

# Delivering on Energy

An overview of activities  
by UN-Energy and its members



UNITED NATIONS



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# Foreword I



Six years have passed since UN-Energy's establishment in 2004. During these years energy has dramatically moved to centre stage on the global agenda. This is reflected by its increased prominence in global security, environmental and development debates. The clear understanding that energy is an essential part of addressing all of these issues is further underlined by the four-fold increase in annual global clean energy investment—from US\$ 36 billion when UN-Energy was established to US\$ 145 billion in 2009.

Concerted global efforts are required to develop and implement smart policies. Fortunately, a broad range of options that can effectively address energy-related challenges already exists today. As an example, renewable energy is an effective tool for helping the 2–3 billion people worldwide who still lack access to modern energy services. Likewise, energy efficiency measures are now well understood and can serve as the foundation for national energy plans.

The United Nations has responded to the challenges and opportunities in the energy sector with numerous programmes and projects addressing key areas from financing, to capacity development, to technical assistance. Still, the need for a strong UN-Energy is clearer now than ever before. As the inter-agency mechanism for coherence and cooperation on energy issues, it effectively combines the experience of some 20 United Nations agencies to implement sustainable energy solutions.

It has been an honour to serve as Chairman of UN-Energy over the last two years. This publication provides highlights of major ongoing initiatives and illustrates UN-Energy's most recent publications. It illustrates the significant effort by the United Nations system to support the transition to a sustainable and clean energy sector. By taking stock of the diverse and innovative efforts completed and underway over the recent past we can best consider UN-Energy's future evolution.

**Kandeh K. Yumkella**  
Director-General, UNIDO  
Chair, UN-Energy

## Foreword II



Energy services are intrinsically linked to poverty reduction, climate change, and the Millennium Development Goals (MDGs). Unless urgent action is taken, lack of modern energy access will become a bottleneck to achieving the MDGs. Strong political commitment—from both the North and the South—is critical to move beyond the business-as-usual approach to energy and address the challenges of energy access, sustainability and security head on. We must seize the opportunity presented by the 2010 MDG Summit to galvanize political commitment and spur collective action to address energy challenges and accelerate achievement of the MDGs by 2015.

Access to affordable and reliable modern energy services is paramount to broadening people's opportunities and choices.

Currently, the available modern energy services fail to meet the needs of the three billion energy poor, constraining developing countries—especially the poor—in tackling poverty, achieving the MDGs and dealing with the challenges of climate change. We must set bold and time-bound commitments to eradicate energy poverty and achieve universal energy access. Achieving universal modern energy access is financially within reach but requires global partnerships to increase the levels of support available to developing countries; effective, strategic and proven policies, in addition to strengthened capacity within countries to plan and implement them.

A variety of UN-Energy members have undertaken considerable efforts to provide support and facilitate rapid access to modern energy services around the world. In light of the ample needs developing countries face, there are many opportunities for action and many possible strategies for development. UN-Energy aims to ensure coherence among these initiatives and foster close cooperation among different agencies in the fields of energy access, energy efficiency and renewable energies.

This report provides an excellent overview of the important work that UN-Energy and its members have performed in recent years in these areas. It also presents a compilation of major publications developed by UN-Energy member agencies and thus provides easy access to the significant knowledge created in the United Nations system. Given the numerous initiatives covering a broad range of actions identified in this report, it underscores the relevance of UN-Energy to regularly compile the extent of the support provided to the member States and disseminate it to a wider audience. This allows for dynamic partnerships to be established both within the United Nations system and with the external partners based on comparative advantages, to deliver as One UN.

**Olav Kjørven**

Assistant Administrator and Director of the Bureau for Development, UNDP  
Vice Chair, UN-Energy

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# Abbreviations

ACPC	African Climate Policy Centre	LED	Light-Emitting Diode
ADB	Asian Development Bank	MDG	Millennium Development Goal
AfDB	African Development Bank	MIGA	Multilateral Investment Guarantee Agency
ASEAN	Association of Southeast Asian Nations	MW	Megawatt
AUC	African Union Commission	NAPA	National Adaptation Programmes of Action
BoD	Burden of Disease	NEPAD	New Partnership for Africa's Development
CBD	United Nations Convention on Biological Diversity	OLADE	Latin American Energy Organization
CDM	Clean Development Mechanism	OPEC	Organization of the Petroleum Exporting Countries
CEDAW	Convention on the Elimination of all Forms of Discrimination Against Women	POP	Persistent Organic Pollutant (Stockholm Convention)
CER	Certified Emission Reduction	PRSP	Poverty Reduction Strategy Paper
CFL	Compact fluorescent lamp	PV	Photovoltaic
CIF	Climate Investment Funds	R&D	Research and Development
CLEW	Climate, land use, energy and water	RD&D	Research, development, and deployment
COP	Conference of the Parties	RE	Renewable Energy
COREP	Comoros Renewable Energy Policy	REEEP	Renewable Energy & Energy Efficiency Partnership
CO <sub>2</sub>	Carbon dioxide	REMTI	Renewable Energy Market Transformation Initiative
DFID	UK Department for International Development	RET	Renewable Energy Technology
EA	Energy Access	SAARC	South Asian Association for Regional Cooperation
EBC	European Business Congress	SCF	Strategic Climate Fund
EBRD	European Bank for Research and Development	SIDS	Small Island Developing States
ECLAC	Economic Commission for Latin America and the Caribbean	SME	Small and Medium-sized Enterprise
EE	Energy Efficiency	SPECA	UN Special Programme for the Economies of Central Asia
EGTT	Expert Group on Technology Transfer	SSA	Sub-Saharan Africa
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific	TNA	Technology Needs Assessment
ESCWA	United Nations Economic and Social Commission for Western Asia	TORs	Terms of Reference
ESTs	Environmentally Sound Technologies	UN	United Nations
FFEM	Fonds Français pour l'Environnement Mondial (French GEF)	UNCCD	United Nations Convention to Combat Desertification
GDP	Gross Domestic Product	UNDG	United Nations Development Group
GEF	Global Environmental Facility	UNEA	UN-Energy Africa
GHG	Greenhouse Gas	UNEP FI	UNEP Finance Initiative
HCFCs	Hydrochlorofluorocarbons	UNEP SEFI	UNEP Sustainable Energy Finance Initiative
HLCM	High-level Committee on Management	UNF	United Nations Foundation
HLCP	High-level Committee on Programmes	UNFCCC	United Nations Framework Convention on Climate Change
IBRD	International Bank for Reconstruction and Development	UNFIP	United Nations Foundation for International Partnership
ICSID	International Centre for the Settlement of Investment Disputes	UN-INSTRAW	International Research and Training Institute for the Advancement of Women
IDA	International Development Association	UNIC	United Nations Information Centre
IDB	Inter-American Development Bank	WSSD	World Summit on Sustainable Development
IEA	International Energy Agency	WMO	World Meteorological Organization
IFAD	International Fund for Agricultural Development	WWF	World Wide Fund for Nature
IFC	International Finance Corporation		
IPCC	Intergovernmental Panel on Climate Change		
ISO	International Organization for Standardization		
IUCN	International Union for Conservation of Nature		
JPOI	Johannesburg Plan of Implementation		
LCA	Lifecycle analysis		
LDCs	Least Developed Countries		

Acronyms of the UN-Energy members are detailed in Chapter 2, 'UN-Energy'.







# 1

## AN ENERGY TRANSITION

It is clear that energy is central to sustainable development and is intrinsically linked to a number of major global challenges such as poverty, security and climate change. The current energy landscape, however, is inadequate for fully addressing those issues. Profound changes are required in the way our society produces and transforms energy—nothing short of a paradigm shift is required.

Today, a sizable share of the world's population lacks access to modern energy services. As an example, an estimated 1.5 billion people live without access to electricity.<sup>1</sup> Energy is present in many aspects of human development due to the wide array of services it delivers in the form of light, mechanical power, process heat, space heating, motive power for transport, water pumping, etc. Access to modern energy services is therefore paramount for accelerating the achievement of the Millennium Development Goals (MDGs) and moving toward sustainable wealth creation.

Continuously rising greenhouse gas (GHG) emissions pose a significant threat to the global climate system, with the effects of climate change already hitting the poor the hardest. The current system of carbon-intensive energy, combined with the expected significant growth in energy demand in the next few decades—especially in the developing world—requires a broad-based energy transition if climate change impacts are to be restrained to manageable levels.

Although the challenges ahead may seem daunting, there are significant opportunities as well. A large, untapped potential for renewable energy is available in most regions of the world. Also, the provision of clean, affordable modern energy services to underprivileged communities comes with significant co-benefits, notably in terms of health improvements as well as the opening of untapped new markets. In addition, energy efficiency policies and measures offer ready-to-deploy instruments to curb energy demand in a cost-effective fashion.

There are clear signs that the process of transition has already begun and that some of these opportunities are being seized, as illustrated by the four-fold

increase in global clean energy investments from US\$ 36 billion in 2004 to an estimated US\$ 145 billion in 2009.<sup>2</sup> Following the same trend, energy spending from multilateral organizations also surged during the past few years. For instance, the World Bank has increased its lending for low-carbon projects and energy access six-fold since 2004 to US\$ 5.5 billion in 2009, and UNDP has almost doubled its funding to energy projects compared to the previous decade.

Enhanced international cooperation is central to assuring the required energy transition. Despite its significant capacity to raise awareness, bring stakeholders together and galvanize international action, until recently the United Nations had not been able to fully leverage its strengths and leadership potential in the field of energy. In response, UN-Energy was established as an inter-agency mechanism to promote coherence in the United Nations System's response to energy challenges.

UN-Energy is making a significant effort to ensure that the United Nations system, together with the World Bank and the GEF, contribute to areas where strategic interventions will have major impacts. It focuses on substantive and collaborative actions related to policy development and their associated implementation through networking, joint programming and the establishment of partnerships. While UN-Energy will continue to play a key and growing role, additional efforts will still be required to elevate the role of the United Nations system in the global energy space and to spur global action towards a low-carbon economy.

This publication provides a snapshot of the impressive body of work produced under the UN-Energy umbrella and by its members during the past biennium (2008-2009). The report offers a

<sup>1</sup> UNDP & WHO, *The Energy Access Situation in Developing Countries*, 2009; IEA, *World Energy Outlook*, 2009.

<sup>2</sup> WEF, *Green Investing: Towards a Clean Energy Infrastructure*, 2009.

non-comprehensive compilation of energy-related programmes and selected projects, as well as a collection of relevant publications. It showcases joint undertakings and collaborative efforts. Figure 1 illustrates the programme distribution outlined in this document by programme type and subject area, with cross-cutting programmes being shown under all programme types and subject areas they cover.

This report:

- t Highlights more than 40 energy-related programmes. The total funding for these programmes is approximately US\$ 16 billion.\* Out of this total, about US\$ 5 billion is dedicated to energy access, US\$4 billion to renewable energy, US\$ 5 billion to energy efficiency, and US\$ 2 billion to cross-cutting issues and thermal generation. In addition, these programmes have successfully leveraged significant co-financing;
- t Showcases a number of selected innovative projects;

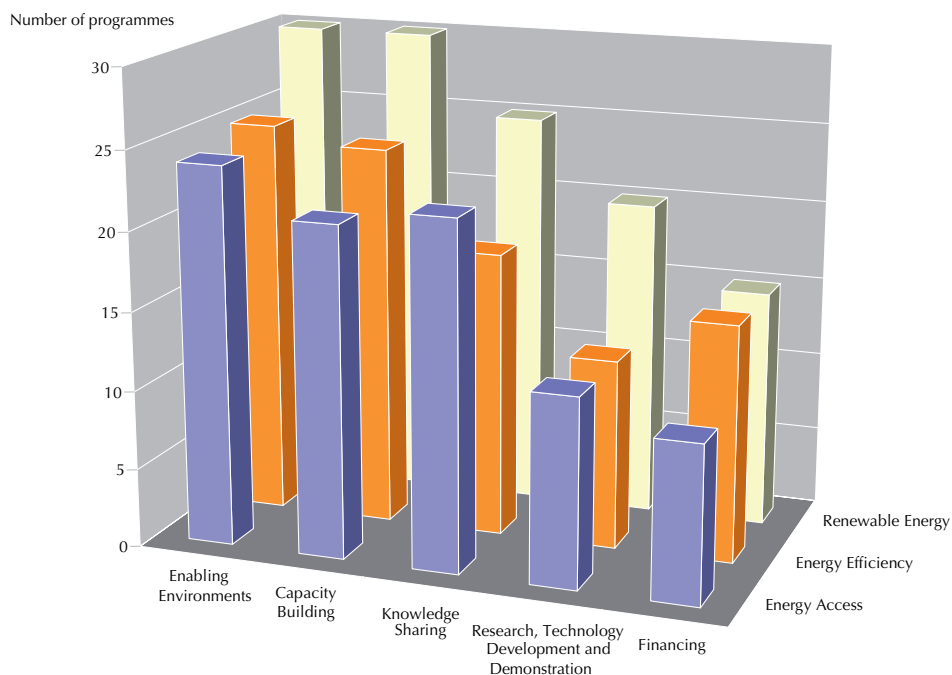
\* The figures are indicative and combine ongoing programmes with different time horizons. The programmes were attributed to clusters according to their classification in this publication.

- t References some 130 publications that address pressing energy challenges; and
- t Presents UN-Energy members and the respective energy support services they provide.

The programmes, projects, and publications outlined give a clear picture of how the United Nations has supported the design and development of enabling environments for large-scale action and investment. It clearly demonstrates the dedication and effort UN-Energy and its members have placed on helping support the move to a clean, sustainable energy sector. This work provides a strong foundation for the future.

The document is structured as follows: chapter 2 provides an overview of UN-Energy. A synthesis of energy-related activities of UN-Energy members during 2008-2009 is presented in chapter 3. Chapter 4 outlines the UN-Energy members and the services they provide with regard to energy. Chapter 5 references relevant publications. Lastly, annex I provides more detailed information on selected programmes.

Figure 1. Programme distribution by thematic clusters and sub-themes







## UN-ENERGY

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At the World Summit on Sustainable Development (WSSD), held in Johannesburg in 2002, it became clear to delegates that poverty reduction, access to energy, energy security and climate change mitigation were all interlinked issues requiring a coordinated response from the development community.

UN-Energy, the United Nations' mechanism for inter-agency collaboration in the field of energy, was established in 2004 to help ensure coherence in the United Nations system's multidisciplinary response to the WSSD, and to support countries in their transition to sustainable energy. The core fields of access to energy, renewable energy and energy efficiency—UN-Energy's clusters—have garnered major attention and experienced rapid growth in investments and policy-related focus with an ever-growing number and variety of players involved.

UN-Energy aims to promote system-wide collaboration in the area of energy with a coherent and consistent approach, as there is no single entity in the United Nations system that has primary responsibility for energy. Its role is to increase the sharing of information, encourage and facilitate joint programming and develop action-oriented approaches to co-ordination. It was also initiated to develop increased collective engagement between the United Nations and other key external stakeholders. UN-Energy brings together members on the basis of their shared responsibility, deep commitment, and stake in achieving sustainable development.

UN-Energy currently consists of 21 members and includes:

Food and Agriculture Organization (FAO)  
[www.fao.org](http://www.fao.org)

Global Environment Facility (GEF)  
[www.thegef.org](http://www.thegef.org)

International Atomic Energy Agency (IAEA)  
[www.iaea.org](http://www.iaea.org)

United Nations Conference on Trade and Development (UNCTAD)  
[www.unctad.org](http://www.unctad.org)

United Nations Department of Economic and Social Affairs (UN DESA)  
[www.un.org/esa/desa](http://www.un.org/esa/desa)

United Nations Development Programme (UNDP)  
[www.undp.org](http://www.undp.org)

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)  
[www.unescap.org](http://www.unescap.org)

United Nations Economic and Social Commission for Western Asia (UNESCWA)  
[www.escwa.org.lb](http://www.escwa.org.lb)

United Nations Economic Commission for Africa (UNECA)  
[www.uneca.org](http://www.uneca.org)

United Nations Economic Commission for Europe (UNECE)  
[www.unece.org](http://www.unece.org)

United Nations Economic Commission for Latin America and the Caribbean (UNECLAC)  
[www.eclac.cl](http://www.eclac.cl)

United Nations Educational, Scientific and Cultural Organization (UNESCO)  
[www.unesco.org](http://www.unesco.org)

United Nations Environment Programme (UNEP)  
[www.unep.org](http://www.unep.org)

United Nations Framework Convention on Climate Change (UNFCCC)  
[www.unfccc.int](http://www.unfccc.int)

United Nations Human Settlements Programme (UNHABITAT)  
[www.unhabitat.org](http://www.unhabitat.org)

United Nations Industrial Development Organization (UNIDO)  
[www.unido.org](http://www.unido.org)

United Nations International Research and Training Institute for the Advancement of Women (UN-INSTRAW)  
[www.un-instraw.org](http://www.un-instraw.org)

United Nations System Chief Executives Board for Coordination (CEB) Secretariat  
[www.unsystemceb.org](http://www.unsystemceb.org)

World Bank (WB)  
[www.worldbank.org](http://www.worldbank.org)

World Health Organization (WHO)  
[www.who.org](http://www.who.org)

World Meteorological Organization (WMO)  
[www.wmo.ch](http://www.wmo.ch)

UN-Energy's work is organized around three thematic clusters, each led by two United Nations organizations:

**Energy access:**

led by UN DESA and UNDP, in partnership with the World Bank

**Renewable energy:**

led by FAO and UNEP, with support of UNESCO

**Energy efficiency:**

led by UNIDO and the IAEA

In addition, UN-Energy Africa (UNEA) was established as a subprogramme of UN-Energy focusing specifically on the African context. UN-Energy Africa is currently chaired by UNHABITAT and co-chaired by UNIDO. UNEA's secretariat services are provided by UNECA and supported by UNIDO.

