

25th Anniversary Edition

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*Innovations for a
Sustainable Economy*

Decision-Maker Briefs

THE WORLDWATCH INSTITUTE

State of the World Decision-Maker Briefs

Worldwatch's flagship publication, *State of the World*, has informed decision makers around the world about trends in sustainable development since 1984. The book has been published in 36 languages, and over the years it has authoritatively assessed a wide range of issues, including population, energy, water, agriculture, environmental health, and trade. Topics are covered from a global, interdisciplinary perspective, and the stress is on innovation and problem solving. *State of the World* is widely used in university classrooms, cited in the news media, and looked to for timely insights by government officials.

The *State of the World Decision-Maker Briefs*, produced here for the first time, are intended to provide busy decision makers with a quick digest of the most important takeaways from *State of the World*—focusing on cutting-edge innovations for solving the world's most pressing environmental problems.

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Alternatives to business-as-usual can steer most economies onto sustainable paths. Underpinned by a handful of key Big Ideas, economic innovations might just remake our world.

Metrics other than GDP are being developed to better measure the things people most value.

Leading-edge businesses are inventing ways to meet people's needs with a fraction of the environmental impacts.

Overworked and indebted consumers are increasingly open to a focus on quality of life rather than more stuff.

Alternative ways of meeting demand for meat and fish can protect the environment and small farmers.

Improved energy productivity, deployment of renewable energy technologies, and enlightened government energy policies are key to reducing global carbon emissions.

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STATE OF THE WORLD 2008

Seeding the Sustainable Economy

Chapter 1

Key Messages

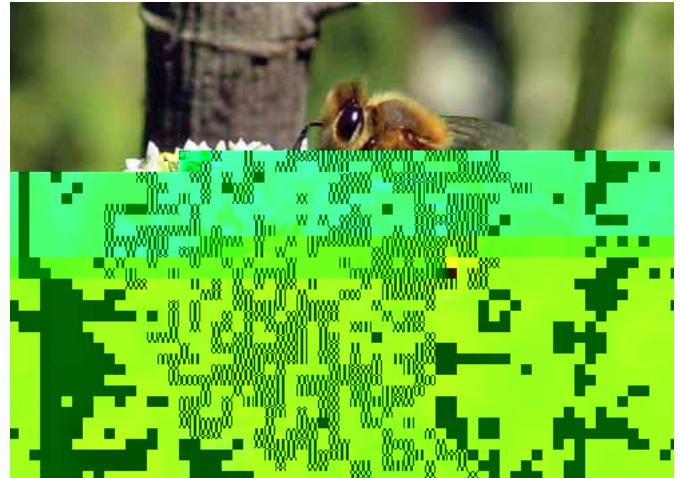
- Innovations in business, government, and civil society suggest that a new kind of economy—a sustainable economy—is struggling to be born.
- These innovations seek to address environmental degradation and social and economic problems created by conventional economic activity.
- A broad set of principles can be used to steer conventional economic activity onto a sustainable path.

The Problem

Economic activity in the 20th century generated more wealth for more people than in any other period in human history. But it also produced widespread environmental degradation, and the prosperity it generated bypassed a large share of the world's people. Three serious global challenges illustrate the failure of economies, as conventionally conceived, to care for the environment and meet the needs of all people: climate change, biodiversity loss, and economic inequality.

Climate change. Human economic activities generate greenhouse gas emissions that are changing our planet's climate. And climate change carries costs: the 2006 Stern Report to the U.K. government estimated the climate impact of "business-as-usual" economic activity over the 21st century to range from 5 percent of global GDP (direct costs) to 20 percent (direct and indirect costs). In contrast, the report estimated the cost of climate *avoidance* at about 1 percent of global GDP. The Intergovernmental Panel on Climate Change (IPCC) estimate was even lower, at about 0.1 percent of global GDP. In other words, it appears to be far cheaper to address climate change than to not.

Biodiversity loss. Economic activity has also taken an enormous toll on biodiversity over the past half century, according to the *Millennium Ecosystem Assessment* produced for the United Nations. Species extinction rates increased to at least 50 to 500 times the natural rate, for example, while 20 percent of the world's coral reefs were lost. The report also documented the economic toll of such losses: some 39 countries experienced a decline of 5 percent or more in wealth (measured as net savings) when biodiversity loss, resource depletion, and carbon damage



Honeybee pollination of key agricultural crops is worth about \$2 billion a year in the United States alone. That contribution to economic activity is increasingly being factored into economic decision-making through agricultural insurance and market mechanisms.

were taken into account. For 10 countries, the decline ranged from 25 to 60 percent.

Economic inequality. Wealth generated by conventional economic activity has failed to reach a large share of the world's poor. Despite an 18-fold increase in total global economic activity between 1900 and 2000, some 40 percent of the global population lived on just \$2 per day or less at the start of the 21st century, with wealth skewed in favor of early industrializing nations. (See Table.) In addition, one in eight people in the world was chronically hungry in 2001–03, while one in five lacked access to clean water, and two in five lacked adequate sanitation. Meanwhile, the U.N. Development Programme reported that in 2006, the combined income of the world's 500 richest people was about the same as the income of the world's 416 poorest people.

