



Green economy – the economy of the future

Approaches for inclusive, resource-efficient and
low-carbon development

Imprint

Published by:
Deutsche Gesellschaft für Internationale
Zusammenarbeit (GIZ) GmbH
Registered offices
Bonn and Eschborn, Germany

Friedrich-Ebert-Allee 40
53113 Bonn, Germany
Phone: +49 228 44 60-0
Fax: +49 228 44 60-17 66

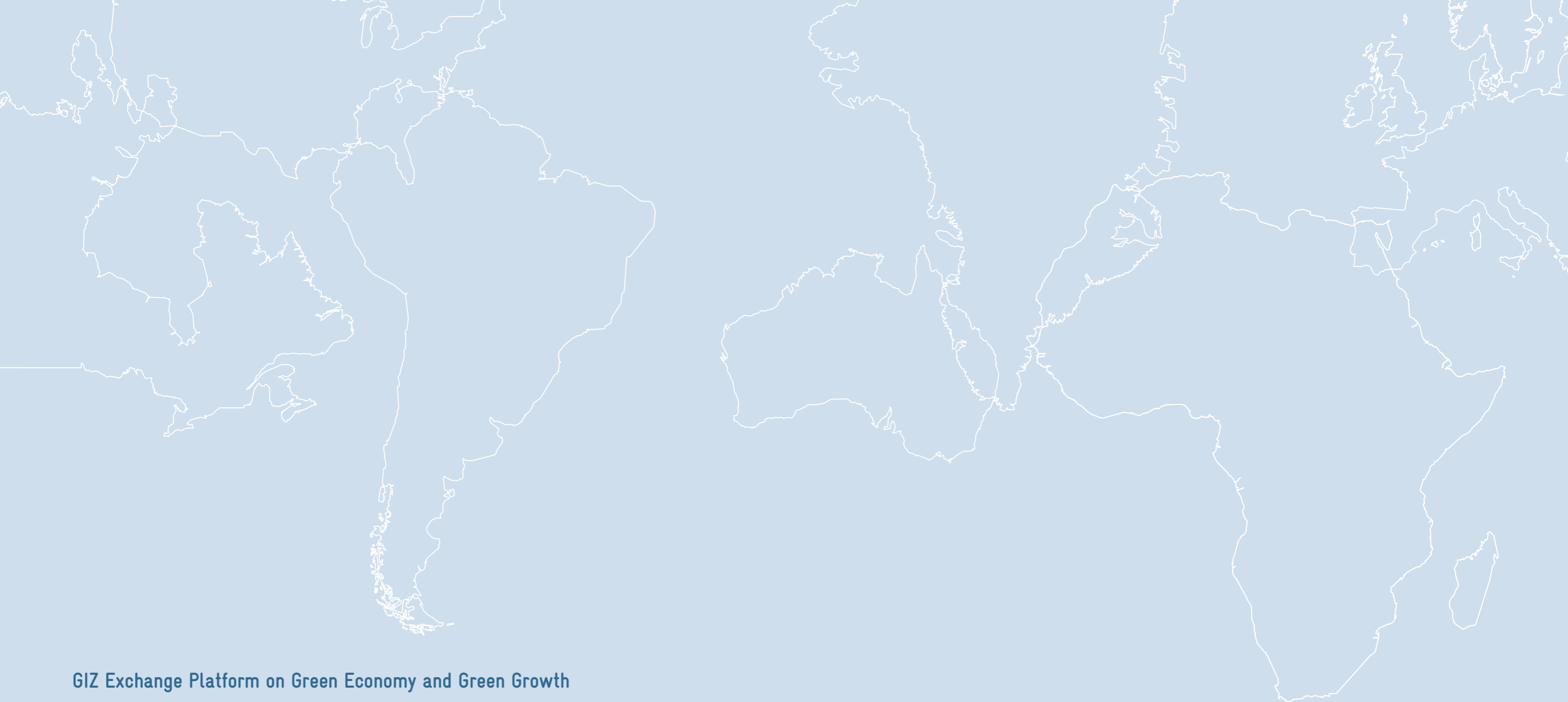
Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
Phone: +49 61 96 79-0
Fax: +49 61 96 79-11 15

Email: green-economy@giz.de
Internet: www.giz.de

Responsible: Corinna Küsel, Dettlef Schreiber
Editing and Production: Annette Lutz
Layout: Mira Gatermann, Hamburg
Litho: Andreas Groß, Frankfurt

2nd edition
Printed by: ColorDruck, Leimen
August 2012

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



GIZ Exchange Platform on Green Economy and Green Growth

As a federal enterprise, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supports the German Government in achieving its objectives in the field of international cooperation for sustainable development. We are also engaged in international education work. GIZ operates in more than 130 countries worldwide.

concepts that contribute to the development of a green economy, in particular in the areas of

- › Economic development and employment
- › Good governance and human rights
- › Water, energy and transport
- › Rural development and agriculture
- › Environment and climate change

Green economy and green growth can best be pursued by using a multi-disciplinary approach, mobilising know-how and best practices from various fields. To this end, GIZ has established an Exchange Platform on Green Economy and Green Growth. It facilitates learning about the green economy, further develops services for our partners and commissioning parties and promotes good practices across our programmes.

Our green economy activities are demand-oriented and pursue a multi-level approach: we combine policy advice at the macro level with capacity development and practical implementation in prioritised sectors, thus helping to achieve measurable results at the local level. We focus on promoting sustainable solutions, strengthening potentials and opportunities and scaling up best practices.

The platform draws on the long-standing expertise of GIZ's Sectoral Department, which offers services and

Further information:

- › www.giz.de, green-economy@giz.de



Green economy - green growth

Reconciling climate, environment and resource protection with social justice and economic development



Intact ecosystems: natural capital for greening economies.



PHOTOS: GIZ

Cities are vital for a green economy.

» Governments are encouraged to support a greener economy that creates green jobs, promotes sustainable and inclusive growth, and advances the Millennium Development Goals (MDGs).

Jacob Zuma, President South Africa

Background and challenges

Economic development is necessary but insufficient for reducing poverty and improving overall living conditions. Economic growth and industrialisation are often associated with increasing consumption of natural resources, impacting significantly on the environment and the climate. Global consumption of natural resources is already outstripping nature's capacity to regenerate. The same applies to the impact of waste, pollutants and emissions on the environment and ecosystems. The consumption and production patterns of industrialised countries, which are being emulated by countries around the globe, are jeopardising the very

foundations on which life depends and compromising society's scope for action – both today and for generations to come. Especially poorer parts of the population in developing countries face even greater constraints on their access to essential resources. The international community is thus facing immense challenges. We need new, environment and climate-friendly development paths. But we also need socially sound forms of economic development that generate broad-based employment and income, thus contributing to the reduction of poverty.

Climate change mitigation and the green economy

Climate change is a major force driving current efforts to identify new ecologically sustainable patterns for economic activities. If we are to keep the rise in global average temperatures down to two degrees Celsius for the current century, then industrialised countries, emerging economies and developing countries alike will have to make a massive effort. The need to decouple economic growth from greenhouse gas emissions is an immense challenge to international cooperation. »

» We need to make every dollar and euro, every rupee and peso work harder and on multiple fronts – that will really accelerate the transition towards a Green Economy that is here to stay, through decoupling and resource efficiency, getting more with less.

