela water from 18 national parks meets the fresh water needs of 19 million people, or 83 percent of the urban population, and about 20 percent of irrigated lands depend on protected areas for water.⁴⁶ This is also critical for rural areas. Indonesia's Lore Lindu National Park provides water for irrigation and fish to support rural livelihoods.

Sanitation

Almost half the people in developing countries lack access to basic sanitation services.⁴⁷ Expanding access can improve health directly and productivity indirectly and, as discussed in chapter 3, contributes to human dignity, self-respect and physical safety, particularly for women. Our own analysis confirms that better access to safe water and sanitation are also positively associated with women's health outcomes relative to men—in other words, women benefit disproportionately

from access to safe water and sanitation, all else equal.

Several innovative approaches have provided small-scale access to sanitation:

- Manaus, Brazil, recently used a \$5 million grant to connect 15,000 mainly poor households to a modern sewage system, by subsidizing services to poor households that otherwise could not afford the service. To encourage take-up, the project worked to raise awareness of the benefits, since the failure of even a small number of households to adopt modern sewage systems can result in contamination of water sources.⁴⁸
- SaniMarts (Sanitation Markets) in eastern Nepal help households buy materials to construct or upgrade latrines. Piloted in Southern India, SaniMarts are local shops staffed by trained sanitation promoters who sell latrine construction materials at affordable prices.⁴⁹
- The Sanitation Marketing Pilot Project in Cambodia sought to enhance the adoption of latrines in the provinces of Kandal and Svay Rieng by demonstrating that selling them could be a profitable business enterprise. The “easy latrine” was sold as a complete package that households could easily install themselves. The commercial viability of the product led private businesses to invest their own resources to address demand.⁵⁰

Despite some regional successes, most such programmes have not been scaled up, largely because they lack strong local leadership or interest, because skills are weak and because monitoring and evaluation are insufficient.⁵¹ One exception is an initiative known as the Global Scaling up Rural Sanitation Project, supported by the World Bank in rural India, Indonesia and Tanzania, which has reached an estimated 8.2 million people over four years. Its success is traceable, at least in part, to better performance monitoring, which shifts the focus to outcomes.⁵²

While most approaches focus on supply, Community-led Total Sanitation targets demand (box 4.1). Along with increasing the use of toilets, other behavioural interventions,

such as promoting hand washing,⁵³ are reducing faecal bacterial contamination in Africa and Asia.

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In sum, greater public policy efforts are needed to increase investments in water and sanitation to improve access. Current patterns of natural resource exploitation are creating huge environmental hardships for the poor, who are often excluded from even minimal levels of service. Access can be increased by building on the successes of a range of countries, many at the local and community levels, and by involving national governments and development partners.

Averting degradation

We turn now to three keys to reducing degradation pressures: expanding reproductive choice, supporting community management of natural resources and conserving biodiversity while promoting equity.

Expanding reproductive choice

Reproductive rights, including access to reproductive health services, are a precondition for women's health and empowerment and essential to the enjoyment of other fundamental rights. They form a foundation for satisfying relationships, harmonious family life and opportunities for a better future. Moreover, they are important for achieving international development goals, including the Millennium Development Goals. Important in themselves, fully realized reproductive rights can also have positive spillover effects on the environment if they slow population growth and reduce environmental pressures.

Recent projections put the world's population at 9.3 billion by 2050 and 10 billion by 2100, assuming that fertility in all countries converges to replacement levels.⁵⁴ However, calculations also suggest that simply addressing unmet family planning need in 100 countries could shift global fertility below replacement levels, putting the world on a path to an earlier peak in population and then a gradual decline.⁵⁵ This can be done through initiatives

BOX 4.1

From subsidy to self-respect—the revolution of Community-led Total Sanitation

Chapter 3 reviewed how faecal-related infections, now rare in richer countries, are stubbornly endemic in others. Some 2.6 billion people lack sanitary toilets, and 1.1 billion people defecate in the open.

That the Millennium Development Goal for sanitation is the farthest off track results partly from a failed reliance on hardware subsidies. The top-down approach, with subsidized standard designs and materials, has provided inadequate toilets that cost too much, delivered them to people who are not the most poor, achieved only partial coverage and use, and engendered dependence.