Innovations/Solutions

In response to these and other vulnerabilities produced by conventional economies, businesses, governments, and nongovernmental organizations are producing a great many innovations to make economic activity more sustainable. The list of trailblazing experiments ranges from environmental taxes in Europe and cars designed for remanufacture

to cap-and-trade carbon markets, microfinance for the very poor, and product take-back laws.

In order to reach a tipping point where most economic activity is environmentally and socially sustainable, business people, policymakers, and consumers will need to embrace the following guiding principles:

- *Adjust economic scale.*

Economic activity often demands more resources and generates more waste than many ecosystems can support. But economies can be better designed to deliver what people need at a lower environmental cost. Caps on carbon emissions and electricity generated from renewable rather than fossil energy sources, for example, help to lower the environmental impact of energy generation.

- *Shift from growth to development.* The dominant imperative of modern economic activity is growth. Yet growth for its own sake may, on one hand, promote harmful excesses such as obesity or consumer debt, or on the other, neglect the needs of society's poorest. Sustainable development requires that the goal of wealth generation be augmented by an emphasis on wellbeing. Initiatives like microcredit, for example, are meant to ensure that the poor can participate more fully in economic activity. For the prosperous, extended parental leave and shorter work weeks can be used to boost quality of life.

- *Make prices tell the ecological truth.* Prices of goods and services are often distorted through taxes and subsidies that hide their environmental cost. Re-designing fiscal policy around ecotaxes—such as a carbon tax, for example—can reveal and reduce the environmental toll of economic activity. Another innovative fiscal tool is “feebates”—fees on environmentally burdensome consumption—combined with subsidies for environmentally friendly economic activity. Congestion fees on vehicles in London and Stockholm, for example, make rush-hour driving expensive while lowering the price of public transport.

- *Account for nature's contributions.* Economic actors have largely taken for granted many of the services generated

by ecosystems, from the flood prevention services of mangroves to pollination by bees. Properly valuing these services, through taxes and subsidies, can create an incentive structure that helps conserve biodiversity.

- *Apply the precautionary principle.* Most economic activity in the 20th century was assumed to be safe unless proven otherwise. The precautionary principle turns this thinking on its head, placing the burden of proof on companies or others who introduce a new technology or practice. The principle has been

adopted by governments from the European Union to the Los Angeles School Board and the city of San Francisco.

- *Revitalize commons management.* Many “open-access” resources, such as oceans, the atmosphere, and some forests, are overexploited in the absence of rules for their sustainable development. Some people argue that better management would emerge from privatization of these resources, while others advocate government ownership. But a third alternative—commons management administered by public trusts—has emerged as a viable option.

- *Value women.* Most of the world's poor are women, and most women are poor. Attention to women's access to land, credit, and equal pay would help lift an economically important constituency out of poverty and stoke economic activity.

Looking Ahead

Governments, businesses, and non-governmental organizations (NGOs) are stepping up to implement these seven principles, often in collaboration. Governments, for example, are shaping markets for carbon, wetlands, and species conservation that can facilitate sustainable business. NGOs are working with food companies to advance sustainable food production. And businesses are partnering with NGOs and governments to advance renewable energy technologies. Continued participation by all three major societal sectors is an encouraging sign that sustainable economies could be built sooner rather than later.

This brief is based on Chapter 1, “Seeding the Sustainable Economy,” by Gary Gardner and Thomas Prugh, published in the Worldwatch Institute report *State of the World 2008: Innovations for a Sustainable Economy*.

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A New Bottom Line for Progress

Chapter 2

Key Messages

- Gross domestic product (GDP), the dominant measure of economic activity in virtually all countries, is not an accurate metric of societal progress.
- New indicators have emerged that better describe the social and environmental dimensions of societal advance.
- As citizens demand that economies do a better job of dealing with today's environmental and social crises, these new indicators could be useful tools for evaluating modern economic progress.

The Problem

Gross domestic product (GDP) is increasingly recognized as an inadequate measure of the success of an economy, for three reasons: 1) it fails to account for a large amount of economic activity important to many economies, such as unpaid housework and volunteer activities; 2) it does not account for the loss of human and natural capital, as when people are killed in wars, or when forests or species are lost to economic activity; and 3) it includes expenditures that add no new value to an economy, but only remediate a problem created by earlier economic activities. The clean-

Reporting Initiative (GRI), now the world's leading benchmark for measuring and reporting corporate sustainability efforts. Currently, the GRI includes 146 indicators drawn from economic, social, and environmental domains, and 33 "aspects" within these domains, such as biodiversity, labor-management relations, and investment and procurement practices.

Many businesses are finding a clear business case for such reporting. Once waste was measured at the 3M Company, for example, it became easier to eliminate. Total emissions

the planet's capacity to absorb human activities by about 25 percent, implying that we need about 1.25 Earths to sustain present patterns of consumption.

Other macro-indicators are based in part on measures of human wellbeing. The Happy Planet Index, developed in the United Kingdom, compares happiness and life expectancy against environmental health to give a measure of "the ecological efficiency with which people achieve long and happy lives." And the government of Bhutan has used its own measure of national wellbeing, Gross National Happiness, since 1972.

In all, a recent global assessment found green macro-accounting programs in place in at least 50 countries and identified at least 20 others that were planning to initiate such programs soon.