Achim Steiner, UNEP Executive Director

The efforts required to achieve low-carbon development must not only ensure that the burden is spread fairly between poorer and richer countries. There must also be co-benefits in terms of social and economic improvements. While convincing examples of win-win strategies of this sort already exist at the micro level, including solutions to promote energy and resource efficiency, there is a noticeable lack of coherent macro-economic strategies and appropriate policies for the transition towards a green economy. International cooperation is faced with the task of developing effective approaches that enable partner countries to pursue a pro-poor, ecologically sound and low-emission path to development.

Green economy and green growth on the international development agenda

The need to steer economic activities in an ecologically sound and pro-poor direction has made its way onto the international agenda. However, what strategies are most appropriate is still a matter of controversial debate.

Many industrialised countries and some emerging economies recognise the potential offered by environmentally sound, resource-efficient production systems, and are now working specifically to promote ecologically innovative sectors of the economy. Along similar lines, UNEP has proclaimed a Global Green New Deal, which goes beyond the boundaries of industrialised countries and is generating development impetus around the globe. Under the banner of 'green growth', the OECD is calling for economic growth strategies that help existing green economic processes and generate more jobs and income opportunities.

Many developing countries, however, fear that embracing a green economy could slow their economic growth and thus their fight against poverty. Others worry that the industrialised countries could establish new non-tariff trade barriers in this context, e.g.

by dictating stricter environmental standards. On the other hand, the states that are most acutely affected by climate change, including small island states, are urging the international community to take rapid and radical steps to halt climate change. These divergent interpretations illustrate that practice needs to prove the advantages a green economy can offer. The Rio+20 conference in 2012 concluded that "... we consider green economy in the context of sustainable development and poverty eradication as one of the important tools available for achieving sustainable development ...". Now it is all about putting it into practice.

Green economy – green growth as a new paradigm?

Green economy and green growth should not be seen as a new paradigm, but more as a new impetus to help us realise the vision of sustainable development and ensure a balance between its different dimensions. This is essential for the cooperation with developing countries and emerging economies. Green economy/ green growth strategies and offers of support should be flexible in design and tailored to the partner country's specific context. Middle-income countries are seeking economically attractive ways of reducing greenhouse gas emissions. At the same time, they are anxious to retain their access to natural resources, so as not to jeopardise existing development dynamics. For many low-income countries the focus is on adapting to climate change and ensuring the ecologically, economically and socially balanced use of their own natural resources.



Closing the loop: recycling secondary raw materials creates jobs.

PHOTO: GIZ



PHOTO: GIZ

Bicycles: the most climate-friendly alternative to automotive transport.

Green economy from the GIZ point of view

As a federally owned enterprise working in the field of international cooperation for sustainable development, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH sees its commitment and the main focus of its activities as being in the field of capacity development, i.e. enabling individuals, organisations and societies to make development sustainable. Green growth and green economy 'in the context of poverty eradication and sustainable development' represent both an opportunity and a challenge. Effective institutions and skilled decision-makers are needed in the realms of politics, business and civil society to lend new impetus to options aiming at achieving sustainable development, and to ensure that ecologically sound development paths are taken.

In its support for developing and emerging countries, GIZ draws on a wide range of experience and focuses on the following methodological approaches:

- › We strive for *individual solutions* that take account of the partner country's specific requirements whilst supporting the implementation of international treaties and target agreements.
- › We see the green economy as a multi-sectoral challenge that can only be met successfully through a *multidisciplinary approach* – i.e. by mobilising know-how and best practices in various fields. It seeks integrated solutions that combine exper-

tise in economic development and employment promotion, governance, agriculture, water, energy, transport, as well as climate, environmental and resource protection.

- › We pursue a *multi-level approach* that effectively combines policy advice and the design of political and economic frameworks with practical implementation and concrete, verifiable results at local level.
- › We promote *dialogue* between government, private sector and civil society stakeholders, with the aim of preparing joint, viable problem-solving strategies and mobilising specific competencies for sustainable development.

- › We promote active *partnerships with the private sector*. Structural transformation to a green economy not only requires entrepreneurship and commitment; it also offers tremendous opportunities for private business involvement, including within international cooperation.

Services

Selected examples of GIZ's services are presented below. Programmes that help our partner countries to green their economy are planned and implemented in ways that are suitable for the particular situation. Depending on the specific requirements and priorities, programmes may incorporate very different instruments and approaches.

Framework conditions for green economy

- › *Strategy development and policy consultancy*: partner countries are advised, according to their needs, on green economy and low-carbon development strategies, and on their implementation at national or regional level.
- › *Mainstreaming*: appropriate tools are used for mainstreaming green economy in all relevant policy areas and strategies at lo- »



Accept the challenge in the innovative and creative sector of green growth.

Lee Myung-bak, President of South Korea

cal, national, regional and global level. They include strategic environmental assessments, environmental and climate evaluations, social impact assessments, environmental and social standards, and green procurement.

- › **Sustainable fiscal policy:** the right economic framework conditions are crucial to success; GIZ offers advisory services on ecological taxation and environmental fiscal reforms (EFR), incentive schemes and socially acceptable ways of reducing environmentally harmful subsidies.
- › **Green finance:** the key approaches include developing carbon markets and introducing innovative financial and insurance products (e.g. index-based weather insurance).

Capacity development

- › **Institutional capacities:** not only do we strengthen key stakeholders' capacity for greening their economy and engaging in green growth or low-carbon development, we also initiate inter-institutional cooperation and appropriate decision-making and implementation mechanisms.
- › **Human capacity development and green jobs:** our input ranges from strengthening the skills of decision-makers and intermediaries - through programmes and international training, for example - to optimising vocational training systems whilst considering new, environment-related employment opportunities.
- › **Innovation and technology:** our aim is to enable developing and emerging countries to actively shape the transformation and adaptation of technologies that contribute to the protec-

tion of resources, the environment and our climate. GIZ promotes innovation systems, competence centres and advisory structures.

The green economy in key sectors

› Sustainable economic development

Conservation of natural resources and pro-environment curricula are included in vocational training; promotion of sustainable value chains and products; corporate social responsibility (CSR).

› Clean and resource-efficient production

Profitable environmental management (PREMA), sustainable development of industrial zones, sector strategies to reduce greenhouse gas emissions and improve resource efficiency.

› Sustainable agriculture

Sustainable use of natural resources in agriculture, including adaptation to climate change and greenhouse gas mitigation.

› Biodiversity and forestry

Sustainable forestry, preserving biodiversity, payment for environmental services (PES) provided by ecosystems, access and benefit sharing (ABS), sustainable tourism as an incentive to conserve ecosystems and biodiversity.

› Sustainable energy and transport systems

Renewable energies (including framework conditions, legislation on feeding power into the national grid, etc.), energy efficiency, sustainable mobility.

› Water, sanitation, waste

Efficient water usage strategies, reuse and recycling of solid waste and waste water, avoiding waste and waste water, recovering secondary raw materials.

› 'Green cities'

Resource-efficient, environmentally sound, low-carbon and climate-resilient development of urban areas, green buildings, and green cooling (climate-friendly cooling systems). ■

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Enabling framework conditions for an inclusive green economy

Enabling framework conditions have a crucial role to play in making an inclusive green economy a reality. In many countries, the framework conditions are heavily weighted towards an unsustainable development path, giving priority to fossil fuels, and causing resource depletion and environmental degradation.