In August 2007, UN-Energy elected Kandeh K. Yumkella, Director-General of UNIDO, as Chair of UN-Energy. It also elected Olav Kjørven, Assistant Administrator of UNDP, as Vice Chair. Secretariat services were provided by UN DESA and UNIDO.



## 3 ACTIVITIES IN THE THREE CLUSTERS

This section provides a synthesis of energy-related activities of UN-Energy members during 2008-2009 within the three clusters: energy access, renewable energy and energy efficiency. The activities are further sorted around five subthemes: financing, capacity-building, enabling environment, information dissemination, and research and development. Many of the programmes and projects presented in this synthesis cover several subthemes and clusters. For the purpose of this publication, these activities have been classified according to their main emphasis. This section finishes by presenting a schematic overview of the activities.



## Energy access

Ensuring access to affordable, modern energy is central for sustainable development and poverty reduction, and plays a prominent role in the achievement of the Millennium Development Goals (MDGs). Unless energy can be reliably produced, delivered and made accessible to poor households at affordable cost, it will stay beyond the reach of many in developing countries.

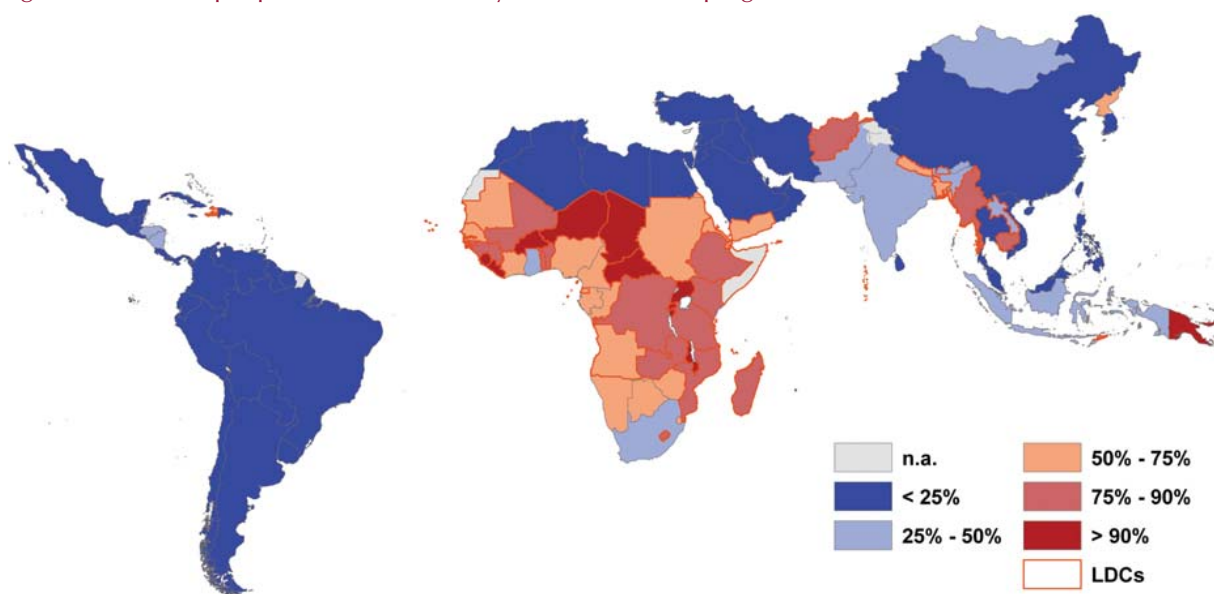
Approximately 28 per cent of people in developing countries currently lack access to electricity—compared to a staggering 70 per cent or more in the world's least-developed countries (LDCs) and in sub-Saharan Africa (SSA). As well, about three billion people around the world still rely on solid fuels for cooking. In addition to environmental impacts, the use of firewood, charcoal and agricultural waste for cooking has adverse effects on health. Two million

deaths each year are associated with burning solid fuels in unventilated kitchens. Some 44 per cent of those who die are children; among adult deaths, 60 per cent are women.<sup>3</sup>

The International Energy Agency (IEA) estimates that 1.4 billion people will still lack access to electricity in 2030 unless new approaches and policies are adopted to adapt electrification programmes to local contexts and national environments.

Greater broad-based efforts are needed to develop the policies and provide the support needed to considerably accelerate the expansion of access to modern energy services. Concerted action by the international community and regional, national and local partners is critical to improve the coherence and delivery of energy access programmes and strategies.

Figure 2. Share of people without electricity access in developing countries, 2008



Source: UNDP and WHO, The Energy Access Situation in Developing Countries: A Review Focusing on the Least Developed Countries and Sub-Saharan Africa, November 2009.

<sup>3</sup> The Energy Access Situation in Developing Countries, A Review Focusing on the Least Developed Countries and sub-Saharan Africa, UNDP-WHO, November 2009.

## Synopsis of UN-Energy member activities in energy access

Through its joint programmes and the variety of activities implemented by its individual members, UN-Energy has undertaken considerable efforts to enhance sustainable access to energy in support of the achievement of the MDGs. UN-Energy members combine valuable experience in helping governments, the private sector, local communities and other stakeholders. They support important institutional reforms to create transparent, well-governed energy markets and leverage private-sector participation. UN-Energy members' access programmes strongly focus on expanding energy services in rural areas, urban slums and the poorest communities as a fundamental means of reducing poverty.

### → Capacity-building

**Capacity-building and training activities constitute key ingredients of successful initiatives aimed at enhancing energy access. They foster ownership by stakeholders and increase the likelihood of sustainability after the withdrawal of external partners. Such activities further develop the local expertise required to allow for the replication and scaling up of successful initiatives. Strengthening capacity of stakeholders at all levels, from local communities to private sector as well as regional authorities and national governments, is therefore one of the core components of energy access programmes proposed by UN-Energy members.**

UN DESA promotes access to affordable, modern energy services, which are essential for the achievement of sustainable development and the MDGs. UN DESA's activities focus on providing the needed energy services in developing countries, particularly in rural areas, by enhancing capacity-building, transferring low-carbon energy technologies (such as renewable energy and energy-efficiency technologies), facilitating financing, and fostering regional and international collaboration.

Strengthening national and local capacity within governments, the private sector and civil society to

foster the expansion of access to modern energy services for the poor is the key component of UNDP's action in the energy sector. UNDP strengthens national policy frameworks for energy and catalyzes financing through market creation or transformation for sustainable energy programmes, particularly renewable energy and energy-efficiency initiatives. This includes expanding energy access service delivery at the local level, particularly for decentralized off-grid energy technologies. It also includes capacity-building to improve the operational efficiency of energy utilities to increase both their viability as modern businesses and their ability to deliver services to a wider set of customers, particularly the poor.

The GEF Strategic Programme on Energy in West Africa, (US\$ 45 million of own funding and more than US\$ 200 million of co-financing), coordinated by UNIDO, is one example of joint programming within UN-Energy. In a concerted effort, UNIDO, the World Bank, UNDP, UNEP, FAO, the African Development Bank and the International Fund for Agricultural Development (IFAD) aim to promote energy access in rural areas through renewable energy and energy-efficiency projects in 18 countries. Capacity-building is an integral part of this programme, which builds on energy as a prerequisite for poverty reduction through income generating and productive activities and aims to show technical feasibility and economic viability of renewable energy and energy-efficiency projects in participating countries. The Strategic Programme in West Africa, Climate Change Component

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UN DESA's Capacity-building for Interregional Electricity Access and Supply in Africa Project (US\$ 591,000 of UNDP/GEF funds) aims at strengthening the capacity of regional economic communities and their member States to establish appropriate policy, institutional and regulatory frameworks for regional electricity grid interconnection in order to increase access to electricity and security of supply.

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furthermore, focuses on knowledge management and emphasizes the exchange of lessons learned and best practices. The programme will be backed by the newly established and UNIDO-supported ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) located in Praia, Cape Verde. ECREEE's activities focus on, among others, capacity-building for markets players and enablers, policy development and quality assurance, technology transfer, and knowledge management.

The IAEA assists its member States in strengthening the expertise required to conduct national energy assessments and design energy strategies and policies. This assistance includes the transfer of updated information and assessment tools (such as energy models) and the training of experts in the use of these tools so they can chart national energy demand and supply strategies consistent with their national development objectives. In addition, the IAEA supports national and regional energy assessments and topical 3E (energy, economy, environment) studies—for example, assessing the economic implications of energy technology choices and analyzing cost-effective energy options for mitigating climate change. The IAEA works closely with all of its member States and interacts actively with several partners, including UN DESA, IEA/OECD and the Intergovernmental Panel on Climate Change (IPCC). The IAEA's Programme Activities in Support of Sustainable Energy Development (annual budget of US\$ 7 million) aim to enhance the capacity of member States to perform their own analyses regarding energy system development, energy investment planning and energy-environment policy formulation, and to help member States plan for the introduction of nuclear energy or to help keep the nuclear option open for those who wish to retain it.

FAO considers bioenergy development as a potential opportunity for developing countries. FAO works on the introduction of innovative rural energy access solutions into global strategies for rural development, environment protection and food security. FAO's work on bioenergy aims to build and strengthen institutional capacity at all levels, generate information that will support decision-making for sustainable bioenergy development, enhance access to energy services through sustainable bioenergy

systems, and facilitate opportunities for effective international exchange and collaboration.

### .....➤ Enabling environments

**Establishing enabling environments at policy, regulatory and market levels is a prerequisite for the sustained development of energy access initiatives. This is reflected in the strong engagement of UN-Energy members in such projects, including joint actions on supporting the design of sustainable development strategies, the formulation of subsequent energy policies and regulations, and the creation of favourable market conditions. UN-Energy programmes also foster regional cooperation to assist national governments and other stakeholders in the creation of environments conducive to enhancing access to modern energy services.**

UNDP works to integrate energy considerations into national development strategies, including poverty-reduction strategy papers (PRSPs), climate change strategies, and various national and sectoral policies, plans, programmes and budgets. It also facilitates multisectoral and multistakeholder dialogues to support informed decision-making on national energy targets, policy and institutional options, including financial responses to energy access challenges.

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The Reform Energy Planning Project at UNDP aims to ensure that institutional and organizational structures, mandates and functions are appropriate for increasing energy access. This Project has contributed to the creation of the National and Sectoral Analysis of Energy Access and Development in Kenya and the Regional Policy on Access to Energy Services for Poverty Reduction, which has been adopted by the Economic Community of West African States (ECOWAS).

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Lighting Africa is a joint programme from the International Finance Corporation (IFC) and the World Bank, also involving the GEF as partner and UNDP and UNHABITAT as member organizations. Lighting Africa currently has a budget of roughly US\$ 12 million provided by its variety of partners. It supports the global lighting industry in developing affordable, clean and

efficient lighting and energy solutions for the millions of people in SSA currently without access to the electricity grid. Efficient lighting solutions such as the latest light-emitting diode (LED), fluorescent and solar technologies have finally made it possible to offer energy services that are clean, efficient and reliable—and at price points that are comparable to kerosene. This programme's objective is to leverage global expenditures on fuel-based lighting to develop, accelerate and sustain the market for modern off-grid lighting alternatives that offer African consumers greater value for their money.

UNECA's Regional Integration, Infrastructure and Trade Division helps member States formulate policies and strategies to promote good practices for the development of the African energy sectors. Areas of intervention include coordinating United Nations organizations working in Africa on energy issues (in support of the New Partnership for Africa's Development (NEPAD) through UN-Energy Africa); improving Africa's energy sector management through policy analysis, studies and capacity-building; fostering regional energy cooperation and integration; and developing policies for improving energy accessibility in Africa.

The strategic goal of ESCAP's Energy Security Section is to promote inclusive and sustainable development in Asia and the Pacific. It advocates a paradigm shift in energy production and use—to improve energy access for the poor, ensure the energy security needed for rapid economic development and social advancement, and enhance environmental sustainability at national, regional and global levels.

## → Financing

**Enhancing sustainable access to energy requires robust financing mechanisms that address the specific needs of key stakeholders. These include cross-subsidies, loans, grants or guarantees as instruments to address the energy access-related financing needs of utilities, national or local governments, NGOs, private sector companies and end-users. The expertise and services provided by all UN-Energy members contribute substantially to creating optimal financing conditions for supporting energy access in developing countries.**

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ESCAP's Trans-Asian Energy System project seeks to promote enhanced energy cooperation through greater coordination and integration of the Asia-Pacific regional energy system, enabling energy exchange and trade in support of sustainable development. Its goals include enhanced access to broader energy markets for exporting countries, easier access to energy supplies for countries not endowed with fossil energy resources, decreased dependency on energy supplies from outside the region, and the establishment of an intergovernmental collaborative mechanism. ESCAP closely cooperates with subregional organizations in the energy sector, including the World Bank, the Association of Southeast Asian Nations (ASEAN) and the Asian Development Bank.

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The World Bank Group seeks to increase access to reliable and affordable modern energy services, particularly for the poorest, through a lending programme that includes direct investment in new energy projects and sector-specific policy advice to client countries. In its fiscal year ending on 30 June 2009, the World Bank Group committed a record US\$ 8.2 billion in new energy financing, more than 40 per cent of which was for renewable energy and energy efficiency. Additionally, US\$ 2.2 billion of the total US\$ 8.2 billion was allocated to increase access to energy in low- and middle-income countries, a four-fold increase since UN-Energy's inception in 2004. In the past year, to meet interim financing needs until a post-2012 mechanism for climate-related energy investments is finalized, the World Bank Group developed the Climate Investment Funds, a US\$ 6.3 billion commitment that has seen plans for investment drawn up for thirteen countries and two transformative clean energy projects approved in Turkey and Mexico.

In addition, the World Bank is home to a number of initiatives that build and share best practices in energy, provide additional climate financing for energy projects and target specific needs in the energy sector. For instance, the Energy Sector Management Assistance Programme (ESMAP) aims to increase institutional knowledge and capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth by investing US\$ 55 million between 2008 and 2013. Other important technical advisory activities by



the World Bank include the development of guidelines for electricity systems design and construction, and procedures for calculating rural tariffs and norms.

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Under ESMAP, the World Bank works in close cooperation with UNDP and bilateral donor organizations to conduct Country Power Sector Vulnerability Assessments. Considering the global financial crisis, highly volatile energy prices and climate variability, developing countries are considered to be very exposed to a highly turbulent energy environment. The Country Power Sector Vulnerability Assessments aim to determine the level of vulnerability in the power sector for each participating country. The first set of assessments was finalized in 2009 for Indonesia, the Philippines and Viet Nam. Another set of assessments is currently underway for the 2010 fiscal year.

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Hydroelectric resources often require joint community management, participation, leadership, teamwork and coordination. As an example, under a GEF project in Sri Lanka, mini-grid hydro installations were built, owned and operated by local communities through electricity cooperatives that were set up specifically for the purpose.

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The GEF, housed at the World Bank, finances access to energy services in rural areas where expansion of the grid is neither cost-effective nor affordable. Since its inception, the GEF has helped countries deploy solar energy technologies in remote areas by funding 70 projects in 69 countries to provide access to electricity through the use of solar home systems and off-grid photovoltaic electricity. The GEF supports these projects with US\$ 360 million, co-financed at a ratio of 1:7 by other donors. These projects include the installation of an estimated nominal peak power of 124 megawatts (MW). These projects led to the rapid growth of the photovoltaic (PV) industry in several countries, improving the quality of production, reducing costs and expanding the market for solar home systems and other off-grid PV applications. In addition, the GEF helps disseminate small hydro technologies by supporting 44 projects with own funding amounting US\$ 170 million and US\$ 1.3 billion of co-financing. Among other

outcomes, these investments have led to the installation of a total capacity of 411 MW, mostly for rural and decentralized electrification purposes.