Microeconomic indicators

Measures at the micro-level focus on key dimensions of local sustainability, including sustainability certification, zero waste, eco-efficiency, workplace wellbeing, and community vitality. These cover yardsticks such as share of a business' inputs procured from certified sources, recycling rates, emissions levels, job satisfaction among workers, local procurement, and living wage ratio.

A comprehensive tool for such accounting is the Global



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Rethinking Production

Chapter 3

Key Messages

- Business leaders and policymakers need to rethink the design and production of products and services to offer

into finished goods like machines or buildings. Conversely, three times as much labor is used to convert materials into higher value-added products as is used in the original mining. The bottom line: if economic activity were focused on reconditioning or reprocessing old products instead of making new ones, economies would use less energy and create more jobs.

By the time most human products have been designed (but before they have been built), 80 to 90 percent of the economic and ecological costs they will generate over their lifetimes have already become inevitable. The emerging field of biomimicry, however, shows that “doing business as nature does it” can deliver cheaper and superior products with far less environmental impact. Unlike the “heat, beat, and treat” approach of modern industry, nature runs on sunlight, not high flows of fossil energy. It makes very dangerous substances, but nothing like nuclear waste, which remains deadly for millennia. And it creates no waste, using the output of all processes as the input to some other process. Nature shops locally and creates beauty.

Innovative manufacturers are embracing biomimicry. Researchers at Sandia Labs in the United States have mimicked the way abalone build seashells to create, for example, mineral/polymer layers that are optically clear but almost unbreakable—for use as coatings to toughen windshields, airplane bodies, and other products that need to be lightweight but fracture-resistant. And EcoCover Ltd. of New Zealand produces a biodegradable mulch mat that helps gardeners prevent moisture loss and weed growth naturally, as an alternative to plastic landscaping sheeting. These are just two of many companies that have taken bio-

mimicry to heart in design and production processes.

Looking Ahead

Since the first industrial revolution, at least six waves of innovation have emerged, each based on new technologies that underpin economic prosperity. (See Figure.) Today, as in previous eras, older industries will become less competitive unless they join those implementing the array of sustainable technologies and innovative practices that comprise the next wave of innovation.

Companies that implement resource productivity and sustainable production strategies—such as biomimicry and cradle-to-cradle—can improve every aspect of their shareholder value. Increasing shareholder value in this way requires the adoption of an “integrated bottom line” that recognizes the contribution of environmental and social performance, in addition to financial performance, to a company’s worth. Companies that do so are among the most competitive today. In 2007, the investment bank Goldman Sachs released a study showing that companies with strong environmental, social, and governance policies outperformed the stock market in general by 25 percent. And 72 percent of the companies on the list outperformed their industry peers.

This brief is based on Chapter 3, “Rethinking Production,” by Hunter Lovins, published in the Worldwatch Institute report *State of the World 2008: Innovations for a Sustainable Economy*. To order a copy of *State of the World 2008*, read more briefs in this series, listen to podcasts,



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The Challenge of Sustainable Lifestyles

Chapter 4

Key Messages

- Economic growth has delivered ‘islands of prosperity’ to millions of people but has left ‘oceans of poverty’ and unsustainable stresses on the global environment in its wake.
- Relieving this pressure will require technological efficiency gains, population stabilization, and changes to our lifestyles and aspirations.
- All of these are achievable and could lead to widespread improvements in the quality of life.

The Problem

The modern economy has delivered remarkable affluence to hundreds of millions of people worldwide. But the staggering economic growth behind this wealth generation has inflicted dangerous costs on the environment, even as billions more aspire to the same high standard of living.

How can a world of finite resources and increasingly tight environmental constraints support the expectations of 9 billion people (the mid-range population estimate for 2050)? Will they be able to live the lifestyle of the affluent West and the developed nations, especially when much of the Earth’s “environmental space” has been captured by the wealthy through their use of the world’s resources?

Innovations/Solutions

Freeing up environmental space for the poor, by reducing the impacts of economic activity, can be done in three ways:

- *Resource efficiency of technology* Great gains have been made in this area in recent years and enormous further gains are possible—in energy especially, but also in manufacturing, city planning and design, and so on. Some experts believe that resource efficiency—the amount of “bang for the buck” from resources invested—can be improved by a factor of 10 or more.

• *Stabilizing the global population* Every environmental pressure is worsened by rising numbers of people. Hopeful signs can be seen in the many countries that have approached or achieved the “demographic transition,” which yields steady or even declining populations. Nevertheless, the planet’s total population is now approaching 7 billion and is expected to reach 9 billion or so by 2050.

• *Changing lifestyles* With population set to increase, and even major technological efficiency improvements unable to do the job alone, easing the economic pressure on the global environment will mean adjusting our consumption patterns and changing our lifestyles, especially in the wealthiest nations.

None of this means accepting a lower quality of life. New research over the last 25 years or so has made it increasingly clear that ever-greater consumption is not only a false path to a fulfilling life, it can actually be harmful. Data from around the world suggest that, at lower levels of per capita income, more money can increase life satisfaction. But in countries where per capita income is over \$15,000, there is virtually no connection between the two: more money does not improve life satisfaction. (See Figure.) The same effect can be seen within countries over time. Real per capita income in the United States, for instance, has tripled since 1950, but the percentage of people who say they are very happy has actually declined since the 1970s.