Instead, enabling framework conditions for an inclusive green economy should steer private and public investment towards sustainable development paths by setting the right incentives and regulations. Possible approaches include:

- › environmental fiscal reforms,
- › greater transparency regarding the environmental impacts of expenditures,
- › introducing carbon markets or other market-based instruments,
- › including environmental criteria in public procurement processes and
- › improving regulatory measures and their enforcement.

Our approach

With a view to creating the right framework conditions for an inclusive green economy, GIZ aims to strengthen the relevant public and private stakeholders, provide policy advice and support strategy development in the following specific areas:

- › Strengthening national institutions in their endeavours to implement financial reform processes in order to move towards a green economy in an efficient, transparent and responsible manner. This helps ensure that environmental priorities in public investments are adequately reflected in the national budget and are subject to external financial control.



The right metrics are an important element of the green economy.

- › Supporting partners in defining the appropriate policy mix of market-oriented incentives and information-based and regulatory policy instruments to encourage businesses and consumers to adopt sustainable production and consumption patterns.
- › Greening the finance sector, including the introduction of innovative financial and insurance products.
- › Mainstreaming the green economy in all relevant policy areas and strategies using tools such as environmental and social standards or strategic environmental assessments

India: metrics beyond GDP

Policy-making for an inclusive green economy needs to be based on reliable information that encompasses economic, environmental and social aspects in a balanced manner. Key indicators such as gross domestic product (GDP) neglect these aspects and give misleading signals if used as the only point of reference. »



PHOTO: GIZ/UTA SCHMIEDER

GIZ develops innovative financing concepts for green investment.

The main criticism is that GDP's measurement and evaluation of economic performance does not include nature. For instance, the market value of cleared forests is included in the calculation, while the loss of services to the environment (CO₂ sequestration, preventing erosion etc.) provided by these forests is not. The aim of environmental-economic accounting is to expand national accounting to include ecological indicators and highlight the importance of the environment for the economic process.

On behalf of the German federal Ministry for Economic Cooperation and Development (BMZ), GIZ supported the development of an environmental-economic accounting system in the Indian state of Andhra Pradesh within a multi-stakeholder process and facilitated the interaction between Indian and German experts. The study at the heart of this advisory process included accounting for the resources used and placing a specific economic value on them. The dimensions considered were air, water, land use, minerals, forests and waste. These resources are quantified from a physical and monetary perspective based on the United

Nations Standard System of Environmental-Economic Accounting to connect the capital loss in terms of natural resources with the state's growth indicators. The experience gained from this pilot process is currently being evaluated for various ministries of Andhra Pradesh and is being translated into short, straightforward recommendations to be implemented as a next step.

China: green credit policy

In 2009, the Chinese central Government with support from provincial authorities adopted a national green credit policy. This policy highlights the importance of channelling funds into energy-saving and emission reduction investments. However, so far it has not been effectively implemented at provincial level – due to a lack of sanctions in the regulatory framework as well as a low level of awareness and inadequate technical capacities in financial institutions.

On behalf of BMZ, GIZ is assisting the Government of the Inner Mongolia Autonomous Region (IMAR) and the local branch of the People's Bank of China in implementing China's national green credit policy. In practical terms, we facilitate policy dialogue and exchange among the various stakeholder groups through an interdisciplinary expert platform involving government authorities, associations, and financial and academic institutions. We support the IMAR Financial Office in developing strategies and policies for the introduction of innovative financing concepts for green investment. We also build the capacity of local financial institutions to implement social and environmental risk assessments, mainly through training and developing industry-specific credit screening guidelines. Private financial institutions (such as the Baoshang Bank) are actively engaged in the project. The possibility of extending the green credit policy to create a more comprehensive green finance approach is currently under consideration. ■

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Poverty reduction and green economy



PHOTO: GIZ/MARIN DESMAROWITZ

Cooking on a woodfire stove in Uganda

Despite considerable progress in overcoming income poverty worldwide, poverty in its multiple dimensions (economic, human, political, socio-cultural and protective) is still widespread. It differs substantially across countries, regions and socio-economic groups. Poverty reduction therefore remains a central development challenge.

In the past 30 years, over 650 million women and men worldwide have been lifted out of extreme poverty and have been able to improve their living standards and well-being. But poverty reduction has often been based on depletion of natural resources and carbon-intensive economic growth. And today, despite the remarkable achievements in poverty reduction, 1.29 billion women and men still live on less than \$ 1.25 a day and aspire to middle-class lifestyles.

The majority of the poor depend on environmental assets for their incomes and livelihoods — particularly rural households, which live by farming, fishing, hunting and non-timber forest

product collection. At the same time, urban households are involved in informal sector employment in recycling, water and energy distribution. Poor women and men are more vulnerable to climate change and less resilient to its effects. Their poverty greatly limits the choices available to them, which – in the absence of alternatives – induces them to engage in harmful environmental practices. The challenges this poses are a compelling argument for an active worldwide transition to an equitable and inclusive green economy. This transition will require deliberate policy, institutional and governance reforms that allow poor women and men to participate in, contribute to and benefit from a green economy.

GIZ supports its partners in formulating political negotiation and decision-making processes geared to poverty reduction. In this way, we not only help our partners to make their actions pro-poor, but also to better integrate poor and disadvantaged women and men into social and economic processes.

- › Poor women and men will be able to benefit from a green economy if policies and institutions provide greater security of access to valuable environmental assets and contribute to increasing their value.
- › Poverty Impact Assessments can improve understanding of the potentially negative consequences of a green economy for the lives of poor women and men, evaluating trade-offs and identifying alternative policy options and countervailing policy measures. Furthermore, Strategic Environmental Assessments have proven useful for 'greening' poverty reduction strategies.
- › Poor women and men are active agents in the transition process to a green economy and need to gain and exert influence over the political, economic and social processes that deter- ➤



PHOTO: GIZ

Waste pickers from the informal sector in Asia

mine and, all too often, constrain their livelihood opportunities. Empowerment of poor people, especially women, secures their rights and provides them with more control over the assets necessary for sustainable poverty reduction.

Informal actors in waste management

In low and middle-income countries, national and local governments are often unable to provide basic waste management services, especially in ever expanding urban slum areas. The informal sector takes care of a significant part of collection and recycling, usually under very poor working conditions. To develop this sector's full potential, it must be strengthened and integrated into the formal waste management system. Organising the informal waste sector can secure decent employment, including improved health and safety standards and higher income for millions of people worldwide, thus strongly contributing to poverty reduction.

It also strengthens informal waste workers' bargaining power and ability to defend their interests. At the same time, their services contribute to improving living standards and reducing mortality, as well as to ensuring environmental sustainability and resource efficiency by reintegrating materials into production chains.

An example of this approach in action can be seen in Iloilo City in the Philippines, where GIZ supported the establishment of a waste pickers' association and the installation of a mechanical sorting system. With around 150 members, the association recovers up to 15 tonnes of light plastics per week. These are sold directly to a cement producer, who utilises them as an alternative fuel and raw material. Together with the sale of other materials to large intermediaries, the organised

waste pickers achieve incomes up to two or three times higher than the statutory minimum wage.