Community-led Total Sanitation (CLTS) turns all this on its head. There is no hardware subsidy, no standard design, no targeting the poor from outside. Collective action is key. Pioneered by Kamal Kar and the Village Education Resource Centre in partnership with WaterAid in Bangladesh in 2000, CLTS teaches communities to map and inspect their defecation areas, calculate how much they deposit and identify pathways between excreta and mouth. It helps communities “face the shit” (the crude local word is always used). Disgust, dignity and self-respect trigger self-help through digging pits and adopting hygienic behaviours. With follow-up encouragement, community members also address equity. Children and schools are often involved.

Sustainability is enhanced by social pressures to end open defecation. There are challenges, and few communities have done away with it completely. Sandy pit walls can collapse—and floods devastate—but households and communities have bounced back and moved themselves up the sanitation ladder, installing better, more durable toilets.

Where governments and communities have endorsed CLTS and enabled quality training and well led campaigns, outcomes have been remarkable. In Himachal Pradesh, India, the number of people in rural areas who had toilets rose from 2.4 million in 2006 to 5.6 million in 2010 out of a total population of 6 million. CLTS has spread to more than 40 countries: more than 10 million people in Africa and Asia already live in open defecation-free communities, and many more have benefited from toilets. In some countries CLTS is making the sanitation Millennium Development Goal look not just achievable but surpassable.

In a 2007 *British Medical Journal* poll sanitation was voted the most important medical advance of the past 150 years. And CLTS won the journal's competition in 2011 for the idea most likely to have the greatest impact on healthcare by 2020. The quality of training, facilitation and follow-up are all critical as CLTS is scaled up. CLTS expansion could reduce the suffering and enhance the health, dignity and well-being of hundreds of millions of deprived people.

Source: Chambers 2009; Mehta and Movik 2011.

that empower women and increase their access to contraceptives and other reproductive health services.

It follows that greater worldwide availability and adoption of reproductive health and family planning services raise the prospect of a win-win-win for sustainability, equity and human development. Of course the environmental gains depend on carbon footprints at the individual level. For instance, an average citizen in Australia or the United States accounts for as much carbon dioxide emissions in two days as an average citizen of Malawi or Rwanda in a year. Reproductive health and family planning are critical in Malawi and

Rwanda—where women still have an average of five children—but will not significantly reduce carbon dioxide emissions. By contrast, innovative programmes such as Family PACT in California, which reimburses physicians for providing reproductive healthcare to low-income women and prevents almost 100,000 unintended births each year, not only improve the lives and health of women and their families but also reduce the future carbon footprint by some 156 million tonnes a year.⁵⁶

Reproductive rights include choosing the number, timing and spacing of one's children and having the information and means to do so. A rights-based approach means addressing demand—by informing, educating and empowering—and ensuring access to the supply of reproductive health services. Many reproductive choice initiatives are under way worldwide—though most focus more on the supply side.⁵⁷

The incremental infrastructure requirements of reproductive services are typically modest because service delivery can often piggyback on other health programmes. Several initiatives exploit synergies among population, health and environment programmes at the community level. These include a United States Agency for International Development pilot programme in Nepal covering some 14,000 community forest user groups⁵⁸ and the PATH Foundation's Integrated Population and Coastal Resource Management Initiative in the Philippines, which show how to bring reproductive health services into existing community-run programmes. Cambodia and Uganda have similar initiatives.⁵⁹ ProPetén, an organization devoted to preventing deforestation in Guatemala, augmented its deforestation prevention initiatives with an integrated approach to population, health and environment that was associated with a decline in average fertility in the region from 6.8 births per woman to 4.3 over a decade.⁶⁰

Better management and more effective targeting of resources often bring large gains, even in resource-poor areas. A local sustained leadership development programme for health workers in Aswan, Egypt, led to more frequent prenatal and childcare visits by health

workers, with large benefits in reduced maternal mortality.⁶¹

A number of governments have reformed policy frameworks and programmes to improve reproductive health. In Bangladesh the fertility rate fell from 6.6 births per woman in 1975 to 2.4 in 2009, a huge drop attributed to the introduction of a major policy initiative in 1976 that emphasized population and family planning as integral to national development. Measures included community outreach and subsidies to make contraceptives more easily available, efforts to influence social norms through discussions with the community (religious leaders, teachers, NGOs), education of both men and women and development of reproductive health research and training activities.⁶²