UNDP has an on-going programme portfolio on energy of US\$ 2.5 billion, with more than 1,500 energy projects at national, local and community levels in more than 100 developing countries. These projects expanded direct access to modern energy services to more than seven million people who had previously not been benefiting from such services.

As another example of partnerships between UN-Energy agencies, the UNDP/GEF Small Grants Programme has financed the implementation of more than 1,000 energy access-related projects in more than 60 countries since 1992, helping extend access to modern energy services to more than two million people at the local level. With a suite of innovative approaches aimed at addressing climate change objectives, this programme has shown great potential as an effective tool for fostering national replication and the expansion or mainstreaming of energy access initiatives.

Further concrete examples of the scope of the financial services UN-Energy's members provide related to energy access issues are mentioned under the description of the activities attributed to the remaining clusters of UN-Energy. This is especially true for the section presenting initiatives focusing on renewable energy, which often directly provide access to energy services as part of their activities.

### ➔ Knowledge sharing

**Ensuring access to relevant knowledge and expertise is key to empowering stakeholders to take informed decisions on the design and implementation of initiatives to enhance energy access, in particular in the context of rapidly evolving technologies. Information dissemination and knowledge sharing are therefore important objectives among UN-Energy members' programmes for energy access, as these permit project developers and stakeholders to effectively build on existing experience, lessons learned and best practices identified, both within the United Nations system and externally. Therefore,**

**almost all the programmes implemented contain dissemination activities, some examples of which are provided below.**

ClimDevAfrica is a regional initiative jointly undertaken by the African Union Commission, UNECA and the African Development Bank. It aims at enabling effective adaptation activities in climate-sensitive sectors, strengthening Africa's climate and development institutions, filling gaps in climate information and analysis, and enhancing the use of climate information in decision-making. As part of this programme, UNECA established in 2009 the African Climate Policy Centre (ACPC), which amounts to an investment of US\$ 35 million over four years. The objectives of ACPC concentrate on facilitating effective adaptation initiatives in the sectors most impacted by climate change, including energy. Climate-proofing energy production and distribution—to ensure continuity of access—is a major issue that needs to be considered carefully. This programme is mainly focused on knowledge management, analysis and options needed by decision-makers at all levels.

Encouraging knowledge sharing among member States and their institutions is a key task for the IAEA, which conducts important work on energy supply strategies. The organization recently launched a collaborative effort to analyse the interdependencies and linkages between climate, land use, energy and water (CLEW), using different models to assess the overall energy and natural resources situation of a given country with particular emphasis on avoiding conflicts in land-use and water demand for food and biofuel production.

Increasing access to modern, clean and reliable energy services, especially for the urban poor, is a priority of UN-HABITAT. Considering the large potential for income generation in municipal solid waste management, UN-HABITAT organizes information exchanges and encourages collaborative arrangements that promote intelligent waste collection and sorting combined with biogas generation, composting and waste-to-energy/recycling partnerships with industry.

In addition to providing advisory services to member States, ECLAC prepares and disseminates various

sectoral studies on energy perspectives for specific countries or regions. It also organizes seminars and training courses and provides technical support to develop national capacities for energy projects.

The UNCTAD Biofuels Initiative provides member countries with economic, legal and trade policy analysis, capacity-building programmes and consensus-building tools. It helps assess the potential of specific developing countries to engage in the production, use and trade of biofuels.

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In many of the poorest areas of the developing world, solid fuels are typically burned in simple, unvented fires—often indoors—which lead to high levels of household air pollution. This is estimated to cause nearly two million premature deaths annually. To monitor the situation, WHO is expanding and maintaining a Household Energy Database. Already containing data from more than 500 nationally representative surveys conducted in 143 countries between 1974 and 2008, this database will be publicly available through the WHO Global Health Observatory (provisionally by mid-2010) and will be used for research on trends and socioeconomic inequalities in energy access and health impacts. In addition to information on the type of fuel used in rural and urban areas, there is also data on the use of improved stoves with chimneys, cooking locations, and on variations by educational level of women and by wealth quintile of the household.

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### ➔ Research, technology development and demonstration

**The introduction of modern energy technologies and their adaptation to local needs can be a significant step toward meeting multiple challenges simultaneously. While allowing expanded access to energy in currently underprivileged settings, modern low-carbon technologies present an opportunity to positively impact livelihoods, especially when combined with productive activities. Therefore, initiatives in support of research, technology development and demonstration are integral parts of the programmes of UN-Energy members.**

UNDP supports demonstration projects that facilitate energy policy development and financial

mobilization. Its action helps to disseminate innovative energy access solutions, keeping the focus on development.

UN-INSTRAW emphasizes the importance of articulating research, capacity-building and knowledge management in a continuous cycle of analysis, learning and action. Doing so allows participatory research results to feed into knowledge management and contribute both to the design of training and capacity-building programmes and to the formulation of policy. The organization aims to make energy-related policies and programmes gender-responsive on the basis of concrete research results, the application of lessons learned and the replication of best practices.

Since most of the access-related activities focusing on research, technology development, technology demonstration and dissemination deal with clean technologies, further concrete examples of efforts by UN-Energy's members are mentioned under the description of the activities attributed to the remaining

clusters of UN-Energy. This is especially true for the section presenting initiatives focusing on UN-Energy's renewable energy cluster, as renewable energy technologies often constitute the option of choice, especially for expanding access to modern energy to rural off-grid areas.

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Supported by the GEF (US\$ 2.6 million with US\$ 7.36 million in co-financing), UNIDO has coordinated the implementation of mini-grids based on renewable energy (hydro, solar and biomass) sources to augment rural electrification in Nigeria. This project aims to promote renewable energy (small hydropower and biomass-based mini-grids) as a viable option for augmenting the rural electrification programme in Nigeria. The demonstration of viable and sustainable renewable energy mini-grid projects will enable the Nigerian government to further establish the appropriate policy and regulatory framework, and to contribute to the development of a conducive market environment for increased private-sector investment programmes.

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## Renewable energy



In 2007, about one-fifth of the global primary energy demand was met by renewable sources, and the remainder by fossil fuels and nuclear energy.<sup>4</sup> However, the largest share of renewable energy was attributable to biomass, primarily traditional biomass such as firewood and charcoal for cooking and heating. The rest was derived from large-scale hydropower (greater than 10 MW) or distributed among other renewable energy technologies—primarily biofuels, geothermal and wind power. In terms of electricity generation, renewable energy represented about 16 per cent, with non-hydro accounting for only a small fraction of that.

There are a number of rationales for promoting renewable energy, including: enhancing the security of energy supplies through diversification of energy sources and substitution of imported resources with domestic ones; curbing greenhouse gas emissions; and job creation.<sup>5</sup> It should be noted that off-grid

renewable energy sources, while small in terms of installed capacity, have real potential to support sustainable access to modern energy.

There is untapped potential for renewable energy in most regions of the world. Yet that potential has not been fully realized due to the numerous challenges and barriers facing the widespread deployment of renewable energy. Notwithstanding, the investment flow into renewable energy worldwide is soaring, notably for wind power, solar PV and biofuels technologies. An estimated US\$ 120 billion was invested in 2008, almost double that of 2006.<sup>6</sup> Emerging countries such as China and Brazil are becoming leaders in the field.

Many countries have set ambitious targets for renewable energy generation, but much remains to be done to reach them. Multilateral and government resources alone are inadequate to meet the large investment requirements of scaling up renewable energy. Therefore, mobilizing private capital is pivotal, and dedicated actions are required to profile renewable energy as an attractive alternative to fossil-based energy. Scaling up renewable energy demands concerted action from all actors on a number of fronts, including policy, legal, regulatory, technical, financial and risk mitigation.

### Synopsis of UN-Energy member activities in renewable energy

Renewable energy has become a cornerstone of the United Nations system strategy, as illustrated by the activities and publications by UN-Energy members in this regard. UN-Energy members provide funds, technical assistance, expertise and knowledge on all types of renewable energy systems, with different focuses according to the specific programmes supported by the respective organizations.

<sup>4</sup> IEA, *World Energy Outlook*, 2009.

<sup>5</sup> Johansson et al., *Policy Recommendations for Renewable Energies*, 2004.

<sup>6</sup> REN21, *Renewables Global Status Report – Update*, 2009.



Some of the programmes of UN-Energy members dealing with renewable energy are presented below.

### → Capacity-building

**Renewable energy technology development has accelerated tremendously in recent years; technology is improving constantly, making new renewables economically more competitive. Implementing those technologies requires human expertise and skilled professionals at all levels, from local communities up to the national policymakers. Capacity development and training activities are essential to empower stakeholders to actively take part in shaping the future development of renewable energy.**

FAO's work in renewable energy focuses on the potential of bioenergy to help alleviate poverty, provide food security and support rural development while mitigating climate change and adaptation. The Climate, Energy and Tenure Division of FAO serves as the focal point for organizing and facilitating a multidisciplinary and global approach to bioenergy. Capacity development forms an integral part of FAO's services in the field of bioenergy.

The impact of biofuel production (and in particular, the risk of diverting farmland or crops for biofuels production in detriment to the food supply) is context-specific and will vary according to feedstock, technology and country characteristics. FAO's Bioenergy and Food Security programme (an investment of US\$ 10 million as of March 2010) aims to support the process of informed decision-making in the complex interactions of bioenergy development and food security.

In the field of bioelectricity production—which has the highest employment-creation potential among renewable energy options—FAO, by raising awareness and capacity-building, helps ensure that small-scale farmers are adequately involved in decisions and benefits along the value chain, and that rural communities also benefit from bioenergy development initiatives.

UNEP is also active in the bioenergy sector, providing training and other institutional support to promote

policy development and planning processes that are consistent with evolving global norms. For example, UNEP is helping governments map their land for bioenergy development or resource and technology needs assessments. It helps define areas that should be exempt from bioenergy development because of their high conservation value in terms of biodiversity or in terms of CO<sub>2</sub> storage capacity, and identify areas that would be suitable for bioenergy development. Such mapping needs to be based on common definitions of terms as well as a mix of “top-down” approaches via GIS mapping and “bottom-up” approaches involving local stakeholders in the identification of high conservation value areas or degraded lands. In this activity, UNEP collaborates with FAO and other organizations (such as the Oeko Institute and the Roundtable on Sustainable Biofuels), the International Union for Conservation of Nature (IUCN) and the World Wide Fund for Nature (WWF).

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An example of joint programming within UN-Energy is the project Capacity-building on Climate Change Mitigation for Poverty Alleviation in Western Asia (an investment of US\$ 550,000). In partnership with UNECA, UNESCAP and UNESCO, ESCWA aims to build the capacity of policymakers, civil society and private sector in the field of renewable energy technologies to enhance energy security and improve access to energy services in the poor rural areas. Best practices and South-South cooperation to increase public-private partnerships are promoted through various activities such as the development of educational material, training modules and a showcase location. Training workshops at the national and regional levels, an expert group meeting and a regional technical capacity-building conference will be organized to strengthen stakeholder capacity in promoting renewable energy services in rural areas.

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UNDP efforts in this area aim at catalyzing finance by creating the necessary market conditions and capacity for countries to move toward more sustainable energy systems and, in particular, to renewable energy. The aim is to strengthen national capacity for addressing the energy challenges of the poor through a diversified suite of delivery mechanisms, including the creation of enabling policy and institutional frameworks for renewable

energy. The process is part of an overall endeavor to integrate efforts to address energy poverty into national development strategies and by facilitating multistakeholder dialogues to support informed decisions on national energy targets, policy and institutional options, including financial responses to energy poverty.

UNESCO recognizes that the supply of skilled manpower is a critical element in the transfer of technology. Due to the enormous needs for institutional and human resource development, UNESCO's activities focus on enhancing national capacity and knowledge through the Global Renewable Energy Education and Training (GREET) programme. The organization coordinates regional expert meetings and seminars and has initiated summer schools on renewable energy in various countries.

UNIDO promotes renewable energy for productive uses and industrial processes in developing countries. Aiming to enhance income generation and increase the competitiveness of small and medium-sized enterprises (SMEs) in rural on-/off-grid areas, UNIDO's renewable energy programme focuses on bioenergy, small hydropower, solar energy and wind power. In the demonstration projects implemented by UNIDO, local and institutional capacity-building is always seen as an integral part. Project counterparts receive vocational training in construction work and project implementation. Their experience is invaluable for the local market development and is a prerequisite for the successful replication of the projects.

In Latin America, ECLAC's activities include a strong capacity-building component through the provision of technical support for energy project evaluations and the development of economic regulations and national energy policies (e.g., designing and implementing sound energy policies for the sustainable production and use of biofuels).

As mentioned previously in this publication, the GEF implements various programmes on renewable energy development and works with a number of UN-Energy agencies. Considering that the appropriation of the programmes by beneficiary

countries and communities is key to success, all of the GEF's programmes include strong capacity-building and stakeholder awareness-raising components.

The WMO World Climate programme seeks to increase WMO members' capacity for weather prediction and assessment through the support of national and regional meteorological climate services. These services develop and provide a range of useful climate information and forecasts for renewable energy implementation, and facilitate interaction between the providers and users of the information to improve the relevance and quality of meteorological products.

### ➔ Enabling environments

**Significantly scaling up renewable energy technologies in developing countries requires conditions that are conducive to fostering the needed investments. UN-Energy and its members help shape enabling environments by supporting the adaptation of policy and regulatory frameworks, removing barriers to renewable energy investment and use, and raising the attractiveness of such investments to the private sector and end users by means of fiscal incentives, clear standards and accessible funding schemes.**

The UNEP Renewable Energy programme provides advice to developing countries on broad policy approaches to bolstering renewable sources of energy. It supports the creation of an enabling environment for small- and micro-businesses in the area of renewable energy, with the aim of removing policy and institutional barriers. UNEP works with local banks to set up end-user financing mechanisms for renewable energy technologies (RETs) and undertakes assessments of solar and wind energy sources to inform public- and private-sector decision-making.

Establishing international standards and certification models for the production, conversion, use and trade of bioenergy systems will be essential as the use of biomass for energy increases. FAO is currently working to converge existing programmes and formulate internationally agreed-upon criteria for

bioenergy production—with the flexibility to accommodate the diverse environmental and socioeconomic conditions of each country's agricultural, energy and environmental sectors.

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The ESCWA project Disseminating Renewable Energy for Poverty Alleviation (a US\$ 200,000 investment) emphasizes the need for increased energy accessibility and renewable energy use to facilitate better living conditions in rural areas. This project includes renewable energy assessment studies to evaluate application potentials and market opportunities, developing an awareness campaign for rural areas, developing means for removing barriers facing renewable energy applications, capacity-building seminars and workshops, and demonstrating renewable energy rural electrification systems.

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Developing and strengthening national energy policy frameworks is a priority for UNDP, which focuses on the enabling environment and the policies needed to support energy options for sustainable development in support of achieving the MDGs. UNDP looks at economic, social and environmental goals simultaneously. As host of the United Nations country teams, it also plays an important role in ensuring national-level coordination and coherence of activities.

The GEF Strategic Programme on Promoting Market Approaches for Renewable Energy is dedicated to promoting market approaches to the supply of and demand for renewable electricity in grid-based systems. The emphasis lies on developing policies and regulatory frameworks that provide limited incremental support for strategically important investments. Projects include a combination of technical assistance for policy reform and regulation as well as initial investments to jump-start the market for specific renewable technologies.

As part of its objectives, UNFCCC aims to create and maintain the necessary conditions that allow for an early, effective and efficient implementation of the Kyoto Protocol. The Clean Development Mechanism (CDM) and joint implementation instruments aim to stimulate sustainable development and emission reductions globally. The CDM allows emission-

reduction or removal projects in developing countries to earn certified emission-reduction credits. Joint implementation allows a country with an emission-reduction or limitation commitment under the Kyoto Protocol (annex B party) to earn emission-reduction units from the project of another annex B party. Both programmes foster foreign investment by industrialized countries to stimulate the renewable energy markets in target countries. To qualify projects under these instruments, a country needs to set up a regulatory framework and legal environment that will foster reliable emissions-reduction tracking and investment by private-sector firms.

UN-HABITAT supports the adoption of sustainable energy solutions in towns and cities worldwide. Under the Cities in Climate Change Initiative, it promotes active climate change collaboration among local governments and encourages their involvement in global, regional and national networks. It also enhances policy dialogues so that climate change is firmly established on the agenda of local governments. Finally, it supports local governments in implementing change and fosters the implementation of awareness, education and capacity-building strategies in close collaboration with a wide range of partners.