In this context, GIZ was also commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) to promote partnerships for recycling management. The project developed concepts and instruments for integrating the informal sector into solid waste management systems. Studies and pilot activities have shown that involving the informal sector in the recycling process can help to apply the principles of the closed-loop approach, reduce negative impacts on the environment and conserve secondary raw materials. The project paid particular attention to promoting cooperation, interaction and dialogue between the public, the private and the informal sectors. Pilot projects in various countries, such as India, Brazil and Mozambique, have contributed to a wide range of experience in cooperation between these sectors. ■

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Capacity development for a green economy

The transition to a green economy requires new capacities and skills in the public and private sector, at both institutional and individual level. For over 30 years, capacity development has been one of the key services delivered by GIZ and its predecessors.

Institutional capacities for a green economy

GIZ supports partner countries in developing institutional capacities for greening their economy. Our services include:

- › enhancing capacities of ministries or government agencies to design green growth and low-emissions strategies, set policy incentives and create enabling conditions for green sectors;
- › establishing effective implementation and enforcement structures for policies and regulations;
- › supporting the establishment of mechanisms for inter-institutional cooperation and coordination, such as multi-stakeholder dialogues;
- › strengthening institutional capacities for innovation in efficient and climate-friendly technologies, e.g. through networks that include the private sector, research institutions, service providers and government.



PHOTO: GIZ/WE RAU

Greening the economy requires know-how and technology transfer.



PHOTO: GIZ/MARKUS KIRCHGESNER

Vocational training is a key element of capacity development.

Human capacity development

Human capacity development plays a crucial role in greening the economy and creating new, environment-related employment ('green jobs') in sectors such as energy, water, waste management, industry, agriculture and tourism. GIZ services range from strengthening the abilities of political decision-makers, entrepreneurs and intermediaries to reforming vocational training systems. Our services include:

- › providing training for policy-makers on key competencies for sustainable development with modules on leadership, communication, negotiation, multi-stakeholder dialogues, environmental fiscal reform, strategic environmental assessment;
- › developing demand and target group-oriented technical vocational education and training in green sectors in cooperation with local institutions;
- › supporting the development, updating and implementation of curricula that reflect new skills needs;
- › enhancing the capacities of teachers and managerial staff of training institutions to develop demand-driven training offers;
- › encouraging green entrepreneurship for providing environmental services on resource-efficient production and certified green products, renewable energies or waste recycling; >>

- › training and on-the-job coaching of entrepreneurs and SMEs on environmental management and resource-efficient technologies, e.g. through our Profitable Environmental Management (PREMA) programme.

Egypt: private sector development

In 2005, GIZ launched its Private Sector Development Programme (PSDP) in Egypt, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The programme was designed to facilitate innovation, increase resource efficiency in selected sectors and improve the framework conditions for environmental technologies.

In terms of institutional capacity, eight innovation networks with the participation of the private sector (66 enterprises), government, technology centres, universities and international experts have been set up. The product innovations that have been developed in the networks include locally adapted solar water heaters, a resource-efficient housing model (the 'iHouse'), and new composite materials produced from organic waste.

In terms of human-resource capacities, enterprises from different sectors such as the ceramics sector and the food processing industry received training and advice on resource efficiency potential in their enterprises based on German expertise. Moreover, Egyptian service providers and consultants have been trained in profitable environmental management and are now ready to deliver their know-how.

Additionally, the Green Star Initiative was launched in conjunction with tour operators and the Egyptian Hotel Association. The initiative has evolved and now offers training material to help hotels to improve their environmental management and gain certification under the Green Star label scheme. As a conse-

quence, waste recycling facilities and water saving practices have been used to increase resource efficiency in hotels.

Green roadmap for business in the Black Sea and Caspian region

On behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), GIZ coordinates the Capacity Development for Climate Protection (CDCP) Programme. It aims at enabling conditions for climate protection and promoting a dialogue on climate change with partner countries. Local demonstration projects are intended to serve as show-cases, facilitating know-how and technology transfer. The CDCP supports a number of smaller projects in Eastern Europe, the Caucasus and Central Asia, ranging from municipal climate protection to carbon markets, standards and human capacity building in the area of renewable energy and energy efficiency.

One of the projects is implemented by the Union of Black Sea and Caspian Confederations of Enterprises (UBCCE). Its objective is to develop a green business support strategy for private sector associations. In addition to training, information and exchange of experience, three pilot strategies were developed in Ukraine, Azerbaijan and Georgia, focusing on how private sector organisations can successfully support green business development. 'Green business' is not only directed at promising, future-oriented markets; it is also a proactive approach by the private sector to environmental and climate challenges. It includes increased resource efficiency, environment and climate performance of companies, and environmentally smart and sustainable goods and services. As private sector associations play a key role in supporting enterprises, a 'Green Roadmap' was established to support UBCCE member organisations as green business promoters. ■

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Sustainable economic development



PHOTO: GIZ

Preparatory talks for Georgia's Sustainable Energy Action Plan

In the past, economic development has been accompanied by huge burdens on the environment, resulting in climate change, environmental degradation and the depletion of natural resources. Countries worldwide face the tremendous challenge of achieving qualitative growth that will generate employment and income for all parts of society and thus reduce poverty.

By balancing economic, social and ecological objectives, sustainable economic development offers promising solutions for solving this trade-off. At present, prices do not fully reflect the environmental costs borne by society. This leads to market failures in the form of overexploitation of natural resources and environmental degradation. Appropriate economic policies can correct these market failures and set the right incentives to change present production and consumption patterns. Rising prices will further fuel the demand for environmentally friendly products thus creating new 'green' markets. Even now, the private sector is being forced to 'green' existing value chains and restructure their production systems accordingly, since efficient use of water, energy and materials has become a decisive factor in competitiveness. To fully unleash the private sector's innovative and investment capacities,

enabling economic conditions, along with a functioning and inclusive financial sector that provides access to adequate financing, need to be in place. The transition towards a green economy will create new jobs and alternatives to current job profiles. Vocational education and training will therefore be an essential part of the process.

GIZ helps to achieve the transformation towards a green economy, as the following examples illustrate.

Green growth in Georgia

The Georgian capital Tbilisi joined the EU Covenant of Mayors initiative in 2010. The signatory mayors committed to reducing carbon emissions in their communities by at least 20 % by 2020. On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), GIZ's Private Sector Development Programme in Georgia supported the city of Tbilisi. It developed a Sustainable Energy Action Plan (SEAP), which sets out the measures needed to reduce emissions and defines responsibility for their implementation. In a complementary exercise, GIZ - on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) - developed a feasibility study for a Tbilisi Energy Agency, which would be a centre of excellence and a catalyst for energy efficiency and renewable energy in Georgia.

In order to strengthen the construction sector, which was identified as a potential driver for economic growth, employment and energy efficiency, GIZ supported public and private stakeholders in selecting and implementing project ideas in order to develop a programme to strengthen quality and innovative power in the construction sector. Ways of doing this included establishing a Centre for Vocational Education and Training, initiating a public-private dialogue, and promoting awareness and information measures. »

On a macro level, GIZ supports the Georgian Ministry of Economy and Sustainable Development in its strategic positioning and promotion of Georgia as an attractive investment location for green business.