Other evidence—such as the rising rates of obesity and depression—suggests that too much wealth can actually translate into increased unhappiness. Highly materialistic people who define themselves through their money and possessions tend to report lower levels of happiness than others. And there appears to be a correlation between rising consumption and the erosion of things that really do make people happy, such as family stability, friendship, trust in others, and strong communities, which are declining in many wealthy countries.



Resource efficiency can have a significant influence on consumer access to sustainable efficient products that minimize environmental impact. Early trials suggest that to offset income-related global warming before replacing the current energy-generating alternatives like compact fluorescent lamps.



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Meat and Seafood: The Global Diet's Most Costly Ingredients

Chapter 5

Key Messages

- Meat and seafood, two of the most rapidly growing ingredients in the global diet, are also two of the most environmentally costly.
- Fortunately, methods of producing meat and seafood exist today that are more environmentally friendly and better for human health.
- Meat and seafood are likely to be more expensive in the future as consumer demand is balanced against environmental health.

The Problem

In an increasingly populous and prosperous world, demand for meat and seafood has increased dramatically in the last four decades. Consider these data:

- In 2006, farmers produced four times as much chicken, pork, beef, and other meat—some 276 million tons—as in 1961. (See Figure.) On a per-person basis, meat consumption doubled over this period, to 43 kilograms annually.
- The fishing industry harvested eight times as much seafood in 2004—about 141 million tons—as it did in 1950. (See Figure.) This was four times as much on a per-person basis.
- Chinese consumers eat roughly five times as much seafood per person as they did in 1961, while total fish consumption in China has increased more than 10-fold.
-

Innovations/Solutions

Fortunately, producers, retailers, and consumers have developed innovations with the potential to put livestock and seafood on a sustainable track. On the production end, farmers and fishers are rediscovering the value of integrating livestock into a more natural environment. Group housing for sows can reduce production costs by as much as 11 percent compared with gestation crates. And beef cattle raised organically on grass emit 40 percent fewer greenhouse gases and require 85 percent less energy than cattle raised on grain, according to a 2003 Swedish study.

Fish farmers find that they can reduce feed requirements and waste by raising multiple aquatic species together. And scientists in Norway have shown that introducing cleaner-fish into salmon pens dramatically reduces lice and related



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Building a Low-Carbon Economy

Chapter 6

Key Messages

- Building a low-carbon economy is the central economic challenge of our age.
- A low-carbon economy requires restructuring

into steel tubes or underground pockets, which can be released to generate electricity when needed. Longer-lasting batteries are also advancing. And plug-in hybrid cars powered by sunlight, wind power, and biofuels will soon be connected to the grid, feeding in electricity when



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Improving Carbon Markets

Chapter 7

Key Messages

- Carbon is emerging as a key commodity in the 21st century, and carbon markets could become the largest commodity markets in the years ahead.
- While viable carbon markets are now being developed, major challenges still exist, including verification, certification, and monitoring.
- Carbon markets need to be scaled up substantially if they are to play an effective role in combating climate change.

The Problem

The average global temperature is now nearly 0.8 degrees Celsius above pre-industrial levels. To limit additional warming to 2°C, global greenhouse gas (GHG) emissions must peak before 2020 and be reduced by 40 to 70 percent from the current rate by 2050. The need for climate stabilization is as much economic as environmental: a 2006 study by UK economist Nicholas Stern estimated the cost of inaction on climate to be 5 to 20 percent of global economic output.

Acknowledging the need for fast action, the European Union adopted legislation in 2007 committing EU member countries to reduce their collective GHG emissions to 20 percent below 1990 levels by 2020. At the 2007 G8 Summit, Canada, France, Germany, Italy, and Japan called for a 50 percent cut in global emissions by 2050, but Russia and the United States abstained. Achieving these ambitious emissions reduction goals will require widespread adoption of a broad range of policy innovations, including effective carbon markets.

Innovations/Solutions

Carbon markets put a price on emissions of carbon dioxide (CO₂) and other greenhouse gases. When linked to the source of the emissions, such as fossil fuel use, this price raises the cost of emissions-intensive resource use and makes low-carbon alternatives, including renewable energy and energy efficiency improvements, more attractive.

Carbon markets also open new channels for investment in carbon-reducing projects. Carbon trading reached an estimated \$30.1 billion in 2006, an increase of nearly 180 percent over the 2005 level. (See Table.)

Within the broad category of carbon credits, there are two distinct segments: allowance-based markets and project-based transactions. Most of this activity occurs globally, though there is accelerating interest in carbon trading at the sub-national and voluntary levels.

Allowance-based markets. These markets dominate today's carbon trade. The European Union's Emissions Trading Scheme (EU-ETS) is by far the largest, accounting

In the United States, 17 states are now moving toward capping GHG emissions and forming regional and inter-regional carbon markets. Ten states have joined the Regional Greenhouse Gas Initiative (RGGI) to cap CO₂ emissions at 1990 levels by 2014 and to reduce them to 10 percent below that by 2018. California has targeted a 25 percent reduction by 2020, and together with five other western states and two Canadian

provinces aims to form a carbon market under the Western Climate Initiative.