## ➔ Financing

**The widespread deployment of renewable energy depends on the availability of financing. UN-Energy members are at the forefront of funding innovative energy projects around the world, with the scale of investments increasing significantly over recent years.**

Renewable energy is a fundamental pillar of the operations of the GEF. Over the past 18 years, the organization has demonstrated unique leadership by investing US\$ 1.1 billion in renewable energy initiatives in almost 100 developing countries and economies in transition. These investments have been augmented by an additional US\$ 8.3 billion in co-financing. The GEF has been at the forefront of advancing innovative market-based mechanisms and financial instruments to promote renewable energy, including financial support to energy service companies, partial-risk guarantees, and revolving and

equity funds. These initiatives have helped the GEF become the largest public-sector renewable energy technology transfer mechanism in the world, with investments that have contributed to the installation of 3.0 gigawatts (GW) electric and 2.8 GW thermal renewable energy capacity, resulting in an estimated direct avoidance of 290 million tons of carbon dioxide (CO<sub>2</sub>). Through catalytic effects and replication, indirect GHG emission reductions are estimated to be 1.2 billion tons of CO<sub>2</sub>. As the GEF implements various programmes on renewable energy development through collaboration with a number of UN-Energy agencies, including UNDP, the World Bank, FAO and UNIDO, such programmes serve as good examples for joint initiatives between UN-Energy members.

The GEF further supports the transfer of technologies to help countries mitigate and adapt to climate change. Over the past 18 years, GEF has approved grants totaling more than US\$ 1.1 billion for almost 150 projects that promote the transfer of renewable energy technologies to developing countries. Those technologies include solar energy (photovoltaics, solar homes and solar water heaters), wind turbines, geothermal, small hydro, methane and biomass for heat and electricity generation.

In partnership with the GEF, UNDP plays a key role in catalysing financing for sustainable energy programmes, particularly in renewable energy and energy efficiency. More details on UNDP's related activities are provided under the financing section of the energy efficiency cluster.

UNEP has been working with the finance sector since the late 1990s on new approaches to financing sustainable energy in developing countries. Through its Renewable Energy and Finance Unit, UNEP has implemented a variety of financial catalysts, including seed financing, enterprise development, credit enhancements and financier advisory support services. These catalysts are aimed at helping financiers share risks, bring down transaction costs, build capacity and address various other barriers that make building sustainable energy investment portfolios a challenge. The Sustainable Energy Finance Initiative (SEFI) brings together financiers, engaging them to do jointly what they may have been

reluctant to do individually and coaxing them to enter into public-private alliances in the sustainable energy finance area.

The increased emphasis on renewable energy initiatives by UN-Energy's members is best illustrated by a steep rise in the financing provided by the World Bank. Since UN-Energy's inception, the World Bank Group increased its renewable energy lending more than seven-fold from US\$ 0.2 billion in 2004 to US\$ 1.6 billion in 2009.

In 2008, the World Bank set up its Climate Investment Funds (CIF), which consists of the Strategic Climate Fund (SCF) and the Clean Technology Fund (CTF). These together reached US\$ 6.3 billion in January 2010. This unique pair of financing instruments was designed to support low-carbon and climate-resilient development through scaled-up financing channeled through the World Bank Group, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, and the Inter-American Development Bank.

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Through two Turkish development agencies—the Turkish Industrial Development Bank (TSKB) and the Turkish Development Bank (TKB)—the Turkey Private Sector Renewable Energy and Energy Efficiency project (US\$ 100 million of which was financed by the World Bank Clean Technology Fund, while US\$ 500 million was financed through traditional World Bank lending) will offer low-cost financing to private firms in Turkey seeking to develop indigenous renewable energy sources such as wind, solar, biomass, small hydropower plants and geothermal sources. Additionally, financing is available to both public and private institutions that want to make significant energy-efficiency investments. The project will help enhance energy security, support a clean energy transition and increase private sector involvement in the development and financing of clean energy and energy-efficiency investments.

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The SCF serves as an overarching framework to support three targeted programmes with dedicated funding to pilot new approaches that have potential for scaled-up, transformational action aimed at a specific climate change challenge or sectoral



response. Out of these three programmes, the Programme for Scaling Up Renewable Energy in Low-Income Countries (SREP) is directly related to renewable energy. It aims to demonstrate the economic, social and environmental viability of low-carbon development pathways in the energy sector in low-income countries. SREP stimulates economic growth through the scaled-up development of renewable energy solutions and acts as a catalyst for the transformation of the renewables market by obtaining government support for market creation, private-sector implementation and productive energy use. Stakeholders include the multilateral development banks, the United Nations and its organizations, the GEF, UNFCCC (as an observer), bilateral development agencies, non-governmental organizations, indigenous peoples, private-sector entities, and scientific and technical experts.

The CTF aims to finance transformational actions by providing positive incentives for the demonstration of low-carbon development technologies and the mitigation of GHG emissions through public and private-sector investments. Due to its strong energy efficiency focus it is further described in the section presenting activities by the energy efficiency cluster.

### → Knowledge sharing

**A widespread deployment of renewable energy requires appropriate regulatory, financial and market frameworks as well as specific technical expertise. Therefore, knowledge sharing and information dissemination between stakeholders is essential. All UN-Energy members actively share key findings, best practices and technical information.**

An important component of WMO programmes is providing guidance, creating knowledge and building capacity related to the needs and requirements for energy-sector services. Different forms of energy production—including hydropower, biomass energy, solar and wind energy—draw on resources that depend significantly on climate conditions. WMO promotes the use of weather, climate and water information to manage risk and develop sound adaptation strategies to increased climate variability and climate change tendencies throughout the various

elements of the energy sector. In partnership with UNEP and within the framework of the UNEP/WMO Intergovernmental Panel on Climate Change (IPCC), WMO supports the development of energy-related assessments, aiming to provide up-to-date information on the renewable energy potential in different locations and on climate variability and risk-reduction opportunities in operations and long-term activities.

UNEP is working on information tools and assessments to provide a scientific foundation for decision-makers planning and building policy frameworks. The organization is collaborating with FAO to guide policymakers through the process of developing a national bioenergy strategy and assessing investment opportunities. UNEP has set up a bioenergy policy support facility that provides ad hoc support to national governments and is also working on sustainability standards under the umbrella of the Global Bioenergy Partnership and the Roundtable on Sustainable Biofuels.

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Conducted by UNEP and supported by the GEF, the Solar and Wind Energy Resource Assessment (SWERA) provides users around the world with easy access to renewable energy resource information and data. Its goal is to help facilitate renewable energy policy and investment by making high-quality information freely available to key user groups and removing information barriers. Its resources and tools are offered through a team of international experts and their in-country partners. The project also involves various international partners such as NASA.

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Since 2005, UNCTAD has given high priority to biofuels, particularly as a trade and investment opportunity for developing countries. The organization conducts economic analyses of the links between trade and climate change, provides information on the rules of the CDM, and organizes technical meetings and conferences.

UNESCO activities for the promotion of renewable energy include disseminating scientific knowledge and technology and supporting pilot initiatives and demonstration projects on the use of renewable energy for sustainable development. This support

serves as a catalyst to launch projects focusing on applications that impact local development.

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The FAO Bioenergy Environment Impact Assessment (BIAS) (an investment of US\$ 100,000) aims to ensure the environmental soundness and sustainability of bioenergy development in developing countries. The project has produced and disseminated guidelines explaining how to develop a state-of-the-art assessment framework of the environmental impacts of the most important existing and emerging biofuel production systems around the developing world.

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The benefits of conventional and renewable energy remain mostly inaccessible to the urban poor; as such, there is a need to explore affordable ways of increasing the dissemination of renewable energy technologies in slum areas. In this area, UN-HABITAT emphasizes the roles and responsibilities of the private sector and utilities by enhancing information exchange, organizing media/advocacy campaigns and encouraging collaborative arrangements between actors.

### → Research, technology development and demonstration

**Research and technology development and demonstration are essential to the transition to sustainable energy. UN-Energy members are strongly involved these activities, with the objective of unfolding the full potential of renewable energy.**

UNIDO is coordinating a number of International Energy Technology Centres (a total investment of approximately US\$ 45 million) that aim to stimulate applications of sustainable energy technologies. These centres include the International Centre for Hydrogen Energy Technology (Turkey), the International Centre for the Promotion and Transfer of Solar Energy (China) and three International Centres for Small Hydropower (China, India and Nigeria). The centres focus on developing and strengthening the scientific and technological capabilities in the developing world and economies in transition, and will help close the gap

between research and development organizations, innovative enterprises and the marketplace. UNIDO's technology centres further implement demonstration projects that help raise awareness of local renewable energy potentials in a number of developing countries. As a result, the economic, financial, technical and environmental sustainability of renewable energy technologies are brought to the attention of stakeholders from governments, the financial sector and the private sector, etc.

UNIDO's Sustainable Energy in Small Island Developing States (SIDS) programme promotes and supports the transition from fossil-fuel-based energy consumption and supply patterns to sustainable development based on RETs and energy efficiency. Its components include demonstrating the economic and technological viability of RETs and energy-efficiency technologies, capacity-building in key institutions, and promoting South-South cooperation between entrepreneurs, managers, researchers and planners from SIDS and other developing countries.

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UNEP's Biofuels Assessment on Technical Opportunities and Research Needs for Latin America (BioTop) project aims to create and support specific research and technology development (RTD) cooperation between Latin America and Europe. A key focus of the project is the identification and assessment of improved first- and second-generation biofuel conversion technologies in Latin America. Sustainability, standardization and trade aspects of future large-scale biofuel production are also investigated, and scenarios, roadmaps and recommendations are developed. In this regard, exchanges between stakeholders active in RTD of biofuel conversion technologies are promoted and BioTop activities are effectively linked with existing networks. The goal of the BioTop project is increased awareness of opportunities for collaboration in the area of biofuels and the identification of suitable areas for biofuels RTD cooperation.

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Technology demonstration is a major component of ECLAC's activities in support of promoting renewable energy. The Liquid Biofuels for Transportation in Latin America and the Caribbean programme aims to provide a mixture of up to 10 per cent ethanol and biodiesel (E10 and B10) for transportation in the region. Technology dissemination is a key element of

the programme, as is supporting national governments in the formulation of policies and strategies.

FAO's Bioenergy and Food Security programme includes research and development activities for the design of a solid analytical framework addressing the linkages between bioenergy and food security. The programme, which is based on work done at the international level and in three developing countries, will come up with a set of internationally agreed-upon best practice policy measures to promote these links. The programme will also create indicators and criteria for monitoring the impacts of bioenergy and food security linkages.

The World Bank and the GEF are the main financing sources for renewable energy technology demonstration and uptake in developing countries. Related activities are implemented in close collaboration with other UN-Energy organizations. The GEF has promoted the demonstration, deployment, diffusion and transfer of renewable energy

technologies, and was among the first to support market transformation for RETs and practices. The support of the GEF has helped developing countries develop and apply effective RET promotion policies.

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In 2010, WMO set up an Expert Team on Climate Risk and Sector-Specific Climate Indices that will develop methods and tools to generate such indices, including time series based on historical data and methodologies to define simple and complex climate risks. This team will also promote the use of climate indices as means to showcase climatic variabilities and trends of particular interest to specific socioeconomic sectors, and to help define the sensitivity of various sectors to climate. It will also develop training materials on these techniques. In particular, this team will work with sector-based agencies and experts to facilitate the use of climate information in decision-support systems for climate risk management and adaptation strategies. The team will work with WMO and its members as well as with experts from relevant organizations within the United Nations System and at regional and national levels.

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## Energy efficiency



Energy efficiency is at the heart of any good energy policy. Efficiency investments are usually characterized by low payback periods and substantial benefits from increased economic competitiveness, yet there is a large untapped potential to reduce, at low or negative cost, the amount of energy used per unit of output—real obstacles do exist. Climate change mitigation and poverty-reduction strategies have increasingly become key drivers to foster energy-efficiency improvements and help tackle the barriers to the increased implementation of energy-efficiency measures.

Developing economies have a huge opportunity to strengthen their economic prospects by boosting energy productivity.<sup>7</sup> Costs for standard but unimplemented renovations and equipment improvements typically run at one-quarter<sup>8</sup> of the cost of commercial energy supply and well below the capital cost of installing new generation capacity. Improving energy efficiency also increases industrial competitiveness by lowering production costs, eases

pressure on household budgets, and reduces government energy bills. Every building or industrial plant constructed today without optimal energy efficiency represents a lost opportunity to “lock in” lower energy consumption for decades.

Furthermore, energy efficiency lessens the pressure related to energy security. As many countries are expected to need to rely increasingly on imported traded energy fuels, their vulnerability to international energy price fluctuations will also increase. In such cases, curbing the energy demand by improving energy efficiency represents an attractive option.

In addition to benefits at global, national and industry levels, households can also profit significantly from energy-efficient technologies. For example, the lives of the poor who still depend on biomass sources can be considerably improved through the introduction of energy-efficient cooking stoves, which require less fuel wood and reduce the effects of indoor air pollution. (Similar benefits exist for the use of energy efficient lighting such as compact fluorescent lamps (CFLs) or (LEDs).) Yet even such basic efficient technologies are currently beyond the reach of the majority of people living in developing countries.

Addressing the potential of energy-efficiency improvements at all levels will be required to contribute significantly to decoupling economic growth with environmental impact. UN-Energy and its members combine the expertise and capacities required to support the realization of this potential.

### Synopsis of UN-Energy member activities in energy efficiency

UN-Energy members have a long history with regard to energy-efficiency programmes. From efficient buildings to transport and energy efficiency in industry, there is a large range of interventions in

<sup>7</sup> McKinsey & Co., *Promoting Energy Efficiency in the Developing World*, 2009.

<sup>8</sup> R. Taylor, *Financing Energy Efficiency: Lessons from Brazil, China, India, and Beyond*. World Bank, 2007.



which various organizations have been very active. The section below provides an overview of current UN-Energy programmes related to energy efficiency.

### ➔ Capacity-building

**Capacity development and training activities are crucial to integrating energy efficiency into the development frameworks of developing countries. UN-Energy members play a key role in regard to capacity-building by developing various training programmes and tools.**

UNIDO strongly emphasizes capacity-building and information dissemination to foster the uptake of energy-efficiency practices and technologies in industry. UNIDO builds capacity at the institutional and market level tailoring activities and methodologies to the different target stakeholders. Special focus is given to the creation of cadres of highly skilled national experts in energy management and system optimization as one of the fundamental engines for the development of start-ups and the transformation of national industrial energy-efficiency markets. As an integral part of its knowledge mobilization and dissemination efforts, UNIDO organizes a number of global forum activities to bring together planners, experts, entrepreneurs, institutions and decision-makers on a common platform to raise awareness, exchange current concepts and ideas, and promote partnerships.

Training and technical assistance is an important part of the IAEA's activities. The IAEA focuses on capacity-building for energy systems analysis and planning to help its member country identify the role of different technologies in meeting their future energy needs. The organization's related activities include assistance to analyse opportunities and constraints for enhancing industrial energy efficiency, capacity-building for energy and electricity expansion planning, demand analysis for urban and rural areas, and financing of rural energy systems.

In cities, the potential for energy-efficiency gains is specifically high. Through its Slum Upgrading programme, UN-HABITAT works in the poorest urban areas to help build capacity and transfer technologies that replace charcoal and fuel wood with more

sustainable and efficient sources of energy (e.g., through the development of biogas facilities, which can complement existing efforts to introduce fuel-efficient and smoke-free stoves). In addition to increasing security, slum electrification programmes can offer ample co-benefits, like the positive impact of electric lighting on enabling people to work and study after their daytime activities.

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Under the Strategic Programme on Promoting Sustainable Innovative Systems for Urban Transport, the Ghana urban transport project (US\$ 90.35 million), a joint GEF/World Bank initiative, addresses capacity-building at institutional, management and regulatory levels to improve personal mobility in cities in Ghana. Project activities were initially designed to strengthen the capacity of ministries, local authorities, agencies and operators concerned with urban transport. As a result of improved traffic planning, a direct reduction of 240 kt CO<sub>2</sub> is expected during the timeframe of the project.

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Building on its successful experience in Europe, UNECE jointly worked with ESCWA, ESCAP, ECLAC and ECA to investigate different financing opportunities for global climate change mitigation. This led to the creation of the Global Energy Efficiency 21 project (GEE21), which was launched in December 2008 at UNECE Conference of the Parties COP-14 in Poznan, Poland. GEE21 is designed to develop a systematic exchange of capacity-building experience, policy reforms and investment project financing, with the goal of promoting self-financing energy-efficiency improvements that raise economic productivity, diminish fuel poverty and reduce environmental air pollution around the world.

Considering that ownership of the programmes by beneficiary countries and communities is key to success, all programmes of the GEF include strong capacity-building and stakeholder awareness-raising components.