China: Forum on Economics of Climate Change

30 years of economic policy reforms in China have brought about an impressive reduction of poverty and substantial increases in the living standards of large parts of society. However, this success has had environmental consequences: today China is the largest emitter of carbon dioxide in absolute terms. In 2007, the People's National Assembly of the People's Republic of China agreed to change from an economic growth to a sustainable development model. However, knowledge about how to transform towards a low carbon economy has only recently begun to emerge.

To support the process of knowledge formation, GIZ - on behalf of the German Federal Ministry for the Environment, Natural Conservation and Nuclear Safety (BMU) - started a project entitled "Forum on Economics of Climate Change in China" in 2008. It aims to support the Chinese government in designing appropriate economic policies to facilitate the transition towards a low carbon economy.

GIZ facilitated the establishment of a high-ranking Chinese-European Research group to prepare a study on The Economics of Climate Change in China. Results and recommendations were presented to the Chinese government at the Global Forum in 2009. This was the first dialogue platform in China on policy recommendations for the introduction of a low carbon economy. The results were also presented at a side event at the UN Climate



PHOTO: THOMAS TRUTSCHEL/PHOTOTEK.NET

Gao Guangsheng of China's National Development and Reform Commission praises the Sino-German cooperation for a green economy.

Change Conference in Copenhagen in 2009 and at the Sino-European Conference on Post-Copenhagen Prospects for Global Climate Policy. All the studies were summarized in a synthesis report, which highlighted instruments and macroeconomic policy recommendations to encourage a low carbon economy.

Due to the participation of high-ranking Chinese researchers and government representatives, the studies and conferences have attracted great attention among high-level political decision makers. The Chinese research community is therefore expected to have a significant influence on further low carbon economy policymaking in China. Based on the programme activities, a network of Chinese and European academics in the field of economics of climate change and low carbon economy has been established and serves as a basis for continuing the German-Chinese Dialogue on strategies for a low carbon economy. ■

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Clean and resource-efficient production

According to the UNEP Report Towards a Green Economy, 'manufacturing is responsible for around 35 per cent of global electricity use, 20 per cent of CO₂ emissions and over a quarter of primary resource extraction'. Some industries cause severe environmental impacts and pollution-related health damage. However, at the same time, it is industry that is currently generating solutions to these problems and putting them into practice. This explains why clean and resource-efficient production has become a centrepiece of the green economy agenda.

GIZ defines clean and resource-efficient production as including all measures aimed at improving the input-output relation of material, water and energy-consuming processes and at mitigating the adverse environmental impacts resulting from these processes. Measures of this kind are economically beneficial to companies, making them more profitable and boosting their competitiveness, especially under the current trend of rising raw material and energy prices.

The market for cost-saving technologies is growing fast as a result of the current drive for resource efficiency. Customers are also becoming more environmentally aware so that their expectations of manufacturing companies are changing. This opens up new opportunities for green investment. However, there are constraints – primarily in small and medium-sized enterprises (SMEs) – which can only be overcome by creating an enabling environment. GIZ therefore provides policy advice on establishing effective incentives to decision-makers in developing countries. This is backed by support measures for public and private service providers. We help them to expand and enhance the consultancy and training they offer in the field of environmental and resource management.

GIZ has almost 20 years of experience in promoting clean and resource-efficient production in developing countries, mainly



Production of valves for water pipelines in the Bhiwadi cluster, Rajasthan, India

PHOTO: GIZ/LALIT SHARMA

gained in the context of business development and environmental management programmes funded by the German Ministry for Economic Cooperation and Development (BMZ). Activities in this field focus on three approaches:

(a) profitable environmental management, (b) sustainable management of industrial zones, and (c) technology cooperation. Their implementation is supported by specific instruments and tools that have been developed and tested in close collaboration with experts from national and international partner organisations.

The range of services provided by GIZ includes:

- › consultancy and training programmes for employees of small and medium-sized enterprises and external consultants. These consist of modules that may be combined, e.g. Good Housekeeping (GHK) and Environment-Oriented Cost Management (EoCM);
- › advice on identifying improvement options at company level and linking consultancy and training programmes with other instruments such as environmental credit lines; »

- › advice on planning and developing eco-industrial parks and fostering networks for public and private-sector stakeholders;
- › providing support to operators of industrial zones in hiring service companies (such as recycling firms) to ensure sustainable site management;
- › strengthening intermediary organisations, such as business development and technology transfer agencies, in delivering services to boost companies' technological capacities;
- › facilitating the transfer of green technologies through development partnerships with the business community.

'Save the Environment while Saving Money'

The Indo-German Environment Partnership (IGEP, former ASEM*) is jointly implemented by GIZ, on behalf of BMZ, and the Indian Ministry of Environment and Forests. It has many years of experience in helping small and medium-sized Indian enterprises to increase their resource efficiency and improve environmental performance. Companies are thus enabled to comply with environmental regulation while at the same time becoming more competitive.

A number of training courses for key employees of companies in various industrial sectors have been conducted. They follow a systematic approach of theoretical input and on-the-job learning through on-site consultation. They also encompass implementation of pilots in small and medium-sized enterprises, including monitoring measures and evaluation practices.

Since 2003, more than 120 small and medium-sized enterprises, mostly located in clusters or industrial parks, have participated in training and consultancy activities, resulting in the identification of over 1,200 improvement options. About 36 per cent of the executed improvement measures were related to energy, 29 per cent to water, 25 per cent to auxiliary materials and other material in-



PHOTO: GIZ/LALIT SHARMA

A manufacturer of bathroom fittings in Rajasthan, India

put, and 10 per cent to waste. On average, a return of four times the investment cost was achieved, with 90 per cent of the investments being paid back in less than a year.

To give an example: as a result of the advisory services provided by the programme, a tyre manufacturer saved around 12,000 kilolitres of water and 1,785 tonnes of coal by reducing steam leakage. The enterprise also reduced compressed air losses by 26 per cent and lowered its energy demand by 329,400 KWh/year.

The programme's 10 years experience shows that technology is not the only key to better environmental and economic performance. Capacity development in small and medium-sized enterprises, along with ownership of senior management, has proven to be of equal or even greater importance. ■

For further information see:

› www.asemindia.com

Imprint

Published by:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Registered offices: Bonn and Eschborn, Germany

Friedrich-Ebert-Allee 40
53113 Bonn, Germany
Phone: +49 228 44 60-0
Fax: +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
Phone: +49 61 96 79-0
Fax: +49 61 96 79-11 15

Email: green-economy@giz.de
Internet: www.giz.de

Sustainable agriculture

The world's population is likely to reach nine billion in the next 40 years. With almost one billion people already starving today, food security is an enormous challenge. The Food and Agriculture Organization (FAO) of the United Nations estimates that agricultural productivity will have to increase by 70 per cent between now and 2050 to meet the increased demand for food and accommodate changes in nutritional habits. These additional agricultural products should come from the areas where people need them, above all in developing countries.

Farmers in developing countries generally have to get by with limited resources. Overuse of resources like water and soil as a result of the intensification of farming is causing an unbearable burden and sometimes irreparable damage.

Farming consumes an average of around 70 per cent of the water that is naturally replenished worldwide. Some 219 million of the planet's 287 million hectares of irrigated land is found in developing countries. More than 30 countries are already facing a growing water shortage.