In many cases partnerships across different groups and with a range of service providers have brought gains. In three rural districts and two urban slums in Kenya, poor families were given vouchers to pay for reproductive health and gender-based violence recovery services.⁶³ In Viet Nam a long-term collaboration of the government, provincial health institutions and several NGOs has led to dramatic improvements in the quality of reproductive health services, provision of new services and establishment of a sustainable clinical training network in reproductive health.⁶⁴

Similarly, in Iran efforts to introduce reproductive health services began in the late 1980s, when rapid population growth was recognized as an obstacle to development. Today, nearly 80 percent of married women use contraception⁶⁵—the country also has a maternal mortality ratio that is less than 8 percent of that in South Africa, which has a similar per capita income. In 2009 Mongolia endorsed a national strategy for reproductive health, included the services in the mid-term budget framework and committed to fully funding contraceptive supply by 2015. Lao PDR's Ministry of Health implemented a community-based distribution model for providing family planning services in three poor southern provinces. The programme sharply increased contraceptive prevalence, in some

regions from less than 1 percent in 2006 to over 60 percent in 2009.⁶⁶

Several initiatives show encouraging evidence of the effect of raising awareness of reproductive healthcare. ProPeten sponsored a radio soap opera to disseminate information on the environment, gender issues and reproductive health.⁶⁷ Using the extensive mobile phone networks now common in developing countries—more than 76 percent of the world’s population⁶⁸ and more than 1 billion women in low- and middle-income countries currently have access⁶⁹—multiple initiatives, including the Mobile Alliance for Maternal Action, provide customized health information to expectant and new mothers in Bangladesh, India and South Africa.⁷⁰ These approaches have enormous potential, though their widespread effectiveness has yet to be demonstrated.

Concerted government efforts are needed to achieve universal access to reproductive healthcare, which yields rich dividends in lower fertility rates and better health and education outcomes. Bangladesh’s success suggests that the bottleneck is not resources but priorities and political will. The incremental infrastructure requirements are low, but just increasing provision is not enough. Information and training are needed to boost uptake of these programmes in ways that respect tradition and social mores. Community-based programmes have great potential, as do new forms of communications and connectivity.

Supporting community management of natural resources

Support is growing for community management of natural resources as an alternative to centralized control, especially where communities depend on local natural resources and ecosystems for their livelihoods. Increasing interest in reforestation in countries as diverse as Costa Rica, Estonia and India reflects the potential for success.⁷¹

While participatory management of common resources has been widely embraced as a promising concept, a detailed review commissioned for this Report shows that the reality is more nuanced.⁷² Local structural factors

affect who benefits from community management. The distribution of wealth (including land tenure rights) and knowledge and participation in decision-making are especially important. For example, when influential stakeholders benefit from a common resource, they might invest heavily in restricting access, thus enhancing sustainability but at a cost to equity. As we discuss below, evidence suggests that more equal and socially cohesive communities are more likely to organize and agree on how to deal with collective action problems.⁷³

A major threat to equity is women’s exclusion from decision-making. With no community voice, women are often excluded from the benefits of common resources while bearing a disproportionate share of the costs, as in some parts of India.⁷⁴ For example, deciding to close forests without considering women’s needs can deprive women of fuelwood, increase the time they spend finding alternative sources of fuelwood and fodder and reduce their income from livestock products. More generally, our analysis suggests a causal link between our Gender Inequality Index and deforestation in more than 100 countries between 1990 and 2010. And as chapter 3 notes, empirical evidence stresses the importance of the nature and extent of women’s participation in management decisions.⁷⁵

One of the most successful and equitable models of community management of natural resources is the community-conserved area—land or water protected by legal or other means and owned and managed by a community. Around 11 percent of the world’s forests are known to be under community ownership or administration,⁷⁶ but this is likely a severe underestimate.⁷⁷ Community-conserved areas help ensure equitable access to resources, sustain human development through essential ecosystem services and maintain ecosystem integrity.

Locally managed marine areas—areas of near-shore waters and their associated coastal and marine resources—also provide win-win solutions. Pacific Island communities, such as Fiji, have dozens of such areas where island communities have long practiced traditional management systems that include

As an alternative to centralized control, community-conserved areas help ensure equitable access to resources, sustain human development through essential ecosystem services and maintain ecosystem integrity

Culture, norms and environmental protection

The values and beliefs that shape people's relationships with their natural environment are central to environmental sustainability, as are accumulated traditional knowledge and community practices of environmental management. The environmental management skills of local people may include multiuse strategies of appropriation, small-scale production with little surplus and low energy use, and a variety of custodial approaches to land and natural resources that avoid waste and resource depletion.