### ➔ Enabling environments

**Enabling environments need to frame the widespread dissemination of energy-efficiency measures. Forward looking policies, relevant regulatory**

**frameworks, supportive marketing contexts and technical adaptation to local specificities are necessary to decouple economic growth from energy requirements.**

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Under the GEF Promoting Energy Efficiency in Residential and Commercial Buildings programme, UNDP is engaged in the Energy-Efficiency Codes in Residential Buildings and Energy-Efficiency Improvement in Commercial and Hospital Buildings in Morocco project. The primary objective is to introduce mandatory minimum energy-efficiency performance requirements in the residential sector through an energy-efficient building code. A second objective is to institutionalize the adoption of efficiency standards and practices among Morocco's commercial and hospital sectors. The project is helping the government of Morocco launch its national energy-efficiency initiative and stimulate public/private partnerships for integrating energy efficiency into public and private building construction/renovation programmes.

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Recognizing the importance of energy in economic development—as well as the negative effects of inefficient energy use—the GEF has set a strategic objective of supporting projects that not only promote the transfer of energy-efficient technologies but also enable work with regulatory institutions on reforming policies and regulations in this vital energy sector. The aim is to promote enabling environments for energy efficiency and renewable energy solutions. The GEF has invested a substantial share of its resources in projects that remove market and other barriers to energy efficiency. Through its support, developing countries have introduced a combination of policies and regulatory frameworks, standards and labels for appliances, lighting, buildings and industrial equipment, and it has also helped to establish market-based approaches and financial instruments.

Integral to its efforts to promote low-carbon development, ESCAP supports national institutional and policy reforms related to energy efficiency through the development of long-term strategies and the implementation of integrated capacity-building, information exchange and regional cooperation initiatives.

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The Strengthening Institutional Capacity to Support Energy Efficiency project takes stock of institutional capacities and policies to improve legislative and standard-setting measures in Central, South and South-East Asia. In 2009, ESCAP conducted a gap analysis and developed case studies of existing institutional mechanisms (including barriers and challenges) for promoting energy efficiency in the three subregions. The project will ultimately develop policy guidelines to address the barriers for effective institutional mechanisms based on findings from the previous year.

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Within the scope of its Industrial Energy Efficiency programme UNIDO promotes and supports the establishment of favourable policy and regulatory environments for energy efficiency, providing policy advice and technical assistance to structure effective, comprehensive and country specific frameworks for industrial energy efficiency. These combine best-practice policies, normative measures, fiscal and financial incentives, industry-wide education, intensive technical training and provision of tailored tools. UNIDO's Industrial Energy Efficiency programme, worth US\$ 200 million for the period 2010-2013, aims at establishing policy programmes and market conditions conducive to and supportive of the integration of energy management and energy efficiency technologies in industry daily business practices. With regard to energy efficiency, UNIDO works in close collaboration with the GEF, UNECE, UNECA, UNEP, and UNDP.

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Within the project Support to the Development of an International Energy Management Standard for Industry, UNIDO has been working to help developing countries and economies in transition participate in the development of the new ISO 50001—Energy Management System Standard. Main elements of this support included raising awareness of policymakers, standard authorities and industry; supporting participation of emerging and developing economies; contributing to preliminary harmonization work; and channelling views of industry into the ISO process.

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Under its Transport programme, UNEP calls for environmental considerations to be integrated with commercial and individual transport-related

decisions. Its overall objectives are to facilitate a shift in transport systems and to implement approaches to mobility that are less disruptive to the environment. These include urban planning that promotes intermodality, the diffusion of clean technologies, the adoption of policies that help reduce environmental impacts, and the introduction of price signals that capture the full costs of different modes of transport.

UN DESA also provides advice and support in transportation planning and policymaking as they relate to goals of reducing emissions, increasing efficiency, and promoting sustainable modes of transport.

Working in close partnership with UNEP, the GEF, the World Bank and the governments of Burundi, Kenya, Rwanda, Uganda and United Republic of Tanzania, UN-HABITAT's Promoting Energy Efficiency in Buildings in East Africa programme (investment of US\$ 9.25 million) helps reduce electricity consumption in buildings through demand management and the implementation of energy-efficiency measures. To achieve this goal, UN-HABITAT is launching awareness campaigns, promoting sustainable urban energy policies, encouraging the development of green buildings through fiscal and financial incentives, giving regional awards to energy-efficient buildings, and developing regulations that incorporate energy efficiency into design codes and standards. Among other things, this programme will help reduce both the capital outlay required to increase generation capacity and the running costs of thermal generators, whether from national or individual power back-up systems.

## ➔ Financing

**The financing requirements of energy-efficiency initiatives vary considerably from those of renewable energy. The implementation of energy-efficiency improvements leads to energy and thus cost savings instead of revenue streams. Recognizing this crucial difference, UN-Energy members provide tailored assistance with regard to financial support and innovative funding mechanisms so that developing countries and economies in transition can benefit from energy-efficiency measures.**

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The European Clean Energy Fund (ECEP) was officially launched in 2006 under the mandate of the Energy Efficiency 21 (EE21) programme. ECEP is a mezzanine and equity investment fund with investment capital of EUR 354 million. The targets for ECEP are clean energy projects in the European Union. Eligible projects are in the areas of renewable energy (wind, solar, biomass, geothermal), electricity (hydropower, cogeneration, combined cycle technology), fuel switching, clean coal, waste-to-energy and district heating. The UNECE Committee on Sustainable Energy has supported the creation of ECEP and views it as the prototype for future investment funds for energy efficiency and renewable energy projects in other countries of the UNECE Region. To date, over 80 per cent of the ECEP capital has been invested in a number of projects in wind energy, solar energy, biofuels and natural gas-related infrastructure. Investment projects were financed in France, Germany, Ireland, the Netherlands, Spain and the United Kingdom. Some estimates show that implementation of projects under this fund could save at least 1,000,000 Mt of CO<sub>2</sub> emissions. The experience of ECEP is being used to design a new investment fund for the 12 countries of South-Eastern Europe, Eastern Europe and Central Asia participating in the Financing Energy Efficiency Investments for Climate Change Mitigation (FEEI) project.

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UNECE promotes the formation of an energy-efficiency market in Eastern Europe so that cost-effective investments can provide a self-financing method of reducing global GHG emissions. This includes the promotion of dedicated financial instruments such as the European Clean Energy Fund (ECEP), which was established by Swiss Re/Conning & Co.

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Supported by the GEF and the IFC, the Hungary Energy Efficiency Co-Financing Programme (HEECP) was designed in two phases. HEECP I, a US\$ 5 million pilot project, generated considerable interest in the energy-efficiency market among Hungarian financial institutions by providing guarantees and technical assistance to support the financing of energy efficiency-related projects including, but not limited to, investments in efficient lighting, building and district heating, boiler and building control systems, motors, and industrial process improvements. HEECP II builds on these accomplishments, aiming to significantly expand co-financing. IFC, GEF, and remaining HEECP I funding was combined to provide a US\$ 16 million guarantee facility

to local financial institutions for building a far-reaching pool of funds to finance energy-efficiency projects in the country. Expansion of the guarantee programme is expected to facilitate up to US\$ 76 million in new energy-efficiency financing. In addition, technical assistance was provided to help financial institutions, energy service companies and end users who were planning investments to evaluate energy-efficiency projects. This is expected to result in secondary benefits not directly related to capital financing by enhancing local capacity for energy-efficiency project financing and technical competence.

At the World Bank, energy-efficiency lending has grown almost 20-fold since UN-Energy's establishment, from US\$ 0.1 billion in 2004 to US\$ 1.7 billion in 2009. As mentioned in the previous renewable energy chapter, the Clean Technology Fund aims to finance transformational actions by providing positive incentives for the demonstration of low-carbon development technologies and the mitigation of GHG emissions through public and private-sector investments. It combines three major components: the promotion of highly efficient technologies to reduce carbon intensity in the power sector (including renewable energy); efficiency and modal shifts in the transport sector; and energy efficiency in buildings, industry and agriculture.

In Nigeria, the US\$ 200 million Electricity and Gas Improvement project—financed by the World Bank and supported by a US\$ 400 million partial risk guarantee issued by the World Bank—ensures the availability and reliability of gas supply to increase power generation in existing public-sector power plants. It also improves the power network's capacity and efficiency to reliably transmit and distribute electricity to consumers, thereby demonstrating the potential for emissions reductions in both production and distribution of electricity.

The GEF is one of the public sector's largest contributors of energy-efficiency funding, with direct investments of US\$ 850 million in more than 90 developing and transition countries and an additional US\$ 5.9 billion in co-financing over the past 18 years. Catalysing financing through the creation of

sustainable energy programmes—particularly renewable energy and energy-efficiency initiatives—is a major aspect of UNDP's work. GEF programme grants represent 80 per cent of UNDP's total energy-related portfolio in this area. Geographically, much of the activities are in the middle-income and emerging economies. UNDP is working with developing countries and economies in transition to explore carbon-financing opportunities that could help accelerate the transition to sustainable, low-carbon energy systems.

### → Knowledge sharing

**From the industrial sector to residential housing or the transport sector, approaches to energy efficiency are complex and manifold. Knowledge sharing is therefore essential to effectively deploy energy-efficiency measures that are tailored to both the sector and the local context. UN-Energy and its members provide valuable platforms for disseminating information and exchanging knowledge.**

At the UNFCCC, TT:CLEAR (a technology information clearing house) includes an inventory of environmentally friendly technologies and technology development and transfer projects, as well as information on financing technology development and transfer.<sup>9</sup> TT:CLEAR also provides access to information on technology needs identified by developing countries, and supports a pilot network of national and regional technology information centres. The objective is to improve the flow of, access to and quality of information related to the development and transfer of environmentally sound technologies that help improve access to energy globally.

The use of inefficient cooking equipment can lead to serious health problems in developing countries. WHO is assessing the relationship between disease and household energy use, in particular diseases resulting from household air pollution caused by open fires for cooking. In this regard, WHO gathers and disseminates information on the use of household energy and on effective approaches to improving worldwide access to clean, efficient household energy.

<sup>9</sup> Website <http://unfccc.int/ttclear/jsp/index.jsp>



## → Research, technology development and demonstration

**The identification and adequate formulation of energy-efficiency measures for the industrial, housing and transport sectors requires significant research and technological development. UN-Energy members activities in this regard, combined with those targeted at technology transfer and demonstration, play a critical role in fostering the dissemination of energy-efficient technologies and instruments in support of low-carbon development pathways.**

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The GEF/UNEP Energy Management and Performance Related Energy Savings Scheme (EMPRESS) supports energy-efficiency efforts in Eastern and Central Europe. By sharing information and expertise, the project helps establish specialized energy service companies (ESCOs) that perform energy monitoring and targeting (M&T) for industrial and commercial clients. Under the project, M&T is introduced through ESCOs that accept the majority of the capital risk for energy-efficiency investments in exchange for a share of the positive cash flow accruing from the subsequent energy savings. EMPRESS has three main objectives: creating a market for M&T energy management services; achieving end-user energy-efficiency improvement and GHG reductions; and opening doors to M&T services worldwide.

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The GEF is the largest public-sector funding source supporting the transfer of environmentally sound technologies (ESTs) to developing countries, with more than 50 ESTs being supported by the GEF over the years. Out of those, more than one-third are energy-efficiency technologies covering lighting, appliances, heating systems, building design and construction materials, power and heat generation and distribution, and industrial applications. The Strategic Programme on Promoting Energy Efficiency in the Industrial Sector includes the deployment and diffusion of energy-efficient technologies and practices in industrial production and manufacturing processes, and has evolved into sector-specific technology transfer programmes focusing on GHG-intensive industries.

Energy efficiency in industry can contribute considerably to decoupling economic growth from

environmental impact by reducing industrial energy intensity and related GHG emissions. As the organization dedicated to industrial development, UNIDO partners with the GEF on its Industrial Energy Efficiency programme, which aims to enable industry to develop and implement energy-efficiency projects and comply with energy-management standards. Taking stock of different countries key manufacturing sectors and development priorities, the UNIDO programme includes pilot and demonstration projects as well as technology transfer activities.

UNEP's Energy Efficiency programme involves various facets of technology research, development, transfer and commercialization, as well as the promotion of new and innovative energy-efficiency methodologies and techniques. UNEP works with a broad spectrum of partners in these efforts including industry associations, NGOs, financial institutions and the private sector.

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Starting in the 1950s, Township and Village Enterprises (TVEs) were established in China as rural, collective entities to provide jobs for of the great numbers of surplus rural labourers, and to make essential local products available at lower costs. TVEs have now been largely privatized to their former managers and still primarily sell their products in local markets. The Energy Conservation and GHG Emissions Reduction in Chinese TVEs project (US\$ 18.5 million including co-financing) was financed by the GEF and executed by UNIDO in cooperation with the Chinese Ministry of Agriculture. It focused on reducing GHG emissions in China's brick, cement, metal casting and coking TVE sectors. This project was designed to remove key market, policy, technology, management and financial barriers and induce a transformation that would support the development and uptake of energy-efficient technologies and products in these TVE sectors.

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The transfer of environmentally sound technologies is embodied in the very fabric of UNFCCC. Article 4, paragraph 5 of the Convention commits developed countries to “take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention.”

## Overview

As described, UN-Energy and its members have responded vigorously to the enormity of the challenges and opportunities presented by the confluence of access, security, climate change and wealth creation in the energy sector. The table below provides an overview of the programmes undertaken by UN-Energy and its members during 2008-2009, and categorizes them by focus.

In the electronic version of this document, clicking on an item in the table below will direct the reader to a brief overview of each programme. Colours indicate the main emphasis of the programmes: multiclustere programmes are shown in pink, energy access programmes in yellow, renewable energy programmes in green and energy efficiency programmes in blue.

			ENERGY ACCESS					RENEWABLE ENERGY					ENERGY EFFICIENCY				
			Enabling environments	Capacity-building/training	Knowledge sharing	R&D, technological demonstration/dissemin.	Financing	Enabling environments	Capacity-building/training	Knowledge sharing	R&D, technological demonstration/dissemin.	Financing	Enabling environments	Capacity-building/training	Knowledge sharing	R&D, technological demonstration/dissemin.	Financing
Departments and offices	UN DESA	OVERARCHING PROGRAMMES (INCLUDING ENERGY)	X		X			X	X				X	X			
	CEB	OVERARCHING PROGRAMMES (INCLUDING ENERGY)	X		X			X	X				X	X			
Regional commissions	UNECA	AFRICAN CLIMATE POLICY CENTRE (ACPC)	X	X	X	X											
	UNECE	SCALING UP THE PROMOTION OF ENERGY EFFICIENCY											X	X	X		
		FINANCING ENERGY EFFICIENCY AND RENEWABLE ENERGY INVESTMENTS FOR CLIMATE CHANGE MITIGATION (FEEI)	X	X	X			X	X	X	X	X	X	X	X	X	X
		GLOBAL ENERGY EFFICIENCY 21 (GEE21)											X	X	X		X
	UNECLAC	LIQUID BIOFUELS FOR TRANSPORTATION IN LATIN AMERICA AND THE CARIBBEAN	X	X	X	X	X	X	X	X	X	X					
	UNESCAP	STRATEGIES TO ADOPT A LOW CARBON DEVELOPMENT PATH	X	X	X			X	X	X			X	X	X		
		SCALING UP THE UTILIZATION OF RENEWABLE ENERGY WITH A FOCUS ON WIDENING ACCESS TO ENERGY SERVICES IN THE CONTEXT OF THE MDGs	X	X	X												
		SCALING UP THE PROMOTION OF ENERGY EFFICIENCY											X	X	X		
		PROMOTING REGIONAL COOPERATION ON ENERGY SECURITY: TRANSBOUNDARY ENERGY COOPERATION	X		X												
	UNESCWA	BIENNIAL WORK PROGRAMME 2010-2011	X	X	X			X	X	X			X	X	X		
Programmes and funds	GEF	STRATEGIC PROGRAMME ON PROMOTING ENERGY EFFICIENCY IN RESIDENTIAL AND COMMERCIAL BUILDINGS	X	X	X	X	X						X	X	X	X	X
		STRATEGIC PROGRAMME ON PROMOTING ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR											X	X	X	X	X
		STRATEGIC PROGRAMME ON PROMOTING MARKET APPROACHES FOR RENEWABLE ENERGY	X	X	X	X	X	X	X	X	X	X					
		STRATEGIC PROGRAMME ON PROMOTING SUSTAINABLE ENERGY PRODUCTION FROM BIOMASS	X	X	X	X	X	X	X	X	X	X					
		STRATEGIC PROGRAMME ON PROMOTING SUSTAINABLE INNOVATIVE SYSTEMS FOR URBAN TRANSPORT						X	X	X	X	X					
	UN-HABITAT	CITIES IN CLIMATE CHANGE INITIATIVE						X	X				X	X			
		PROMOTING ENERGY EFFICIENCY IN BUILDINGS IN EAST AFRICA						X	X				X	X	X	X	
	UNCTAD	UNCTAD BIOFUELS INITIATIVE	X	X	X			X	X	X							
	UNDP	DEVELOPING AND STRENGTHENING NATIONAL AND LOCAL CAPACITY TO EXPAND ACCESS TO ENERGY SERVICES FOR THE POOR	X	X	X	X	X	X	X	X	X	X					
		STRENGTHENING NATIONAL POLICY FRAMEWORKS FOR ENERGY	X	X	X		X	X	X	X		X	X	X	X		X
		CATALYSING FINANCING THROUGH MARKET CREATION/ TRANSFORMATION FOR SUSTAINABLE ENERGY PROGRAMMES, PARTICULARLY RE AND EE EFFICIENCY INITIATIVES			X			X	X	X	X	X	X	X	X	X	X
	UNEP	RENEWABLE ENERGY						X		X		X					
		ENERGY EFFICIENCY											X	X	X		
		ENERGY AND CARBON FINANCE					X	X	X	X	X	X					X
		TRANSPORT											X	X	X		
		BIOENERGY	X					X	X	X		X					
	UNFCCC	CLEAN DEVELOPMENT MECHANISM (CDM)						X									
		JOINT IMPLEMENTATION MECHANISM (JI)						X					X				
		TT: CLEAR INFORMATION TECHNOLOGY SYSTEM				X					X					X	