The agricultural sector is not only a victim of climate change; it also contributes significantly to the problem. Almost one third of global greenhouse gas emissions are directly or indirectly attributable to agriculture, with roughly 50 per cent of these emissions being released as a result of land use change, i.e. the conversion of 13 million hectares of forests per year into agricultural land that is unsustainably used.

Sixty per cent of global emissions of methane and nitrous oxide originate from agriculture. This is mainly due to its heavy reliance on nitrogen fertilizers, burning of crop residues, improper soil management, paddy rice cultivation and cattle farming. The global warming potential of methane is 25 times greater than carbon dioxide, that of nitrous oxide is 300 times greater.



PHOTO: GIZ/KLAUS WOHLMANN

Local harvest of the staple food pearl millet

It is vital that the necessary growth in agriculture be decoupled from resource consumption and that resources be used in a sustainable manner. FAO therefore defines sustainable agriculture as being 'economically viable and socially responsible' agriculture. It must be geared towards conserving land, water and genetic resources for future generations. Be it sustainable land management, careful use of fertiliser and water, or integrated pest management, a variety of methods and processes - depending on the particular location - are available for sustainable agriculture.

GIZ pursues a policy of integrated water and land management designed to ensure the efficient, poverty-reducing and sustainable use of these increasingly scarce resources. Using our expertise in the agriculture and water sectors, we advise on integrated, holistic approaches that facilitate effective and sustainable developments in water use, especially by small farmers.

India. A community venture: managing water catchment areas

Life has become better for thousands of Indian village people over the past few years. Cereal production has quadrupled, and »



PHOTO: GIZ/MICHAEL KOTTMEIER

Irrigated rice in Asia requires responsible water management.

drinking water is more abundant and of much better quality. Protective vegetation cover has increased, employment has risen four-fold and women are more self-assured and are now generating their own income. These are just a few of the visible results of new and environmentally friendly land management practices in India.

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and in close cooperation with partner government agencies, a variety of non-governmental organisations and village self-help groups, GIZ has worked to support better use of natural resources. Its projects covered nine water catchment areas in a number of Indian states and included conservation measures, such as building retention dams, planting grass, trees and hedges and laying out terraces. Soil fertility and crop yields improved over the years when these activities were combined with measures to prevent water from draining and enhance cultivation methods. At the same time, the project set up a credit programme that was primarily used by women and helped

them to create their own source of income. The fact that all stakeholders constantly shared experience and knowledge, combined with the involvement of villagers from the outset, played a major role in making these measures sustainable.

Ghana. A matter of knowledge: integrated pest management

Ghana's official plant protection policy advocates a combination of preventive, crop-specific and curative measures. It puts the emphasis on eliminating as far as possible the use of pesticides that might cause environmental damage. However, in recent years the reality has been different: there is a lack of methods adapted to local conditions and government experts' knowledge is not being passed on to smallholders.

This is where a GIZ project on behalf of BMZ came in. It focused on introducing integrated plant protection in selected rural parts of Ghana. To this end, the project first recommended using less harmful pesticides and encouraged farmers to use biological and traditional methods to combat pests. At the same time, GIZ advised Ghana's Government to include integrated pest management in funding targets for farmers and to impose restrictions on using hazardous pesticides. Farmers also received training and advice on integrated plant protection methods.

The risk to farmers, consumers and the environment decreased: there were fewer pesticide accidents, food and water contamination was reduced on a lasting basis, and beneficial insects were not harmed. The income of farming households improved by up to 73 per cent as a result of gains in production and quality. This success enhanced the acceptance and dissemination of integrated pest management techniques. Based on these encouraging results in the project regions, sustainable plant protection methods are now being used in other regions of Ghana. ■

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53113 Bonn, Germany
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Fax: +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
Phone: +49 61 96 79-0
Fax: +49 61 96 79-11 15

Email: green-economy@giz.de
Internet: www.giz.de

Biodiversity and ecosystems



PHOTO: GIZ CLIPAD/GEORG BUCHHOLZ

A major part of the rural population depends on intact ecosystems.

potential collapse of important ecosystem functions and services. One major challenge is assessing the economic value of ecosystem services and integrating them in economic markets, government policies and land management practices. When decisions are solely based on their social and economic benefits, thus externalising the long-term costs to the environment (which will then

The world's socio-economic systems strongly depend on biodiversity and ecosystems as they provide people with a wide range of benefits known as ecosystem services. Forest ecosystems, for instance, regulate the local and global climate and hydrological cycle, protect watersheds, mitigate extreme weather events and provide a vast store of genetic information. Changes in ecosystem services affect livelihoods, income, and local migration, and may even cause social conflict. Nevertheless, ecosystems continue to decline worldwide. This is largely due to the fact that they are taken for granted and to the inadequate social and economic incentive mechanisms for maintaining them. The degradation of ecosystems and loss of biodiversity deprive especially the rural poor of their natural resource base and exacerbate poverty. Thus, the conservation and sustainable use of biodiversity is essential in sustaining the flow of ecosystem services as it provides immediate economic benefits and strengthens the resilience of those systems in the face of climate change. Without reflecting on the value of natural assets and sharing the benefits of ecosystems more equitably, human interaction with them will remain unsustainable. Degradation is likely to continue, leading to the

be borne by society and future generations), decision-makers will typically favour unsustainable solutions with high social and economic benefits. Therefore, decisions should be taken based on a full account of all costs and benefits (social, economic, environmental, cultural and political) and with a better understanding of the environmental-economic trade-offs.

From the perspective of the GIZ, critical steps in the transition to greener economies require governments to recognise the synergies between environmental and socioeconomic objectives. Businesses and communities should also come up with solutions to reduce their negative impacts on ecosystems and foster their sustainable use. We work with our partners to promote the integration of biodiversity and ecosystem values into decision-making processes, the implementation of fair and equitable models of access and benefit sharing (ABS) and the sustainable commercialisation and trading of biodiversity-based products (BioTrade). For example, we support sustainable forest management, sustainable tourism and the promotion of biodiversity-based value chains as incentives for conserving eco-systems and biodiversity. »



Capturing drinking water in the upper watershed

Peru: Paying for drinking water, investing in the future

The region of San Martín, situated in the tropical Andes in northern Peru, is a biodiversity hotspot – and, unfortunately, a hotspot for deforestation. The consequences of uncontrolled deforestation, agricultural use, and water contamination from livestock and coffee processing were felt in the town of Moyobamba. The municipal water supply company reported rising costs for water treatment due to erosion, contamination, and more frequent and prolonged interruptions in water supply. Clean drinking water was becoming scarce in the municipality; faced with this challenge, it declared the upper watersheds as municipal conservation areas. On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) GIZ provides advisory services to the regional and municipal governments and the Commit-

tee for Payments for Ecosystem Services on implementing this new mechanism for financing watershed protection and biodiversity. Families in the upper watersheds must comply with the rules such as converting to agro-forestry systems and conserving the remaining forest areas. In return, they receive technical support which is funded through public investment projects and an additional fee added to water bills.

This allocates a price to water provision, which, as an ecosystem service, was previously considered to be free. Thanks to the conscious efforts of the state institutions and civil society, giving value to nature's services will contribute to sustainable development in the San Martín region.

REDD initiative in the Lao People's Democratic Republic

The Lao People's Democratic Republic is undertaking activities to get ready for REDD (Reducing Emissions from Deforestation and Degradation) at the national and local levels. These are supported by BMZ, the World Bank, the Japan International Cooperation Agency (JICA) and other donors.