Case studies suggest that traditional values can protect natural resources. Over three decades in the Zambezi Valley of Zimbabwe, for instance, forests considered sacred lost less than half the cover of those that were not. In Ghana conservative traditions and practices led to the designation of sacred areas and to periodic restrictions on farming, harvesting and fishing. Local knowledge also informs natural disaster responses. Chile reported only 8 fisher victims out of an estimated population of about 80,000 following the February 2010 tsunami, thanks mostly to lessons from previous tsunamis passed down through elders' stories and neighbours' evacuation alerts.

Though such knowledge is often downplayed and overlooked, traditional values have also informed policy. In Andavadoaka, a small fishing village in Madagascar, the community initiated a sustainable octopus fishing initiative that inspired other villages and became the country's first locally managed marine area, involving 24 villages. And in Afghanistan the government is drawing on elements of long-standing *mirab* systems—in which locally elected leaders manage water rights—in creating water use associations.

Source: Byers and others 2001; Marín and others 2010; Thomas and Ahmad 2009; Sarfo-Mensah and Oduro 2007; UN 2008.

seasonal fishing bans and temporary no-take areas. Community-conserved marine areas provide enormous value to local communities in the forms of fish protein and sustainable livelihoods.⁷⁸

Communities can manage natural resources using a variety of mechanisms, including payments for ecosystem services and community-conserved areas. Cultural or traditional norms emerge as important (box 4.2). Success requires broad stakeholder inclusion in returns—from the resources themselves as well as from their management. Local processes and national commitment are also important. Sweden's experience in the 1960s, reviewed in box 2.10 in chapter 2, shows that national environmental protection mandates can support community management.

Where the livelihoods of multiple stakeholders are closely tied to natural resources, community-based management is susceptible to conflict. As discussed in chapter 3, scarcity of natural resources and environmental stresses can contribute to the eruption and escalation of conflict. In some cases public policies exacerbate the sources of conflict, especially when policies worsen horizontal inequality⁷⁹ or negatively affect people living within particular

ecosystems. In some cases—including Costa Rica and the Philippines—greater decentralization and comanagement of natural resources have helped alleviate tensions.

Conserving biodiversity while promoting equity

In recent years perceived trade-offs between preserving livelihoods and maintaining biodiversity have been replaced by a clearer understanding of the potential synergies. For instance, preserving natural ecosystems and biodiversity can help secure livelihoods, food, water and health. Many countries (including Botswana, Brazil and Namibia) and international organizations (including the United Nations Development Programme) are calling for investments to preserve biodiversity for its potential development benefits. One instrument is to assign and enforce protected area status to ecosystems, putting in place measures to avert or reverse land degradation and ecotourism. Ecotourism in particular is a promising route to protecting biodiversity while enhancing livelihood opportunities for the local community. The primary challenge is to ensure equitable participation, including by women.⁸⁰

A recent survey found that nature-based tourism is one of several conservation mechanisms that can reduce poverty.⁸¹ In Namibia, for example, an ecotourism programme has protected nearly 3 million hectares of land and marine areas housing great biodiversity. Especially important for equity, the programme has improved livelihoods immensely. And with roughly 29 percent of the wealth generated by these protected areas going to labour and another 5 percent to traditional agriculture, the programme shows the potential of protected areas to reduce poverty as well.⁸² Similarly, an initiative to conserve biodiversity at the level of landholders in the island state of Vanuatu led to the establishment of 20 conservation sites, which reduced poaching and enhanced fishstocks and incomes for local communities. And in Ecuador the government entered into an agreement with the United Nations Development Programme in 2010 to establish an international trust fund to

protect Yasuni National Park, an area rich in biodiversity and home to the indigenous Tagaeri and Taromenane people, from oil drilling. Though too early to assess the results, the initiative offers a model for preserving such ecosystems through developed country compensation of poorer countries.⁸³

Another example of promoting livelihoods while maintaining biodiversity is agroforestry, which entails an integrated approach of combining trees, shrubs and plants with crops and livestock to create more diverse, productive, profitable, healthy and sustainable land-use systems. Agroforestry production can be seen in the Yungas region on the eastern slope of Peru's Central Andes, among an indigenous community of around 32,000 inhabitants. This enables the community to conserve genetically important species while providing for a range of nutritional, medicinal and commercial purposes.⁸⁴

Integrated conservation and development projects aim to conserve biodiversity while promoting rural development. For example, in Nepal's western Terai Complex communities reduce pressures on natural forests by focusing on biodiversity-friendly and sustainable land and resource use practices. Such projects ensure that communities, particularly women and the poor, have viable alternatives for income, while reducing pressures on natural ecosystems.⁸⁵

Addressing climate change—risks and realities

Finally in this review of promising approaches, we consider two key policy directions to offset the impacts of climate change on people: equitable and adaptive disaster responses and innovative social protection.