Even without caps on carbon dioxide emissions, businesses, organizations, and individuals are voluntarily purchasing emission reductions, giving purchasers an early understanding of this major new commodity market. At least 23.7 million tons of CO₂-equivalent is estimated to have been traded in voluntary carbon markets in 2006. Of

that can count toward investing countries' emissions targets under Kyoto or can be sold into a market like the EU-ETS. In 2006 alone, CDM projects produced certified emissions reductions (CERs) of 475 million tons of CO₂-equivalent, worth more than \$4 billion. JI has yielded relatively modest reductions of 16 million tons of CO₂-equivalent, with corresponding credits valued at \$141 million.

Early on, the CDM was criticized for lax oversight on its rules, but in recent years the Executive Board has exerted greater scrutiny in project approval. Proposed CDM and JI projects must satisfy two key quality-oriented criteria: (1) projects must be certified to be "additional," meaning they would not have taken place if the flexibility mechanism did not exist; and (2) projects must show that their benefits will not be lost due to "leakage"—that is, the emissions will not simply be shifted elsewhere. These criteria help ensure that promised emissions reductions are delivered, but they also contribute to the challenge of high transaction costs (typically 14–22 percent of projected revenues).

Sub-national and voluntary initiatives. Acknowledging the need for rapid action to reduce emissions, states and provinces in Australia and the United States are jumping ahead of their national governments to impose emissions caps and create carbon markets. Currently, the second largest allowance-based market is that of New South Wales, Australia, where the government set mandatory emission reduction targets for the power sector in 2003.



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Water in a Sustainable Economy

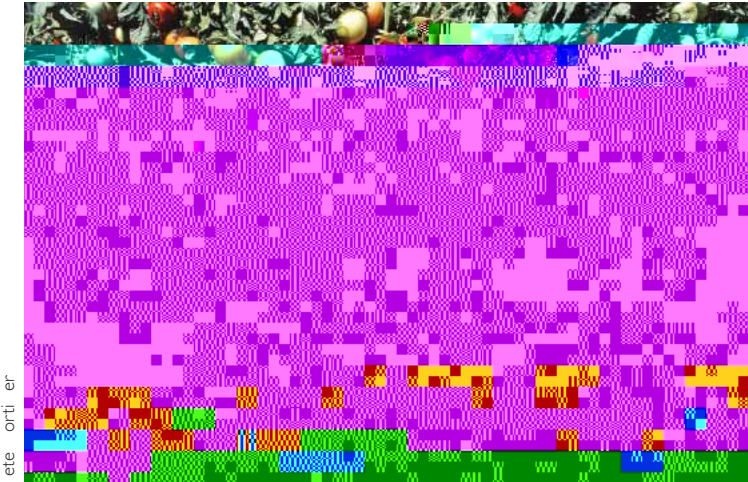
Chapter 8

Key Messages

- Looming water shortages and growing recognition of the value of water to the world's economies and ecosystems present new incentives and opportunities for sustainable water management.
- Many innovations—some technological, some policy-oriented, and many market-based—are emerging to help use water more sustainably.
- Water managers and economic policymakers need to

ensure financial viability, and encourage conservation.

Some countries are experimenting with water markets, which allocate water rights that can be bought and sold by users. Others are studying ways to incorporate the value of water use and degradation into calculations of GDP, as with the United Nations' System of Environmental-Economic Accounting for Water.



Water is a essential to economic activity and human life. In a global context, water use has increased significantly due to population growth, technological innovation, and increasingly targeted drip irrigation. Drip irrigation offers a way of managing water more efficiently, productively and sustainably.

Payments for ecosystem services are increasingly popular and take many forms, including:

- *rate a - e t h e e*, which provide payments or rewards in return for maintenance or restoration of a watershed service. Mechanisms used in such schemes include transfer payments, land purchase, cost sharing, and the purchase of development rights to land.
- *a - a d - t r a d e r o r a*, where a cap is established for the release of pollutants, extraction of groundwater, or

other purposes. Tradable permits or credits are then allocated by dividing up the total available resource among parties interested in using it.

- *l a - e t h e e*, which are used to provide safe drinking water or regulate river flows and are the most common form of payment for environmental services. Municipalities or national governments typically spearhead these initiatives and rely on user fees, land purchase, and land easements as management tools.
- *r o - e t a l t a e*, a fiscal mechanism used to ensure that some or all of the external costs of land use are internalized in the decision-making process.

International trade can also be used in service of sustainable water management. If arid countries import water-intensive goods from water-rich regions rather than producing or growing those goods themselves, water savings in the drier countries could be substantial—amounting to 6 percent of the water used in agriculture worldwide, according to recent studies. Trade can also be used to ease water stress by reducing barriers to trade in water-saving technologies and services that can spread state-of-the-art water solutions.