The first concrete REDD demonstration measures are being conducted in three selected provinces within the framework of the Lao system of national parks. In the Nam Phui and Nam Et-Phou Louey national parks, GIZ is supporting its partners in testing investment, financing and incentive mechanisms for innovative, poverty-related REDD activities. Local villagers contribute to and benefit from the process, especially in land-use planning and the co-management of national parks.

This is the first REDD initiative in the Lao People's Democratic Republic at implementation level, breaking new ground and providing valuable experience for national REDD policies. ■

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Sustainable energy and transport systems

Energy and transport systems are the lifeline of a nation. They provide access to electricity and mobility to citizens and businesses, and form the backbone of the national economy. The demand for energy and transport services is increasing dramatically as emerging economies grow and megacities continue to expand across the globe. Policymakers are faced with serious challenges: Energy and transport needs – especially of the poor – must be satisfied, while rising energy prices, local air pollution and greenhouse gas emissions are just a few of the negative effects that must be countered to ensure sustainable growth.

In the energy sector, GIZ provides advisory services to governmental institutions on strategies for a sustainable basic energy supply. Furthermore we assist our partner countries in establishing and expanding the use of renewable energy. Achieving energy efficiency in thermal power plants, buildings, households, municipalities as well as in a wide range of industrial applications is also a key issue in our work. In addition to these activities, we provide advice on general energy policy.

In the transport sector, GIZ supports partner countries in the sustainable management of transport infrastructure and in transport planning. In addition, we offer advice on how to put transport systems on sustainable footing by utilising environmentally friendly and affordable means of transport, such as public transportation, walking and cycling, and by increasing the efficiency and sustainability of logistics operations.

The main contractors in the energy and transport sectors are the Federal Ministry for Economic Cooperation and Development (BMZ), the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the private sector.

Uganda: Promoting renewable energy and energy efficiency

In Uganda, which is among the countries with the least access to modern energy services, GIZ carries out the 'Promoting renewable energy and energy efficiency' programme (PREEEP). It is financed by BMZ, the European Union and the Netherlands



Christine Namazzi (left), solar dealer in rural Uganda, with a customer

Directorate-General for International Cooperation (DGIS) and aims to increase the benefits of modern and efficient energy services for the population and economy of Uganda. As the programme works on national, district and communal levels, it promotes cooperation, communication and coordination between the micro, meso and macro levels in the Ugandan energy sector.

PREEEP offers methodological, technical and financial support for developing capacities on energy policy, the promotion of improved biomass energy technologies, rural electrification and energy efficiency.

In the first period of the programme (June 2008–May 2011), the following results were achieved:

- › About 770,000 tonnes of firewood (i.e. 38,000 ha of forest) could be saved per year by promoting efficient cooking technologies (i.e. wood/charcoal stoves and ovens). »

- › Almost 100 full-time and 700 part-time jobs have been created through the programme activities (mostly through the components for improved biomass usage and energy efficiency).
- › More than 70 social institutions have been electrified through photovoltaic solar systems or by extending the existing electricity grid.
- › About 2,000 households and small and medium-sized enterprises (SMEs) have purchased a solar home system.
- › Training was provided to intermediaries that conducted energy efficiency audits in 160 SMEs, 110 schools, 2 public buildings and 2 industrial facilities.

The second stage of the programme already started in June 2011 and more positive results are expected before its conclusion in May 2014.

Climate-friendly mobility in Ukrainian cities

The project 'Climate-friendly mobility in Ukrainian cities' worked with the Ukrainian city of Lviv to promote cycling as a modern and sustainable mode of transport. The project is being financed by the BMU's International Climate Initiative.

The results of the project are already visible: Based on a comprehensive cycling development programme, Lviv started building the first new cycling routes in 2011. According to the approved plans, the city will feature about 270 km of cycling infrastructure by 2019.

In cooperation with the city of Lviv, GIZ

- › helped develop technical recommendations;
- › drafted recommendations for designing cycling infrastructure on various streets;
- › assisted in the supervision of works;



Cycling is the most efficient mode of mobility.

- › celebrated cycling during the European Mobility Week;
- › promoted cycling in various other cities and on national level.

The development of cycling in Lviv will reduce carbon emissions from the transport sector by about 111,600 tonnes per year in 2030, compared to the business-as-usual scenario. It clearly demonstrates that measures to shift urban travel towards sustainable transport modes such as cycling can contribute to the reduction of CO₂ emissions. In addition, positive co-benefits, such as the reduced reliance on fossil fuels, better health, improved road safety and more affordable transport services, can be expected.

In addition to expanding the cycling infrastructure, the project actively promoted the concept of sustainable mobility in dialogue with other Ukrainian cities at conferences and workshops, as well as through expert missions on cycling and general transport policy. ■

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Fax: +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
Phone: +49 61 96 79-0
Fax: +49 61 96 79-11 15

Email: green-economy@giz.de
Internet: www.giz.de

Water, sanitation and waste



Workers of the ARC cooperative in Brazil sort recyclable material.

Solid waste management poses a further challenge to many countries. The adverse effects of this largely unregulated sector cause major environmental and health problems – especially in cities, which have to deal with both large quantities of waste and inadequate waste management systems. Increasing industrialisation gives rise to ever larger quantities of special waste, such as hazardous waste from trade and industry, agriculture, medical centres, and even private households

Managing our natural resources for future generations is a balancing act that is increasingly recognised as fundamental for sustainability: No country can meet its development objectives without improving the way it manages its resources..

Water flows through the veins of the economy and society. Still, about 0.9 billion people have no access to safe drinking water and 2.6 billion people lack access to basic sanitation services. More than 4,000 people die every day because of water-induced diseases. Freshwater resources are crucial for helping the poorest people escape the poverty trap. Joined-up thinking and institutional cohesion are necessary to decide on the re-allocation of water resources among users and to encourage more efficient use in all economic sectors. The major users of water – the energy, agriculture and industry sectors – need to become much more water-efficient by adopting new technologies and smart practices: reduce, reuse, recycle. GIZ supports its partners in this process, offering policy advice, introducing reforms to the water sector and promoting transnational water cooperation to ensure sustainable development and the reduction of extreme poverty.

in small quantities. Moreover, the waste sector is responsible for around 8 to 12 per cent of greenhouse gas emissions. This immense challenge requires an integrated response. Together with our partners, we aim to reduce, reuse, recover, recycle, treat and ultimately dispose of waste.

Latin America: Strategic alliance between Gerdau and GIZ

Continual growth in the production of goods results in a high demand for raw materials. At the same time, however, environmental awareness is also increasing and the amount of waste that is employed as a source of secondary raw material is greater every day, especially in industrialised countries.

On behalf of BMZ, GIZ is collaborating with Gerdau, one of the largest steel companies in the Americas. Their joint objective is to improve how informal sector actors in the steel value chain are organised in Brazil, Uruguay, Peru and Chile. People from the informal sector are to be systematically involved in the steel industry in a profitable and fair way. To this end, the partner- >>

ship sets out to professionalise them, to strengthen intermediary organisations and to create a supra-regional network: an approach that is integrated into policies at the local and national levels. In addition, a monitoring system for the entire value chain is being developed and implemented.