Equitable and adaptive disaster responses

As chapters 2 and 3 show, natural disasters are disequalizing, reflecting economic and power relations at the local, national and global levels. But planning and targeted responses can reduce the disparities. Two promising avenues are community-based disaster risk mapping

and progressive distribution of reconstructed public assets.

Experience has led to a shift from top-down models of disaster recovery to decentralized approaches. Community-based disaster risk programmes are generally better than centralized programmes at tapping local knowledge of capacities and constraints for emergency relief and longer term recovery and reconstruction. Local organizations are also often better able to reach remote and restricted areas—as demonstrated in Aceh, Indonesia, and Sri Lanka, where periods of armed conflict made it difficult for international aid workers to operate.⁸⁶ Some attention is needed to avoid depending exclusively on local organizations, which could intensify disparities and exclusion.

Community-led vulnerability and resource mapping has demonstrated effectiveness:⁸⁷

- In Mount Vernon, one of the poorest communities in Jamaica, community-led disaster mapping highlighted flooding problems and led to agreement on the need for footbridges.
- A community-led mapping of women's access to resources and services in Jinja, Uganda, identified corrupt land distribution and denial of women's rights to land as impediments to women's access. Grassroots leaders responded by setting up savings clubs and rotating loan schemes, which improved women's access to land titles and helped them develop their property.

Community involvement can be enormously empowering for poorer communities, as shown by disaster training programmes in 176 districts in the 17 most hazard-prone Indian states. Female master trainers reached out to women in their communities and served as role models. Engaging women in community risk-mapping involved them in decision-making, giving them greater voice and control over their lives. In the words of Mitali Goswami of Ngoan District in Assam, "We feel very useful and are filled with pride when we see ourselves fulfilling our responsibilities towards the family and community."⁸⁸

Poor rural communities are disproportionately affected by ecosystem degradation and disproportionately benefit from their

Poor rural communities are disproportionately affected by ecosystem degradation and disproportionately benefit from their protection and restoration

protection and restoration. Sometimes the most efficient and equitable ways to avoid and mitigate disasters are to manage, restore and protect the ecosystems that buffer the community. For example, villages with healthy mangroves, coral reefs and lowland forests were better protected from the 2004 tsunami in India, Indonesia, Malaysia and Sri Lanka.⁸⁹

Structural inequalities are often embedded in patterns of infrastructure and social investments and reflected in the outcomes. Rebuilding after environmental disasters can address past biases and other factors that perpetuate poverty and inequality. When Northern California was recovering from the 1989 Loma Pietra earthquake, the community opposed rebuilding the freeway along the original route, which divided neighbourhoods and exposed them to vehicular pollution. The freeway was rerouted through nearby industrial land, and

agreements were reached to promote local hiring and contracting on reconstruction.⁹⁰

Innovative social protection

Growing evidence shows that social protection programmes—assistance and transfers to enhance the capacity of poor and vulnerable people to escape poverty and manage risks and shocks—can help families maintain stable consumption and meet broader distributive goals.⁹¹ As many as 1 billion people in developing countries live in households that receive some form of social transfer.⁹²

Table 4.2 shows four types of social protection measures that, appropriately combined, can promote both equity and environmental objectives. We highlight both the potential benefits and the challenges of targeted cash transfers, employment schemes, weather-based crop insurance and asset transfers.