Looking Ahead

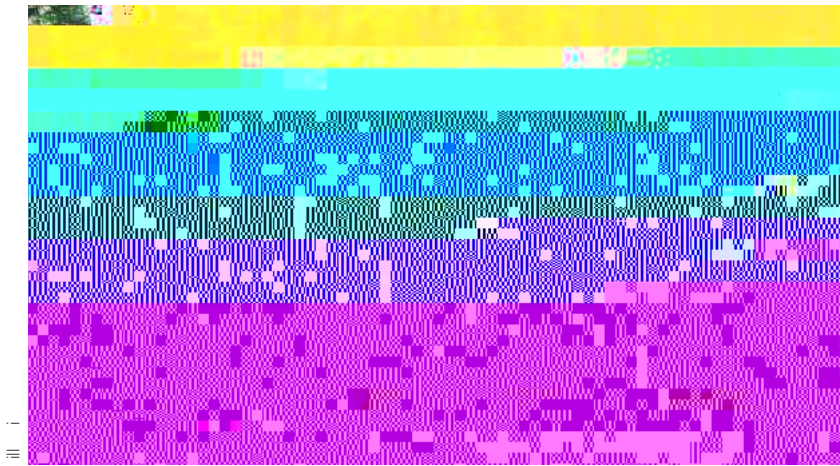
Sustainable water management will require that water managers and policymakers work closely together. Water managers need to take into account the economic implications of water management decisions, while economic policymakers will need to be aware of the impact of their policies on water management.

In a sustainable economy, social, economic, and regulatory incentives will need to be aligned to promote water use patterns that are sustainable; water allocations that enhance current and future welfare; and water investments, technologies, and practices that promote efficiency, water quality, conservation, and ecosystem integrity.

This brief is based on Chapter 8, "Water in a Sustainable Economy," by Ger Bergkamp and Claudia W. Sadoff, published in the Worldwatch Institute report *State of the World 2008: Innovations for a Sustainable Economy*.

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wetland? Such concerns lead many to be skeptical of market-based efforts to protect biodiversity. But proponents note that without the banks, the saved wetlands would often have been lost anyway. The reason these systems were created, they argue, is that existing protection of species and ecosystems was failing—that is, when given the option of building a road or protecting a species, many societies go for the roads.

Market approaches grab the headlines today, but government protection of ecosystem services still has an important role to play. In some cases, the government simply requires that biodiversity be conserved: Brazilian law, for example, mandates that landowners keep a minimum amount of territory in forest cover (though enforcement is currently weak). China, meanwhile, uses monetary incentives, paying farmers to keep forest cover on hillsides. And Mexico relies on financial transfers, collecting a fixed amount of revenue from water users and using the funds to protect forested areas in targeted watersheds. Nearly a million hectares of forests are being protected in this way in Mexico.

Costa Rica uses its National Forestry Trust Fund to compensate private landowners who protect their forest cover. Money for the fund comes from a national fuel tax and from the revenue from sales of “environmental credits” to businesses. Between 1996 and 2003, the program enrolled more than 314,000 hectares of forested land, transferring more than \$80 million to landowners in the process.

Finally, some businesses are setting up biodiversity offsets on a voluntary basis, as the business case for such action becomes clearer. Companies that participate gain continued access to land and a license to oper-

ate, increase investor confidence and access to capital, bring competitive advantage as a partner, reduce risks and liabilities, and maximize strategic economic opportunities in emerging markets. One initiative to encourage such business action, the Business and Biodiversity Offsets Program, is operating projects in countries as diverse as Ghana, Kenya, Madagascar, Qatar, South Africa, and the United States. Major mining and oil-producing companies are involved in the effort.

Looking Ahead

The future of payments for ecosystem services is uncertain. Biodiversity and conservation banks will need to show that they offer real, ongoing protection to species and habitats. This strengthening may require action from governments, given the key role played by legislation and regulations (such as the U.S. Clean Water Act) in creating biodiversity markets. And because market mechanisms are only a single tool in the conservation toolbox, governments will also need to ensure that old-fashioned legal protections are in place to conserve wildlife and its habitat.

This brief is based on Chapter 9, “Banking on Biodiversity,” by Ricardo Bayon, published in the Worldwatch Institute report *State of the World 2008: Innovations for a Sustainable Economy*. To order a copy of *State of the World 2008*, read more briefs in this series, listen to podcasts, and download discussion questions, visit www.worldwatch.org/stateoftheworld.

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from the revival of traditional main streets, public spaces, and community gardens, to the resistance to corporate control of university research and genetic research.

For example, the American Community Gardening Association estimates there are now roughly 18,000 community gardens in the United States, with 750 in New York City alone. In Toronto, Canada, the number increased from 14 to 69 between 1987 and 1997. Meanwhile, the number

of farmers' markets grew by 150 percent between 1994 and 2006, and now number more than 4,000 in the United



STATE OF THE WORLD 2008

Engaging Communities for a Sustainable World

Chapter 11

Key Messages

- Communities are a valuable source of unique assets that can help facilitate the transition to sustainable societies.
- These assets include a community's built infrastructure, the social relationships it generates, the ways of life it promotes, the financial resources at its disposal, and its influence over broader societies.
- Replicating and scaling up innovative community initiatives is key to tapping the full potential of communities to help build sustainable economies.

The Problem

Communities are where people purchase most of their goods, where they are rooted as citizens, and where they cultivate friendships and civic relationships. As such, they are powerful tools for building sustainable economic activity. Yet communities are commonly overlooked in the effort to create policies and incentives for sustainable economies. To disregard communities in the quest for sustainability is to miss out on an important asset needed to help build sustainable economies.