Expected impacts include improved sources of scrap metal for the steel industry, better labour conditions for people working in the informal sector and their families, as well as increased organisation and competitiveness among steel professionals. Other improvements include more efficient resource use, saving raw materials and greenhouse gases as well as lower energy costs in scrap-metal based steel production.

This project can ultimately become a model to be applied in other sectors or countries. This will enable governments, municipalities and companies to make use of the strategies and instruments and apply them in their waste management systems or corporate social responsibility strategies.

Integrated water resources management in Morocco

Water resources in Morocco are distributed unevenly throughout the country and are dependent on climatic variations. Increasing demands on water for tourism, industry and agriculture lead to the depletion of water resources. The consequences include reduced groundwater levels, contaminated water resources and increasing droughts and floods. To face these challenges, the German-Moroccan technical cooperation programme 'Integrated water resources management' assists in implementing of the new national water strategy. This bilateral programme is carried out jointly with the Moroccan Department of Water, three regional river basin authorities and GIZ on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

The programme consists of four components:

- › modernisation of the Moroccan Department of Water and selected river basin authorities;
- › improving groundwater management;
- › promotion of wastewater reuse;
- › improving rainwater management.

With the different river basin authorities and their partners, groundwater management plans are coordinated and implemented to reduce groundwater depletion. The river basin authorities are supported in dealing with stakeholder participation and communication. Pilot activities in the programme region comprise ecological sanitation through reusing wastewater for irrigation and using faeces as fertilizer. Innovative approaches for efficient rainwater management and for generating energy from wastewater are also promoted. These approaches are included in national strategies, e.g. the strategy for rural sanitation or the national water strategy, and taken up by their working groups. ■



Morocco: constructing a biogas reactor for toilet waste and manure

PHOTO: GIZ

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Fax: +49 228 44 60-17 66

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65760 Eschborn, Germany
Phone: +49 61 96 79-0
Fax: +49 61 96 79-11 15

Email: green-economy@giz.de
Internet: www.giz.de

Green cities



PHOTO: GIZ/ROBERT HEINE

Climate change is a multifaceted issue and requires a broad range of global solutions. At present, cities are responsible for around 70 per cent of global carbon dioxide emissions, and this is set to increase in the years and decades ahead. Although cities cover only 0.4 per cent of the world's surface area, they will be responsible for 76–80 per cent of global emissions by 2030¹ as a result of urban growth. The highest emission rates can be found where production and resource consumption are concentrated: in the industry, transportation, housing and waste sectors.

Climate change will have a serious impact on urban ways of life. Cities in coastal regions will be the most severely affected by flooding. Fifteen of the world's 20 megacities² are situated in low-lying coastal regions, where approximately 600 million people currently live. In future, adapting to climate change will be key, especially in coastal regions in Africa and Asia.

Although they form part of the problem, cities hold the power to provide solutions. Given their ability to respond to the needs of citizens, companies and political decision-makers, cities are in a position to establish the political and organisational structures needed to adapt to climate change. Cities are a hub for innovative

Coastal cities are specifically exposed to climatic effects such as rising sea levels, typhoons, river flooding and waterlogging.

strategies, offering opportunities for the application of resource and emission-saving technologies. Furthermore, mitigation and adaptation policies will be primarily implemented in cities.

There is a broad range of cost-effective mitigation options which can even result in additional benefits, playing an important role in achieving sustainable urban development. In order to reduce future risks caused by situa-

tions of high vulnerability, adaptation measures such as investing in resilient urban infrastructure are imperative to guarantee long-lasting development. Eco-efficient cities will gain a competitive advantage in an era of depleting resources and growing global and urban populations.

The resilient and low-carbon development of a city requires not only single efficient technologies, but green urban infrastructure and smart systems design. Developing green infrastructure entails looking at the variety of existing urban infrastructures and identifying possible efficiency gains by establishing linkages between these infrastructures, new operational and business models, and financing models.

GIZ has vast experience in providing support to cities in developing countries in the areas of urban development, infrastructure and environmental management. Climate change poses a new challenge: developing an integrated advisory approach that brings together expertise from all sectors. This is particularly relevant when it comes to encouraging and advising adaptation and mitigation strategies at the local level. As a result cities will be able to improve their reduced emissions and energy performance, strengthen their adaptive capacities, become more competitive economically and better secure urban assets. >>

¹ IEA (2008). World Energy Outlook. Paris, International Energy Agency, p. 12
² World Bank (2010). World Development Report. Washington, World Bank, p. 91

Developing medium-sized cities in Asia

The Cities Development Initiative for Asia (CDIA) was founded in 2007. Since then it has been addressing the special infrastructural and ecological challenges faced by rapidly expanding, medium-sized cities in Asia. This regional multi-donor initiative was established by the German Government through the Federal Ministry for Economic Cooperation and Development (BMZ) and the Asian Development Bank (ADB). The Governments of Sweden and Austria as well as Shanghai Municipal Government also contribute to the CDIA. This regional programme supports sustainable and pro-poor urban development and improved environmental and living conditions for the people. The programme achieves these aims by developing resource-efficient and socially responsible infrastructure measures and then preparing them for future financing. Among other things, CDIA projects address the expansion of local public transport systems, waste disposal systems (with potential for methane storage), improved energy efficiency in buildings, and adaptation measures in the field of flood protection and drainage. As well as preparing urban investment projects, the initiative supports the improvement of local institutional frameworks through capacity development.

› <http://cdia.asia>

Ukraine: energy efficiency in buildings

Saving energy, cutting costs, securing an adequate energy supply and establishing effective climate protection measures in the construction sector are the main goals of Ukraine's national energy policy. The Ukrainian-German project 'Energy efficiency in buildings' is carried out by GIZ on behalf of BMZ. It focuses on urgently needed improvements to the legal, institutional and financial framework to achieve an effective national energy savings policy in the construction sector. The project advises Ukraine's Ministry for Regional Development, Building and Housing in

drafting legislation and developing funding programmes and incentive mechanisms. At municipal level the focus is on introducing an energy management system in four pilot cities. Energy managers have already undergone training, energy plans for the building sector have been developed, data and monitoring systems have been established, and preparations have been made for the exemplary energy-efficient modernisation of buildings.

› www.eeib.org.ua

China: climate and ozone-friendly cooling

Air conditioning and refrigeration accounts for approximately 37 per cent of the electricity consumption in office buildings, 70 per cent in households and 70 per cent in supermarkets. This amounts to up to 40 per cent of the electricity consumption in the urban sector in a number of tropical cities. On behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), GIZ's Proklima programme supports China in replacing ozone-depleting and climate-damaging fluorinated greenhouse gases with natural substances. One project included the installation of a new production line for extruded polystyrene foam boards near Beijing. Another project has been initiated together with China's largest manufacturer of refrigeration and air-conditioning equipment, Gree Electric Appliances Inc., which developed an energy-saving line of air conditioners running on natural refrigerants. The planned annual volume is approx. 100,000 units thus far and more product lines from various other manufacturing companies are soon to follow. Sector-wide conversion to this innovative, climate-friendly and efficient hydrocarbon technology in China will result in its marketing around the world – a substantial contribution to reducing urban greenhouse gas emissions and ozone-depleting substances and to greening the cities of tomorrow. ■

› www.giz.de/proklima

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