			ENERGY ACCESS					RENEWABLE ENERGY					ENERGY EFFICIENCY				
			Enabling environments	Capacity-building/training	Knowledge sharing	R&D, technological demonstration/dissemin.	Financing	Enabling environments	Capacity-building/training	Knowledge sharing	R&D, technological demonstration/dissemin.	Financing	Enabling environments	Capacity-building/training	Knowledge sharing	R&D, technological demonstration/dissemin.	Financing
Specialized agencies	FAO	ENVIRONMENT								X	X						
		BIOENERGY AND FOOD SECURITY	X	X	X	X		X	X	X	X						
		RURAL DEVELOPMENT	X	X	X	X		X	X	X	X						
		POLICY FRAMEWORK	X					X					X				
		TECHNOLOGY								X	X						
	UNESCO	GLOBAL RENEWABLE ENERGY EDUCATION AND TRAINING (GREET) PROGRAMME							X	X	X						
	UNIDO	RENEWABLE ENERGY FOR PRODUCTIVE USES						X	X	X	X	X					
		GEF STRATEGIC PROGRAMME ON ENERGY IN WEST AFRICA	X	X	X	X		X	X	X	X		X	X	X	X	
		INDUSTRIAL ENERGY EFFICIENCY											X	X	X	X	X
		SUSTAINABLE ENERGY IN SMALL ISLAND DEVELOPING STATES						X	X		X		X	X		X	
		CAPACITY-BUILDING AND GLOBAL FORUM ACTIVITIES		X				X					X				
		INTERNATIONAL TECHNOLOGY CENTRES						X			X						
	UN-INSTRAT	TRAINING AND CAPACITY BUILDING PROGRAMME		X				X					X				
Related organizations	IAEA	ANALYSIS FOR SUSTAINABLE ENERGY DEVELOPMENT	X	X	X	X		X	X	X	X		X	X	X	X	
	WHO	REDUCING THE BURDEN OF DISEASE ASSOCIATED WITH HOUSEHOLD FUEL USE			X					X					X		
	WMO	WMO WORLD CLIMATE PROGRAMME								X	X						
	WB	ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAMME (ESMAP)	X	X	X			X	X	X			X	X	X		
		LIGHTING AFRICA											X		X	X	
		ASIA SUSTAINABLE AND ALTERNATIVE ENERGY PROGRAMME (ASTAE)	X	X			X	X	X			X	X	X			X
		CLEAN TECHNOLOGY FUND (CTF)				X	X				X	X				X	X
		STRATEGIC CLIMATE FUND (SCF)	X	X			X	X	X			X	X	X			X

The financing, knowledge sharing, capacity development and technical assistance provided through these activities all help leverage private-sector and national resources. They also help create the conditions necessary for long-term, stable investment in sustainable energy pathways.

The emphasis on collaboration was highly successful, with members starting, implementing or finalizing more than 40 programmes under the UN-Energy cooperative umbrella during the period 2008-2009, more than half of which involve three or more UN-Energy members. Well over half of these tackle the complexity of sustainable energy by working across multiple clusters. During the same period UN-Energy and its members issued

some 130 publications contributing to the knowledge-base and addressing pressing energy challenges.

While these efforts are considerable, there is of course much more to do. UN-Energy and its members are active in more than 140 countries around the world, tackling the energy challenges in ever-expanding scales of engagement. Given this broad response to the energy challenges ahead, UN-Energy has an essential role to play in supporting coherence and coordination. Dynamic partnerships based on comparative advantages, established both within the United Nations system and with external partners, provide an opportunity to adequately address the energy challenges at hand.



## 4 PORTRAITS OF UN-ENERGY MEMBERS

This chapter provides a brief introduction to the individual UN-Energy members and a succinct overview of their work in the energy field.



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## The Food and Agriculture Organization (FAO)

Founded in 1945, the Food and Agriculture Organization (FAO) leads international efforts to defeat hunger. FAO serves both developed and developing countries, acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy, and is a source of knowledge and information. The Organization's mandate is to raise levels of nutrition, improve agricultural productivity, better the lives of rural populations, and contribute to the growth of the world economy. Achieving food security for all is at the heart of FAO's efforts, with special attention given to development in rural areas, home to 70 per cent of the world's poor and hungry people. FAO helps developing countries and countries in transition modernize and improve agriculture, forestry and fisheries practices, and ensure good nutrition for all. FAO's work programme consists of the following areas: putting information within reach; sharing policy expertise; providing a meeting place for nations; and bringing knowledge to the field.

### Energy at FAO

FAO's work in this area focuses on the potential of bioenergy to contribute to poverty alleviation, food security, rural development as well as climate change mitigation and adaptation. The Climate, Energy and Tenure Division of FAO serves as focal point for organizing and facilitating a multidisciplinary and global approach to bioenergy. The work on bioenergy aims to generate information in support of decision-making for sustainable bioenergy development; to build and strengthen institutional capacity at all levels; to enhance access to energy services through sustainable bioenergy systems; and to facilitate opportunities for effective international exchange and collaboration.

With an emphasis on bioenergy, services provided by FAO include:

- Development of analytical tools related to the resource assessment and use, and to how to make sound decisions on bioenergy, strategies, programmes and investments
- Generation of data and knowledge tools
- Awareness-raising and capacity-building regarding analysis, policy development and programme implementation
- Partnerships and collaboration



## Global Environment Facility (GEF)

Established in October 1991 as a US\$ 1 billion pilot programme in the World Bank, the Global Environment Facility (GEF) of today is an independent financial organization that unites 180 member governments—in partnership with international institutions, non-governmental organizations, and the private sector—to address global environmental issues. GEF provides grants to developing countries and countries with economies in transition for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer and persistent organic pollutants. These projects benefit the global environment, linking local, national, and global environmental challenges and promoting sustainable livelihoods. As the largest funder of projects to improve the global environment, the GEF has allocated US\$ 8.8 billion, supplemented by more than US\$ 38.7 billion in co-financing, for more than 2,400 projects in more than 165 developing countries and countries with economies in transition. Through its Small Grants Programme (SGP), the GEF has also made more than 10,000 small grants directly to non-governmental and community organizations. The GEF partnership includes 10 agencies: the UNDP; the UNEP; the World Bank; the FAO; UNIDO; African Development Bank (AfDB); Asian Development Bank (ADB); European Bank for Research and Development (EBRD); Inter-American Development Bank (IDB); and IFAD. Additionally, GEF currently serves as the financial mechanism for the following four Conventions: United Nations Convention on Biological Diversity (CBD), UNFCCC, the Stockholm Convention on Persistent Organic Pollutants (POPs), and the United Nations Convention to Combat Desertification (UNCCD).

## Energy at GEF

The GEF's efforts to reduce or avoid greenhouse gas emissions include renewable energy, energy efficiency, and sustainable urban transport. The deployment and transfer of new technology lie at the heart of the GEF's work in this area, and GEF climate change projects are catalysts for this technology transfer. The GEF provides support for new technologies with lower greenhouse gas emissions to lower costs and develop markets, including large scale solar power plants, fuel-cell buses, and building integrated solar photovoltaics. Providing developing countries with early experience in new, low-carbon energy technologies expands demand, which increases supply and reduces cost. The reduced costs help developing countries adopt those technologies earlier and with a wider scope.

Services provided by GEF include:

- Promotion of the demonstration, deployment, diffusion, and transfer of renewable energy and energy-efficient technologies at all levels of society
- Support of market transformation for these technologies
- Support to advancing innovative market-based mechanisms and financial instruments
- Work with regulatory institutions on reforming policies and regulations



## International Atomic Energy Agency (IAEA)

Established in 1957 as the “Atoms for Peace” organization, the International Atomic Energy Agency is the world’s foremost organization for scientific and technical cooperation in the peaceful use of nuclear technology. The Agency works with its 151 member States and multiple partners worldwide and it is mandated to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world while preventing its misuse for non-peaceful purposes. The IAEA’s mission is guided by the interests and needs of member States, strategic plans and the vision embodied in the IAEA Statute. The Agency’s key roles contribute to international peace and security, and to the world’s Millennium Goals for social, economic and environmental development. Underpinning the IAEA’s mission are the three main pillars of its work programme, namely: Safeguards and Verification (the IAEA is the world’s nuclear inspectorate with more than four decades of verification experience); Safety and Security (the IAEA helps countries upgrade nuclear safety and security, and to prepare for and respond to emergencies); and, Science and Technology/Nuclear Technology for Development (the IAEA helps countries mobilize peaceful applications of nuclear science and technology in the areas of agriculture, human health, hydrology, industry and the environment). A principal mechanism for the delivery of services and technical support is the Technical Cooperation Programme.

### Energy at IAEA

In the field of energy and especially the UN-Energy clusters, the IAEA assists its member States in strengthening the local expertise to conduct national energy assessments and design energy strategies and policies. IAEA’s assistance includes transfer of updated information and assessment tools (energy models) and training of experts from member States in the use of these tools for charting out national energy demand and supply strategies consistent with their national development objectives. In addition, the Agency supports national and regional energy assessments and topical studies on 3E (Energy-Economy-Environment), for example, assessing economic implications of energy technology choices, analysing cost-effective energy options for mitigating climate change, etc. More recently, the IAEA has initiated a collaborative effort on analyzing the interdependence and linkages between Climate, Land-use, Energy and Water (CLEW). The IAEA works closely with all its member States on these programmes and interacts actively with several partners, such as UN DESA, IEA/OECD, IPCC, US-DOE, etc.

Services provided by the IAEA include:

- Providing information and analytical tools (energy models), training and technical assistance to build capacity in energy systems analysis and planning for identifying the role of different technologies in meeting their future energy needs
- Conducting 3-E (Energy-Economy-Environment) analysis of nuclear technologies and their competitors, focusing on competitive energy markets, environmental impacts and sustainable energy development,
- Guiding and supporting national and regional energy assessments



## United Nations Conference on Trade and Development (UNCTAD)

The United Nations Conference on Trade and Development (UNCTAD) was established in 1964 with the aim of promoting the development-friendly integration of developing countries into the global economy. As an authoritative knowledge-based institution, UNCTAD effectively helps shape current policy debate and thinking on development, with a particular focus on ensuring that domestic policies and international action are complementary forces in bringing about sustainable development. To fulfill this mandate, UNCTAD carries out three vital functions: it functions as a forum for intergovernmental deliberations, supported by discussions with experts and exchanges of experience, aimed at consensus building; it undertakes research, policy analysis and data collection for the debates of government representatives and experts; and it provides technical assistance tailored to the specific requirements of developing countries, with special attention to the needs of the least developed countries and of economies in transition. When appropriate, UNCTAD cooperates with other organizations and donor countries in the delivery of technical assistance.

### Energy at UNCTAD

In the field of energy, UNCTAD has given high priority to biofuels since 2005, and particularly as a trade and investment opportunity for developing countries. Under the Kyoto Protocol and in the field of alternative energy technologies and climate change, UNCTAD has supported efforts to engage the private sector in the Clean Development Mechanism (CDM) as part of a programme giving emphasis to the work in LDCs.

Services provided by UNCTAD include:

- Conducting economic analysis on the links between trade and climate change, for example by assessing the trade and development impacts of specific emission reduction proposals
- Developing training materials on the rules of the CDM, so that an increasing number of developing nations can make use of it
- Organizing technical meetings and intergovernmental conferences to discuss the links and mutual supportiveness of trade and climate change policies
- Conducting policy analysis on the trade and development implications of the biofuels sector, including by assessing the WTO-consistency of specific measures and regulations. This includes providing data on tariff and non-tariff barriers affecting biofuels and related feedstock and technologies and providing a forum for discussion and exchange of views and experiences
- Supporting specific developing countries in designing national biofuel strategies that contribute to economic growth, energy independence and climate change stabilization, while minimizing social and environmental risks
- Organizing an annual Africa Oil and Gas Trade and Finance Conference aimed at bringing together major players from the private and public sector, facilitating multistakeholder dialogue on topical issues in the African energy sector, and strengthening consensus on how to develop this sector.





## United Nations Department of Economic and Social Affairs (UN DESA)

Reorganized into its present form in 1997, the Department of Economic and Social Affairs of the United Nations Secretariat assists countries around the world in agenda-setting and decision-making with the goal of meeting their economic, social and environmental challenges. It promotes and supports international cooperation to achieve its mission, i.e., to promote development for all. In providing a broad range of analytical products, policy advice, and technical assistance, UN DESA effectively translates global commitments in the economic, social and environmental spheres into national policies and actions and continues to play a key role in monitoring progress towards internationally agreed-upon development goals.

### Energy at UN DESA

UN DESA's work in the field of energy is undertaken in concert with the implementation of the sustainable development agenda, as outlined in Agenda 21 and the Johannesburg Plan of Implementation (JPOI). The achievement of sustainable development requires the integration of economic, environmental and social components at all levels. UN DESA works in three main interconnected areas:

- UN DESA supports the intergovernmental process by facilitating the negotiations of member States in many intergovernmental bodies on joint courses of action to address ongoing or emerging global challenges, including those related to providing access to basic energy services:

UN DESA promotes sustainable development as the substantive secretariat to the Commission on Sustainable Development (CSD) as well as by facilitating the negotiations between member States on resolutions on energy, like on the recently by the General Assembly adopted resolution on the promotion of new and renewable sources of energy (A/C.2/64/L.60). Moreover, UN DESA organizes Informal Briefings and Interactive Thematic Dialogues on Energy for Sustainable Development to provide a platform for information sharing and interactive discussion.

- UN DESA generates and analyses a wide range of economic, social, and environmental information on energy issues from which member States of the United Nations draw to review common problems and take stock of policy options:

In 2009, UN DESA supported the drafting of the Secretary-General Report on the Promotion of New and Renewable Sources of Energy and published policy briefs on energy for sustainable development as well as the *World Economic Situation and Prospects (WESP)* that is a joint product of UN DESA, the United Nations Conference on Trade and Development and the five United Nations regional commissions.

- UN DESA advises interested governments on the ways and means for translating policy frameworks that were developed in United Nations conferences and summits into implementation at the country level and, through technical cooperation and capacity development:

UN DESA is assisting developing countries in the implementation of energy access, renewable energy and energy efficiency projects. With the e8 network, which consists of major electric utilities in industrialized countries, UN DESA together with GEF is implementing a joint initiative on Financing Sustainable Electrification. Moreover, together with the Chinese Government, UN DESA co-organized the Beijing High Level International Conference on Climate Change: Technology Development and Technology Transfer (7-8 November 2008) and the Delhi High Level International Conference on Climate Change: Technology Development and Transfer (22-23 October 2009) co-organized with the Indian Government.



## United Nations Development Programme (UNDP)

The United Nations Development Programme is the United Nations global development branch that advocates for change and nationally-owned solutions to poverty reduction, thereby connecting countries to appropriate knowledge, experience, resources and partners to help people build a better life. On the ground in 166 countries, UNDP works with local actors on indigenous solutions to global/national challenges, on developing local capacities, and on helping developing countries attract and use aid effectively. UNDP's wide-reaching network links and coordinates global and national efforts to reach the Millennium Development Goals, with the focus of helping countries create and share solutions to the challenges of: democratic governance; poverty reduction; crisis prevention and recovery; environment and energy; and HIV/AIDS. In all its activities, UNDP privileges the protection of human rights and the empowerment of women. UNDP continues to: sponsor innovative projects; connect countries to good practices/resources; promote the role of women in development; and bring governments, civil society and outside supporters together to coordinate efforts. The seminal annual Human Development Report, commissioned by the UNDP, focuses the global debates on key development issues, provide new measurement tools, innovative analyses and often controversial policy proposals.