Innovations/Solutions

A growing number of communities are leveraging their unique strengths to jumpstart sustainable economic activity. (See Table.) Communities can play an important role in, for example: modeling sustainability, cultivating community connections, localizing economic production, financing green development, and mobilizing broader societies.

Modeling sustainability. Communities are physical places, and therefore can model sustainable living by designing energy, water, and food systems for lighter environmental impact. Residents of the Findhorn Ecovillage in the United Kingdom, for example, have just half the ecological footprint of an average U.K. resident. And in Germany's Sieben Linden Ecovillage, per capita carbon emissions are just 28 percent of the national average. Meanwhile, suburban residents are finding ways to "green" established developments:

the people of the Phinney Ridge neighborhood in Seattle converted their conventional neighborhood into an ecovillage by organizing residents to reduce their environmental impact, including a global warming project that mobilized neighbors to use push lawn mowers, lower their thermostats, and turn off appliances not in use.

Cultivating community connections. Communities are tapping their "social capital," the relational glue of trust and reciprocity that holds communities together, for sustainability ends. Carpools, community gardens, and potlucks of locally grown food are some of the ways people create strong neighborhood ties centered on sustainability values. The emphasis is to use social bonds to create a high quality of life with lower environmental impacts.

Social capital has measurable value for quality of life. A study in Vermont found that residents of ecovillages and cohousing communities expressed levels of life satisfaction equal to those of the residents of Burlington, where incomes were more than twice as high. The explanation: social capital replaces some expenditures—for example, borrowing a neighbor's power tool substitutes for buying one, or rotational babysitting eliminates the need for paid childcare—and in the process creates a similar quality of life, stronger social ties, and reduced ecological impact.

Social webs for sustainability are also created through "third place" venues outside of home and work, such as cafés and other informal public gathering places. Sustainable third places not only cultivate community ties, but also adopt green business practices and use lectures, dis-

to educate customers about sustainable living.

ocali ing economic production.

Localizing economic activity provides more stable jobs, reduces fuel use for shipping, and increases the share of profits that remain within a community. Localizing a community's food sector is increasingly popular, in part because of its clear environmental benefits: locally grown fruits and vegetables in the United States, for example, generate 5 to 17 times less carbon emissions than food from more distant sources. Today, community gardens, farmers' markets, and community-supported agriculture (CSA, where local farmers allow consumers to buy annual subscriptions to farmers' produce) are increasingly used to promote purchases of local food. Some 4,300 farmers' markets and 1,100 CSA farms now operate in the United States.

Beyond the food sector, communities are working to strengthen the exchange of local goods, decentralize business ownership, and provide fair wages. In the United Kingdom, 21 Transition Towns are striving to re-localize, reduce oil dependence, and lower the ecological impact of their economies. And the town of Willits, California, has undertaken assessments of its imported energy and carbon emissions per capita and is now studying how to reduce its dependence on the global economic system.

inancing green development. Mobilizing community capital for investment in local green development is essential if local agriculture, sustainable third places, and other local initiatives are to prosper. Community development financial institutions (CDFIs), such as development banks, credit unions, and loan funds, help to stimulate local initiatives such as affordable housing, jobs that pay a living wage, and essential services such as health care. In the United States, the number of CDFIs quintupled between 1997 and 2005. Other mechanisms used to strengthen local communities include local currencies, time "dollars," and social enterprises (businesses that take on a social challenge as

This brief is based on Chapter 11, "Engaging Communities for a Sustainable World," by Erik Assadourian,



STATE OF THE WORLD 2008

Mobilizing Human Energy

Chapter 12

Key Messages

- The greatest untapped resource for addressing global poverty and environmental decline is the poor themselves.
- The international community has long focused on financial and technical approaches to development and has more recently emphasized community-based development. But even this approach often fails to genuinely empower people at the grassroots.
- Community-driven development, in contrast, recognizes that the poor must be the authors of their own destiny and that real empowerment requires tackling political and other structural obstacles to grassroots initiative.

The Problem

Despite a century of unprecedented prosperity at the global level, wealth has been slow to spread to many developing countries. Two out of every five human beings today survive on \$2 or less per day. And while GDP per person has grown rapidly in parts of Asia, those achievements may not be environmentally sustainable. By some estimates, China's economic growth is being offset entirely by the cost of pollution and other forms of environmental degradation.

While the international community sets ambitious development targets like the Millennium Development Goals, it can be unclear how to reach them. The debate is often polarized between mobilizing massive financial resources

ment and power over information collection.

- *behavioral change*. Behavior change happens when people perceive that something works and is in their self-interest to continue.

Once communities are mobilized around their own agendas, scaling up successes to achieve widespread impact is the next challenge. Replication can happen in many ways. An “additive” approach is a village-by-village effort that develops local leaders and change from within the community, but it is typically very slow and dependent on outside resources. A “campaign” approach, often used in



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appropriate health clinic in Ghana to promote the use of bed nets for malaria prevention

response to natural disasters, uses large-scale, concentrated efforts aimed at fulfilling a specific need, as for example the global smallpox campaign of the 1970s. However, these approaches are top-down and provide little opportunity for truly engaging communities. A “blueprint” approach applies a technical solution that has worked in a variety of conditions. Examples include nature preserves, appropriate technology projects, large-scale microcredit programs, and infrastructure expansion.