Social protection programmes can help people access modern energy sources, clean water and adequate sanitation. A recent study illuminates the impacts of cash transfers to poor households under Mexico's Oportunidades programme that go beyond the well studied effects on health and education. The transfers have affected both short-run spending on energy services and long-run spending on new appliances (refrigerators, gas stoves). They have enabled families to switch from wood or charcoal to the cleaner, more expensive electricity and liquefied petroleum gas.⁹³

Countries should consider more integrated approaches to social protection—approaches that address environmental sustainability, equity and human development. A recent survey of social protection, disaster risk reduction and climate change adaptation schemes in South Asia revealed that few countries integrate such programmes. Of the 124 programmes surveyed, just 16 percent combined all three elements.⁹⁴ One example is South Africa's Working for Water, part of an Expanded Public Works Programme launched in 2004. The project, the first of its kind to include an environmental component, increased stream flows and water availability, improved land productivity and biodiversity in some ecologically sensitive areas and inspired

TABLE 4.2

Social protection for adaptation and disaster risk reduction: benefits and challenges

Programme and example	Benefits	Challenges
<i>Targeted cash transfers</i> Ethiopia: Productive Safety Net Programme	<ul style="list-style-type: none"> • Targets the most vulnerable • Stabilizes consumption • Allows adaptive risk-taking and investment • Enhances flexibility to cope with climate shocks 	<ul style="list-style-type: none"> • Ensuring adequate size and predictability of transfers • Reducing risk through long-term focus • Demonstrating the economic case for cash transfers associated with climate shocks • Using socioeconomic vulnerability indices for targeting
<i>Employment schemes</i> India: Mahatma Gandhi National Rural Employment Guarantee Act	<ul style="list-style-type: none"> • Provides 100 days of employment on demand in rural areas • Constructs infrastructure, including projects that enhance community resilience against climate change impacts • Provides a guaranteed income to combat seasonal variations in income 	<ul style="list-style-type: none"> • Ensuring adequate benefits • Accountability and transparency • Increasing awareness to ensure high participation • Controlling costs and avoiding the risk of exclusion
<i>Weather-based crop insurance</i> Government of Malawi and partners: weather-indexed crop insurance for groundnut production	<ul style="list-style-type: none"> • Guards against risk-taking associated with insurance • Frees up assets for investment in adaptive capacity • Can be linked to trends and projections for climate change • Supports adaptive flexibility 	<ul style="list-style-type: none"> • Targeting marginal farmers • Tackling differentiated gender impacts • Keeping premiums affordable for the poor • Subsidizing capital costs • Integrating climate projections into financial risk assessment • Establishing guarantee mechanisms for reinsurance
<i>Asset transfers</i> Bangladesh: Reducing Vulnerability to Climate Change project	<ul style="list-style-type: none"> • Targets the most vulnerable • Can be integrated into livelihood programmes 	<ul style="list-style-type: none"> • Ensuring provision commensurate with the threats faced • Ensuring local appropriateness of assets • Integrating changing natural environmental stresses in asset selection

Source: Adapted from Davies and others in OECD (2009).

similar initiatives for wetlands, coastal areas and waste management.⁹⁵ When reviews of the first phase (2004–2009) found that public works programmes were too short and wages too low to substantially reduce poverty, the government set a new minimum wage for the next phase of the programme.

Public works programmes need to provide options for women and for people unable to work. South Africa’s Working for Water has quotas for women (60 percent) and for people with disabilities (2 percent).⁹⁶ In India women and members of scheduled castes and scheduled tribes account for (an overlapping) 50 percent of participants in the National Rural Employment Guarantee Act.

Involving the community in designing and managing adaptive social protection programmes is important. A review of the India National Rural Employment Guarantee Act illustrates how villagers have been empowered to identify projects and negotiate with local authorities.⁹⁷ How widespread participation in governance and decision-making contributes to strong and accountable institutions and equitable outcomes is discussed further in the following chapter.

Ultimately, how adaptive social protection is implemented turns largely on political preferences for equity and the environment and on how well society is mobilized behind programmes for building long-term resilience as part of social protection and poverty reduction.

* * *

This review of promising approaches provides strong grounds for optimism. It is possible to identify and implement strategies that improve both sustainability and equity—strategies that fall in quadrant 1 of figure 1.1 in chapter 1—to address many of the challenges outlined in chapters 2 and 3. And we have seen successes in such approaches around the world, with tangible benefits for poor and disadvantaged people and the environment. But such outcomes are not automatic. More concerted efforts are needed to integrate equity into policy and programme design and engage people in discussions and decisions that affect their lives. Such approaches must be resourced appropriately, in ways that ensure a progressive distribution of responsibilities. It is to these challenges that we turn in chapter 5.

**We have seen successes
around the world with
strategies that improve
both sustainability
and equity**