### Energy at UNDP

UNDP's energy activities focus on the following three broad priority areas: (1) strengthening national and local capacity for expanding access to modern energy services for the poor, (2) strengthening national policy frameworks for energy and (3) catalysing financing through market creation/transformation for sustainable energy programmes, particularly renewable energy and energy efficiency initiatives. Its upstream energy activities focus on enabling environment and policies needed to support energy options for sustainable development and the achievement of the MDGs by addressing economic, social and environmental goals simultaneously. UNDP also catalyses financing through market creation or transformation especially to respond to the challenges of energy and climate change. Downstream activities concentrate on integrated energy solutions addressing social, economic and environmental objectives to tackle poverty and promote sustainable development. Actions taken at the local level promote the localization of the achievement of the MDGs and foster sustainable development. The actions also support global sustainable development goals, generating both developmental and environmental outcomes. Through upstream and downstream energy activities, UNDP provides the following services:

- National level coordination as host of the United Nations Country Teams
- Capacity development
- Forging partnerships including resource mobilization

The services that UNDP offers aim at (a) strengthening national institutional and policy frameworks; (b) expanding modern energy services beyond the grid, (c) promoting clean energy technology; and (d) increasing access to financing for energy.



## United Nations Energy Africa (UNEA)

Established in May 2004 during the African Ministerial Meeting on Energy held in Nairobi, UN-Energy Africa is a subprogramme of UN-Energy, which is open to all United Nations organizations that have activities in the energy sector. UNEA is therefore the principal interagency mechanism in the field of energy in Africa to help ensure coherence in the United Nations system's multidisciplinary response to WSSD by sharing information, knowledge, experiences and good practices as well as initiating joint energy projects/programmes. It maintains an overview of ongoing and planned work within the system and builds/strengthens synergies among independent initiatives at the national, subregional, regional and continental levels. UNEA serves as the United Nations agencies sub-cluster on energy in the framework of the Regional Consultations in support of NEPAD and it is also mandated to collectively engage non-UN stakeholders (including the private sector) active in the field of sustainable energy. Currently, UNEA active members are: UN-HABITAT, UNIDO, UNEP, UNESCO, UNDP, IAEA and UNECA; and close allies include AfDB, African Union and NEPAD. UN-HABITAT, UNIDO and UNECA assume the functions of chair, co-chair and secretariat respectively.

### Energy at UNEA

UN-Energy Africa is currently engaged in creating a "knowledge hub" based on local, regional and national best practices. It is also working on enabling policies and regulations on appropriate energy options, including renewable energy technologies and energy efficiency systems for productive use and for the provision of affordable basic infrastructure and services.

Services provided by UNEA include:

- Mobilizing funds to undertake energy-related pilot projects for demonstration, awareness and capacity-building purposes
- Designing and delivering training material with a focus on private sector professionals and African students
- Developing project documents on clean, reliable, affordable and efficient energy options for productive uses and for the provision of environmentally sound infrastructures and services
- Planning, designing and organizing global forum activities
- Creating detailed case studies on energy-related practices and policies, and preparing publications in the form of case books, toolkits, technical papers and other outreach material in support of ongoing training, leadership and policy development activities



## United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)

As the most comprehensive of the United Nations' five regional commissions in terms of population served and area covered—membership of 62 Governments, 58 of which are in the region, and a geographical scope that stretches from Turkey in the west to the Pacific island nation of Kiribati in the east, and from the Russian Federation in the north to New Zealand in the south—the United Nations Economic and Social Commission for Asia and the Pacific is the regional development arm of the United Nations for the Asia-Pacific region. Established in 1947 with its headquarters in Bangkok, Thailand, ESCAP's mandate is to promote economic and social development in the Asian and Pacific region by fostering cooperation between its members and associate members. Within this mandate it focuses on various issues that are most effectively addressed through regional cooperation and it carries out work in the following thematic areas: macroeconomic policy and development; statistics; sub-regional activities for development; trade and investment; transport; environment and sustainable development; information and communications technology and disaster risk reduction; and social development.

### Energy at UNESCAP

ESCAP is developing strategies to enable countries to make a paradigm shift that meets developmental needs in a sustainable manner. In this context, ESCAP contributes to the strengthening of an integrated policy framework on low carbon development. It is supporting national institutional and policy reforms related to energy efficiency through capacity-building, information exchange and regional cooperation. The Commission facilitates the development of long-term strategies and implements integrated capacity-building in energy efficiency for various national circumstances, including energy efficiency in cities, the financing environment, and institutional and policy reforms. ESCAP contributes to and is instrumental in developing policies and strengthening capacity of policymakers, civil society and the private sector for widening access to energy services.

Services provided by UNESCAP include:

- Mobilizing private sector involvement through public private partnerships in providing a sustainable electricity supply to the poor and financial resources for improving social infrastructure
- Providing member states with technical cooperation assistance in energy efficiency
- Conducting gap analyses, research and case studies of existing institutional mechanisms, including barriers and challenges for promoting energy efficiency
- Developing policy guidelines to address the barriers to effective institutional mechanisms
- Facilitating dialogue among member states to develop, agree on and implement joint activities to enhance energy security





## United Nations Economic and Social Commission for Western Asia (UNESCWA)

Established in 1973 as the Economic Commission for Western Asia, the Commission was re-designated the United Nations Economic and Social Commission (ESCWA) in order to recognize the vital social component of its work. It is comprised of 13 Arab countries in Western Asia and its mission is to provide: a framework for the formulation and harmonization of sectoral policies for member countries; a platform for congress and regional/subregional coordination; a home base for expertise and knowledge-sharing/dissemination; and an information observatory. Alongside the formulation and promotion of appropriate development assistance activities and projects based on needs and priorities of the member countries, ESCWA also acts as an executing agency for relevant operational projects. Specifically, the objectives of ESCWA are: to support economic and social development in the countries of the region; to promote cooperation between the countries of the region; to encourage interaction between member countries and promote the exchange of experience, best practice and lessons learnt; to achieve regional integration between member countries; and, to ensure interaction between Western Asia and other regions of the world, familiarizing the outside world with the circumstances and needs of the countries in the region.

### Energy at UNESCWA

The Energy Section places significant emphasis on the issue of sustainability of the energy sector. The main programme areas in energy that are being implemented by ESCWA address: (a) energy efficiency and conservation; (b) renewable energy; (c) energy and the environment; (d) energy sector's regional integration and reform; and (e) energy for transport.

Services provided by UNESCWA include:

- Supporting member countries and decision makers in integrating into their policies and plans the social aspects of managing energy resources that would facilitate the creation of new jobs, the generation of income and the empowerment of women so as to support poverty alleviation
- Increasing awareness of decision makers and users with regard to critical energy issues
- Providing training programmes and materials on building institutional and human capacities in the management of energy resources and systems
- Promoting regional cooperation mechanisms for enhancing national and regional capacities in the field of energy



## United Nations Economic Commission for Africa (UNECA)

Established by ECOSOC in 1958, ECA has been mandated to promote and support the economic and social development of its 53 African member states, foster intra-regional integration, and promote international cooperation for Africa's development. Its current work programme is rooted in two mutually supportive areas, namely: (a) promoting regional integration in support of the African Union vision and priorities; and (b) meeting Africa's special needs and emerging global challenges. The modalities and services the ECA deploys to support its members are the following: policy analysis and advocacy; enhancing partnerships; technical assistance; communication and knowledge sharing; and supporting subregional activities.

### Energy at UNECA

ECA's work is structured into seven programme divisions and the one most involved in the field of energy is the Regional Integration, Infrastructure and Trade Division. It promotes the harmonization of policies, laws, regulations and standards, and practices, as well as subregional, regional and interregional cooperation in the field of transport, energy, water and mining. ECA's work in the energy sector is based on priorities and commitments made within the framework of the WSSD, NEPAD energy initiatives and other energy priorities related to the achievement of globally agreed upon objectives such as the MDGs. Accordingly, the work of the Regional Integration, Infrastructure and Trade Division involves assisting member states in formulating policies and strategies aimed at promoting good practices in the development of the African energy sector, in fostering regional energy cooperation and integration, as well as in devising the ways and means of addressing energy access issues. Major areas of intervention include: (a) coordination of United Nations Agencies working in Africa on energy issues in support of NEPAD through UN-Energy/Africa; (b) improving Africa's energy sector management through policy analysis, studies and capacity-building; (c) fostering regional energy cooperation and integration; and (d) devising policies for improving energy accessibility in Africa.

Services provided by UNECA include:

- Capacity-building
- Formulating regional policies and strategies
- Developing the African energy sector
- Fostering regional cooperation and integration
- Addressing energy access issues and improving energy accessibility in Africa
- Mobilizing finance



## United Nations Economic Commission for Europe (UNECE)

Set up by ECOSOC in 1947, the United Nations Economic Commission for Europe (UNECE) aims to facilitate pan-European economic integration and cooperation among its 56 member States, while promoting sustainable development and economic prosperity. Within the scope of this mandate the ECE provides analysis, policy advice and assistance to governments in the following sectors: environment; transport; statistics; sustainable energy; economic cooperation and integration; trade; timber and forestry; housing, land management and population. The UNECE programme of work is focused on: (a) the negotiation of conventions, norms, standards and guidelines in the above-mentioned sectoral areas to facilitate international cooperation within and outside the region; (b) the provision of technical assistance (advisory services, capacity-building workshops, training courses, and study tours) to countries with economies in transition, aimed at building national capacity to implement UNECE legally binding instruments and standards, and supporting these countries in the achievement of internationally-agreed development goals; (c) the organization of policy debate, and the exchange of experience and best practices in the key areas of UNECE work; (d) the monitoring of and support to the regional implementation of outcomes of global United Nations conferences and summits.

### Energy at UNECE

The UNECE's work in the field of energy is built around the Sustainable Energy subprogramme, which is run by the Sustainable Energy Division, overseen by the Committee on Sustainable Energy and carried out by the Committee's Subsidiary Bodies, Task Forces and Ad Hoc groups. The subprogramme works to promote a sustainable energy development strategy for the region, with the following objectives: sustained access to high quality energy services for all individuals in the region; security of energy supplies in the short-, medium- and long-term; facilitate a transition to a more sustainable energy future and introduce renewable energy sources to reduce health and environmental impacts resulting from the production, transport and use of energy; well-balanced energy network systems across the whole of the UNECE tailored to optimize operating efficiencies and overall regional cooperation; sustained improvements in energy efficiency, in production and use, particularly in countries with economies in transition; and in the context of post-EU enlargement, the integration of energy restructuring, legal, regulatory and energy pricing reforms, as well as of the social dimension into energy policymaking. The subprogramme also addresses intersectoral issues, in particular in the field of energy and environment. It is also designed to take into account the goals of the United Nations Millennium Declaration, the outcome of the World Summit on Sustainable Development, and the proposals emanating from the process on Strengthening the Organization, initiated by the Secretary General in 2002.

Services provided by UNECE include:

- Promoting convergence in the overall legal, regulatory and policy framework, including the development of classification systems and guidelines

- Promoting energy efficiency and conservation, notably in economies in transition
- Encouraging the greater use of natural gas as a “transitional” fuel to bridge the gap until “new” environmentally-benign energy sources are developed and commercialized
- Greening the coal-to-energy chain
- Addressing issues related to electric power network system interconnections
- Providing technical assistance to countries with economies in transition to help implement market-oriented energy policies and market-based energy reforms as well as to promote the development of the energy sector



## United Nations Economic Commission for Latin America and the Caribbean (UNECLAC)

The Economic Commission for Latin America was established by ECOSOC in 1948, while its scope was later broadened to include the countries of the Caribbean, hence, the Economic Commission for Latin America and the Caribbean. ECLAC's purpose is to contribute to the economic and social development of Latin America and the Caribbean, to coordinate the necessary actions directed towards this end and to reinforce the economic ties among the region's countries and other nations. Since 1996, the mission of ECLAC has been reformulated to place emphasis on the important role it plays as a centre of excellence that is responsible for supporting the region's countries in the comprehensive analysis of the development process. This reformulated mission includes design, monitoring and evaluation of public policies and the provision of expertise, advisory services and training, as well as support for regional and international cooperation and coordination activities. ECLAC continues to function as an active forum for dialogue between the region's countries and other stakeholders on both challenges and opportunities facing Latin America and the Caribbean.

### Energy at UNECLAC

ECLAC's work is divided among ten programme divisions and the division most involved in the field of energy is the Natural Resources and Infrastructure Division, which consists of the following thematic work areas: water, energy, mining, and transportation and infrastructure. It will address the contribution to sustainable development of natural resources, assets and services, transportation and public infrastructure in the countries of the region. In the energy sector, the countries of the region can still improve their knowledge and capacity in sustainable energy technologies, with emphasis on energy efficiency, renewable energy and biofuels. ECLAC will also pay special attention to the oil market and to establishing the price of that product, and will explore other energy sources such as coal and nuclear alternatives. In this context, the objective of this component of the work programme is to develop a series of policy recommendations, tools and resources to promote energy efficiency and increased use of renewable energy as a reliable source of energy in Latin America and the Caribbean.

Services provided by UNECLAC include:

- Advisory services to member States on: energy and sustainable development matters; design and application of energy plans and policies in the hydrocarbon and power sector; reviewing sector regulations and advising countries on regulatory frameworks; contract negotiations and renegotiation; improving management techniques in the energy sector (plus advisory services)
- Strengthening the capacity of national institutions in energy policies and providing technical assistance to develop national capacity for energy project evaluation and economic regulations



- Preparing studies on: energy panorama and sectoral perspectives for the specific country/region; potentials and use of new and renewable sources of energy in the region and promoting the development of specific energy sources (e.g., geothermal); methodologies and analytical instruments for energy studies and evaluation (plus technical assistance); restructuring of the energy industry in member States (plus technical assistance); the interrelationship between energy and economic development, energy and natural resources and environment, energy and social aspects
- Organizing regional/interregional seminars on energy development and planning and supporting regional/subregional training seminars/courses on energy development, planning and regulation
- Promoting energy efficiency policies and implementation of “ad-hoc” regulatory frameworks in member States



## United Nations Education, Scientific and Cultural Organization (UNESCO)

The United Nations Education, Scientific and Cultural Organization (UNESCO) is a specialized agency of the United Nations that was founded in 1945. It comprises 193 member States and 7 associate member States. Using its specialized competencies, UNESCO works to create the conditions necessary for open dialogue among civilizations, cultures and peoples, all based upon respect for commonly shared values and global visions of sustainable development. The Organization's mission is to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information. The internationally agreed-upon development goals, including the Millennium Development Goals, underpin all of UNESCO's strategies and activities. Specifically, UNESCO focuses on two global priorities, namely, Africa and gender equality. The overarching objectives of the Organization are: attaining quality education for all and lifelong learning; mobilizing science knowledge and policy for sustainable development; addressing emerging social and ethical challenges; fostering cultural diversity, intercultural dialogue and a culture of peace; and, building inclusive knowledge societies through information and communication.

### Energy at UNESCO

In its contribution to international efforts, UNESCO puts emphasis on addressing capacity-building and sharing of best practices in renewable and alternative energy in support of sustainable development, and on providing policy advice, especially in developing countries. Renewable and alternative energy in support of sustainable development and poverty eradication receive special attention through UNESCO's contribution to reinforcing national capacities and the knowledge base, formulating energy policies and disseminating best practices, and scientific knowledge and technology.

Services provided by UNESCO include:

- Enhancing national capacities and the knowledge base in the energy field
- Sharing scientific knowledge and best practices
- Promoting energy policies
- Supporting pilot initiatives
- Providing technical assistance



## United Nations Environment Programme (UNEP)

The United Nations Environment Programme, established in 1972, is the main voice and caretaker of the environment within the United Nations system. To promote the wise use and sustainable development of the global environment, UNEP wears many hats, acting as a catalyst, advocate, educator and facilitator. UNEP's overall mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing and enabling nations and peoples to improve their quality of life without compromising that of future generations. Globally, UNEP's work programme is comprised of: assessing global, regional and national environmental conditions and trends; developing international and national environmental instruments; strengthening institutions for the wise management of the environment; facilitating the transfer of knowledge and technology for sustainable development; and encouraging new partnerships and mindsets within civil society and the private sector. To make important strides in this work, UNEP works with a breadth of partners, including United Nations entities, international organizations, national governments, non-governmental organizations, the private sector and civil society.