The most innovative replication strategy is the “biological” approach. In an analogy to evolution, it supports local experimentation and adaptation and then sets an enabling environment for rapid expansion and social movement. It combines the local focus of the additive model with the growth potential of the campaign and blueprint approaches, but the impetus comes from within adapting communities.

Seed-Scale envisages expansion at three levels:

- *local*, where members master how to build upon their local success, in partnership with NGOs and government agencies. An example is when success in, say, health spreads to success in food security, income generation, education, and other key areas.
- *regional*, where successful communities share their experiences with other communities in the same region. NGOs can facilitate farmer-to-farmer site visits, for example, or knowledge-sharing sessions when farmers come together in market settings.
- *national*, as the government works to remove structural obstacles to community-driven development that enable community creativity and energy to blossom.

Looking Ahead

Much can be done to create enabling environments in which community-driven development can thrive. Trade rules could be reformed, for example, to offer greater access by developing-country producers to wealthy-country markets. Aid could drop its “tied” character, under which funds offered for development circle back to the donor country. And donor nations could work more closely with developing-country governments to build capacity needed to administer aid programs effectively. Most importantly, governance needs to be decentralized and citizen-based.

In the end, however, the most important action will happen at the grassroots level, even among the very poorest. Here, empowerment-based approaches hold the most promise, because little more is required than a capacity to aspire.

This brief is based on Chapter 12, “Mobilizing Human Energy,” by Jason S. Calder, published in the Worldwatch Institute report *State of the World 2008: Innovations for a Sustainable Economy*. To order a copy of *State of the World 2008*, read more briefs in this series, listen to podcasts, and download discussion questions, visit www.worldwatch.org/stateoftheworld.



STATE OF THE WORLD 2008

Investing for Sustainability

Chapter 13

Key Messages

- The financial sector is highly influential in determining

percent support from voting shareowners—a level that gets executives' attention and can lead to corporate change. This performance is almost double the share of resolutions surpassing this threshold in the 2005–06 proxy seasons.

Another rapidly growing area of investment is project finance, the underwriting of major infrastructural projects. In 2003, a set of sustainability guidelines known as the



STATE OF THE WORLD 2008

New Approaches to Trade Governance

Chapter 14

Key Messages

- The debate surrounding the global trading system has moved from a narrow focus on policy and mechanisms to a broader interest in how the system might help build sustainable economies.
- As the perception grows that gross inequalities and environmental damage can lead to conflict, the trading system is under pressure to codify trade practices that prevent such conflict.

The Problem

International trade governance suffers from a crisis of legitimacy as the full benefits of trade continue to elude many developing countries. Decades' worth of trade rounds have failed to deliver long-promised prosperity to the poorest nations. The creation of the World Trade Organization (WTO)—whose Preamble declares that trade should advance sustainable development globally—has further highlighted the gap between aspiration and reality.

The latest set of trade negotiations, the Doha Round, was dubbed the “Development Round” in an effort to meet developing-country demands for trade that advances development—by redressing imbalances in the trading system and by providing developing countries with improved market opportunities. Yet more than six years after the launch of Doha, several problems are evident:

- Trade openness on its own does not bring the benefits that trade theory suggests.
- Concerns for equity, the environment, and development are largely incompatible with the traditional hardball approach to trade negotiations and the culture that this approach engenders.
- As the focus of trade policy and trade rules has shifted from border issues to domestic policy, and as the reach of trade has expanded beyond goods, the relationship between trade policy and broader public-policy issues cannot be ignored.
- Developing countries will no longer accept promises of future benefits. They want

about trade facilitation (the removal of administrative barriers to trade), countries will agree to take on the full set of obligations only if they have the necessary institutional and human capacity in place. Where they do not, they will receive technical assistance, perhaps through Aid for Trade programs.

Looking Ahead

Beyond the innovations described above, trading nations may need to develop a set of screens and tests to ensure that the impact of new trade rules on sustainable development is positive. A resolution forum in the case of incompatibility would also be needed, probably separate from the formal dispute settlement mechanism, much as the Council for Environmental Cooperation set up under the North American Free Trade Agreement (NAFTA) was intended to do (though it has never lived up to expectations).

Some of the most creative thinking on trade governance is occurring outside traditional institutions. This includes places like the Evian Group, a forum that gathers a mix of WTO delegates and staff, academics, and civil society representatives; the International Centre for Trade and Sustainable Development in Geneva, which offers senior trade officials a safe space in which to experiment; and the Royal Institute for International Affairs in London and its equivalents in Brazil, China, India, and South Africa.

A great deal of experimentation is also under way with forms of collaborative governance that go beyond strict government-to-government interaction. These involve public-private partnerships or public policy partnerships that

gather concerned stakeholders in accountability compacts. The Extractive Industries Transparency Initiative, the World Commission on Dams, and the Forest Stewardship Council are good examples of these.

The goal is to move from an economics framed in terms of efficiency to one framed in terms of justice—a system designed for citizens, not consumers. Future progress will

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