### Energy at UNEP

UNEP's Energy Branch strengthens countries' ability to integrate climate change mitigation responses into their national development processes. This is achieved by helping governments, institutions and companies navigate the process of creating and implementing sustainable energy initiatives. Making use of its network of resources, UNEP offers a range of services—including analysis and assessment, public sector policy development and the promotion of private sector opportunities—to help decision-makers make informed energy choices and build solid frameworks to reduce climate change in the future. The Programme builds bridges that help governments and institutions move from the idea phase to the implementation phase, offering not only tools and resources, but also the skills needed to effectively use those tools and resources. The ultimate goal of these interventions is to ensure that stakeholders will be ready to establish their own programmes and efficiently employ suitable financial measures to bring renewable energy resources and improved energy efficiency to their populations. Furthermore, by developing successful projects that are easy to replicate, it is possible for small projects to be scaled-up and so have a global impact.

Services provided by UNEP include:

- In-depth assessment and analysis of opportunities for reducing GHG emissions through new technologies, as well as the promotion of global norms and standards for these technologies
- Training and other institutional support that promotes policy development and planning processes that are consistent with evolving global norms
- Promotion of private sector opportunities, conducive with government policies, formulated through the assistance described above, help to create expanding markets for low GHG goods and services



## United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change is an international treaty that entered into force on March 21, 1994 and was ratified by 193 countries. It is a public and global commitment to climate change mitigation and adaptation, at global and local levels. A complement to the UNFCCC, the Kyoto Protocol was a legally-binding and more powerful agreement that entered into force on 16 February 2005, setting binding targets for greenhouse gas emissions for 37 industrialized countries and the European community; 184 Parties of the Convention have ratified its Protocol to date (status as of 1 April 2010). Under the Convention, governments are expected to: gather and share information on greenhouse gas emissions, national policies and best practices; launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and, cooperate in preparing for adaptation to the impacts of climate change.

### Energy at UNFCCC

UNFCCC supports the implementation of the Kyoto Protocol. While the UNFCCC and its Kyoto Protocol do not prioritize a particular sector in their work programmes, the energy sector is and remains of critical importance to achieving emission reductions. The Convention also supports the implementation of the Technology Transfer Framework, which assists countries in their actions for environmentally-sound technology, including in the energy sector. Further work comprises scientific, technical and socio-economic aspects of mitigation, including the following aspects: currently available and emerging technologies, including small-scale mitigation technologies and associated emission reduction potential; opportunities and best practices to overcome barriers to and factors that promote innovation, deployment, transfer and diffusion of these technologies, including through innovative financing; international cooperative efforts to promote technology innovation, deployment, transfer and diffusion, and opportunities to enhance such cooperation; socio-economic aspects of mitigation, such as costs and benefits, co-benefits, spillover effects and “win-win” practices that contribute to sustainable development; and, cross-cutting aspects and methods and tools for assessing mitigation opportunities.

Services provided by UNFCCC include:

- Making a contribution to sustainable development through support for action to mitigate climate change at the global, regional and national level
- Providing high quality support to the intergovernmental process in the context of the Convention and the Kyoto Protocol
- Creating and maintaining necessary conditions for an early, effective and efficient implementation of the Kyoto Protocol

- Providing and disseminating high quality, understandable and reliable information and data on climate change and on efforts made to address it
- Promoting and enhancing the active engagement of NGOs, business and industry, the scientific community and other relevant stakeholders in the Convention's work and processes, including through effective communication





## United Nations Human Settlements Programme (UN-HABITAT)

The United Nations Human Settlements Programme is the United Nations agency for human settlements. It is mandated by the United Nations General Assembly to promote sustainable urbanization through socially and environmentally sustainable towns and cities with the ultimate goal of providing adequate shelter for all. Its mandate is outlined in the Vancouver Declaration on Human Settlements, Habitat Agenda, Istanbul Declaration on Human Settlements, the Declaration on Cities and Other Human Settlements in the New Millennium and Resolution 56/206. Specifically, UN-HABITAT's main roles and responsibilities are derived from the 1996 Habitat Agenda, which itself is comprised of two main goals: adequate shelter for all and sustainable human settlements development in an urbanizing world. UN-HABITAT's programmes are designed to help policymakers and local communities come to grips with the human settlements and urban issues and find workable, lasting solutions.

### Energy at UN-HABITAT

UN-HABITAT's activities in the field of energy are developed around three main themes: (a) promotion of renewable energy technologies in urban and peri-urban areas; (b) promotion of energy efficiency in the built environment; and, (c) increasing the access to modern, clean and reliable energy services, especially for the urban poor. In UN-HABITAT's efforts to achieve target 11, Goal 7 of the Millennium Declaration, which seeks to improve the lives of 100 million slum dwellers, UN-HABITAT seeks to provide assistance in achieving sustainable energy solutions in towns and cities worldwide. The programme assists people who are working in or with local governments to develop sustainable energy and climate action plans and implementation programmes. There can be no single recipe for all cities, so it is up to each local government to develop its own innovative and appropriate plans based on local resources and needs. UN-HABITAT promotes the use of such locally available sources of energy such as hydro, solar, wind and biogas to reduce dependency on fossil fuels and conventional electricity.

Services provided by UN-HABITAT include:

- Promoting the public profile of the above issues through outreach to media, advocacy campaigns and the active involvement of a broad range of actors
- Serving as a clearing-house for policy and programme information exchange, and for sharing lessons learned and experiences
- Promoting policy coherence at all levels in line with various United Nations mandates and identifying specific areas where there is a need/opportunity for further policy development
- Encouraging and facilitating collaborative arrangements in relation to programmes and projects among relevant actors, in order to avoid duplication and ensure optimal resource utilization
- Establishing linkages among and with research centres, institutes, networks and other sources of knowledge related to a particular sector
- Serving as a link between global, regional and national level activities.



## United Nations Industrial Development Organization (UNIDO)

The United Nations Industrial Development Organization (UNIDO) is the United Nations' specialized agency with the mandate to promote industrial development in the world's developing and least developed nations. The Organization supports governments, businesses and other stakeholders in their efforts to meet the challenges of, and to remove the barriers to, their industrial development. To do so, UNIDO mobilizes knowledge and information, builds capacity, and facilitates the transfer of technology to enhance competitiveness and advance the adoption of climate change mitigation measures. UNIDO's strategy is built upon three pillars:

- *Poverty reduction*: fostering the engagement of men and women in productive industrial activities
- *Trade capacity-building*: enabling industries in developing countries to produce and trade goods and services that meet national and international industrial standards
- *Energy and environment*: encouraging the adoption by industries of cleaner, resource efficient and low-carbon patterns of production and investment

### Energy at UNIDO

UNIDO supports patterns of energy use that mitigate climate change and are environmentally sustainable, and that promote access to clean energy for productive activities. This effort involves promoting energy efficiency and energy management standards, as well as supporting the adoption of renewable energy technologies in the industrial sector. UNIDO's actions also aim to enhance energy access in developing countries, primarily in rural areas, as a fundamental means to create value-added products and reduce poverty. Furthermore, the Organization is championing industrial energy perspectives and access to energy in global debates on climate change and other energy-related issues. UNIDO's unique expertise on sustainable industrial development gives it the ability to effectively carry out specialized demand-driven projects. UNIDO serves as the executing agency of several multilateral agreements and funds, including the GEF and other partners, for a large number of energy projects. The Organization operates in the international arena both independently and in cooperation with other development agencies, maintaining its strong network of partner technology institutions, cooperating agencies and experts.

Services provided by UNIDO include:

- *Technology demonstration*: demonstrating the technical, economic and social feasibility of using different sustainable energy technologies; and promoting these technologies for industrial applications in energy intensive manufacturing SMEs
- *Policy support*: enabling a policy environment that helps promote sustainable energy technologies, markets and investments; and fostering agreements between the industrial sector and the national energy and environment sector regulators, utilities and financing agencies

- *Capacity-building*: supporting capacity-building of national institutions, public decision makers, local entrepreneurs and industry; and strengthening manufacturing capacities of local industries and enterprises to manufacture, assemble and maintain sustainable energy technologies and systems
- *Global forum activities*: bringing together experts, institutions and decision makers in high-level global forums to raise awareness, foster partnerships and discuss and contribute to the global debate on sustainable energy issues
- *Information dissemination*: enhancing access to databases and dissemination of information on sustainable energy sources and technologies and their applications; and promoting clearing house activities for information sharing, synergies and networking



## United Nations International Research and Training Institute for the Advancement of Women (UN-INSTRAW)

The United Nations International Research and Training Institute for the Advancement of Women is a United Nations entity created in 1976 by ECOSOC. UN-INSTRAW is the leading United Nations Institute devoted to research, training and knowledge management in partnership with governments, the United Nations system, civil society and academia to achieve gender equality and women's empowerment. Its vision is to act as a leader in strategic and innovative actions that make a difference in women's lives. Through alliance building and interactive dialogue with United Nations member States, international organizations, academia, civil society, the private sector and other actors, UN-INSTRAW: undertakes action-oriented research from a gender perspective that has a concrete impact on policies, programmes and projects; creates synergies for knowledge management and information exchange; strengthens the capacities of key stakeholders to integrate gender perspectives in policies, programmes and projects; and, builds a sustainable, transparent and efficient institution. Many of the studies conducted by UN-INSTRAW have highlighted the gendered effects of globalization in processes such as migration; the impact of structural adjustment policies on women's access to work, health and education; and violence against women as an obstacle to development and the achievement of international commitments such as the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) or the MDGs. Its current work in training and capacity-building focuses on women's political participation and governance at the local level; women's participation in peace and security processes, including the full implementation of United Nations Security Council Resolution 1325; and gender, migration and development issues. The Institute has created networks, working groups and other communities of practitioners and stakeholders on various issues, including gender and security sector reform, ending violence against women, women's political participation, gender and remittances and other issues.

### Energy at UN-INSTRAW

UN-INSTRAW emphasizes the importance of articulating research, capacity-building and knowledge management in a continuous cycle of analysis, learning and action, so that participatory research results feed into knowledge management and the design of training and capacity-building programmes, as well as the formulation of policy. Through its applied research programmes, the Institute aims to make policies and programmes gender-responsive on the basis of concrete research results, the application of lessons learned and the replication of best practices. This approach allows for flexibility in responding to both existing challenges and new and emerging issues. UN-INSTRAW's training and capacity-building programmes have highlighted gender dimensions and women's participation in the collection and analysis of data and statistics, the use of new information and communications technologies (ICTs), environmental management, including water supply and sanitation and new and renewable sources of energy.



## United Nations System Chief Executives Board (CEB) Secretariat

As the successor body to the Administrative Committee on Coordination (ACC), the Chief Executives Board (CEB) furthers coordination and cooperation on a whole range of substantive and management issues facing United Nations system organizations. It brings together, on a regular basis, the executive heads of the organizations of the United Nations system, under the chairmanship of the Secretary General of the United Nations. CEB regularly reviews contemporary political issues and major concerns facing the United Nations system, and on the basis of the recommendations of its reporting bodies, it approves policy statements on behalf of the United Nations system as a whole. The Board is supported by three High Level Committees, the High-level Committee on Programmes (HLCP), the High-level Committee on Management (HLCM) and United Nations Development Group (UNDG). The division of responsibilities between the three bodies can be summarized as follows: HLCP—promotion of global policy coherence, including the development of common policy tools, including toolkits, in addition on its work on global policy and programme issues and global public goods; HLCM—harmonization of business practices across the system, including general management issues, thus ensuring overall management coherence from global to country level; and the UNDG—promotion of coherent and effective oversight, provision of guidance and capacity-building with country level partners, coordination of United Nations development operations at country level, addressing policy guidance issues related to country level operations, including the implementation of the TCPR resolutions and support to the RC system.





THE WORLD BANK

## World Bank Group (WBG)

Established in 1944, the World Bank is a vital source of financial and technical assistance to developing countries around the world. It is made up of two development institutions owned by 186 member countries—the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA)—and affiliated, complementary organizations, namely, the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for the Settlement of Investment Disputes (ICSID). The World Bank's mission is to fight poverty with passion and professionalism for lasting results and to help people help themselves and their environment by providing resources, sharing knowledge, building capacity and forging partnerships in the public and private sectors. In advancing the vision of inclusive and sustainable globalization, each WBG institution plays a different role. The IBRD focuses on middle income and creditworthy poorer countries and the IDA on the world's poorest countries. IFC provides investments and advisory services to build the private sector in developing countries. Together, the World Bank Group provides low-interest loans, interest-free credits and grants to developing countries for a wide array of purposes that include investments in education, health, public administration, infrastructure, financial and private sector development, agriculture, and environmental and natural resource management.

### Energy at WBG

The World Bank supports developing countries' efforts to provide cleaner and stable electricity services to households and businesses through its financing instruments, policy advice, partnerships and knowledge transfer. In order to increase access to affordable and reliable modern energy services and RE/EE in developing countries, the World Bank also recognizes the vital need to engage the private sector and other commercial partners. In response, a wide array of WBG financial and non-financial instruments supports developing countries' efforts to secure private investments for advancing access to sustainable energy. Among these are conventional lending instruments, equity and quasi-equity, partial risk guarantees, currency, commodity and interest rate risk management, and carbon finance. In addition, WBG provides capacity-building, policy, legal and regulatory support. In response to the demand from developing countries, WBG financing for energy infrastructure development has been strong in recent years. In 2008 the Bank set up the Climate Investment Funds (CIF), a unique pair of financing instruments designed to support low-carbon and climate-resilient development through scaled-up financing channeled through development banks. The CIFs consist of the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF).

Under energy access, services provided by WBG include:

- Building, rehabilitating and strengthening electricity distribution networks and supporting the corporate development of electricity supply companies

- Strengthening the capacity of regional and local governments to plan and manage electrification projects, including those that accompany other rural development activities and promoting electrification investment opportunities to potential private investors
- Developing the legal framework and associated regulations to facilitate provision of capital cost subsidies to private sector providers and increasing private sector participation in the energy sector
- Developing guidelines for electricity systems design and construction appropriate for rural areas, including operations norms and developing procedures for calculating rural tariffs and norms for rural service quality
- Developing appropriate policies and incentives for development of renewable energy and of public/private cost-sharing in renewable energy investment projects
- Developing and piloting sustainable financing strategies and supporting capable, local communities and stakeholders such as local governments, consumer associations and village groups interested in operating and participating in the financing of small electricity concessions
- Developing multisector programmes to serve as an effective interface between the development of rural electrification programmes and productive and social programmes and projects executed on the same territory by other actors
- Improving corporate governance and commercialization of state-owned energy companies
- Establishing competition in energy markets through market-opening and gradual liberalization
- Strengthening utility management and operations to underpin efficiency, quality of service and financial sustainability
- Strengthening and expanding the electricity networks to maximize the benefits of electricity trading
- Supporting generation, transmission and distribution projects through its full range of financial instruments (loans, guarantees, equity investment, etc.)

Under GHG mitigation measures, services provided by WBG include:

- Helping developing countries move to a lower carbon path by exploiting renewable energy resources, supporting energy conservation and increasing efficiency
- Promoting new technologies, like carbon capture and storage (CCS), addressing the need to reduce the carbon impact of fossil fuels
- Financing for clean energy and mitigation; this includes the creation of new carbon facilities, including the Carbon Partnership Facility and the Forest Carbon Partnership Facility



## World Health Organization (WHO)

Established on 7 April 1948, the World Health Organization is United Nations primary directing and coordinating authority for international health within the United Nations system. Its membership is comprised of 193 countries and two associate members. WHO's objective, as outlined in its Constitution, is "the attainment by all peoples of the highest possible level of health." Health, as defined in the same Constitution, is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. Also, WHO sees health as a shared responsibility in the twenty-first century as it involves equitable access to essential care and collective defence against transnational threats. The Organization is responsible for fulfilling its objectives through the following core functions: providing leadership on matters critical to health and engaging in partnerships where joint action is needed; shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge; setting norms and standards and promoting and monitoring their implementation; articulating ethical and evidence-based policy options; providing technical support, catalysing change and building sustainable institutional capacity; and monitoring the health situation and assessing health trends. Through WHO, governments can jointly tackle global health problems and improve people's well-being.

## Energy at WHO

Energy, as a key element of both economic development and poverty alleviation, has great importance and relevance to the World Health Organization as a lead agency in health. Notably, the WHO is gathering and compiling data with regard to indoor air pollution as part of its programme that is investigating the contribution of a range of risk factors, such as malnutrition, smoking and lack of access to water and sanitation, to the burden of disease.

Services provided by WHO include:

- Gathering information globally on the use of household energy
- Assessing the burden of disease associated with household energy, in particular from household air pollution
- Providing guidance to reduce the health impacts due to household fuel combustion
- Facilitating the development and harmonization of methods for evaluating the impact of interventions on air pollution, health, development and climate change
- Disseminating information related to improving access to clean, efficient energy, including on the impacts of interventions and on effective approaches to implementation



## World Meteorological Organization (WMO)

The World Meteorological Organization, established in 1950 with a current membership of 189 member States and Territories, is United Nations authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources. The vision of WMO is to provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources and related environmental issues and thereby contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations. In accomplishing its work programme, WMO contributes substantially to the protection of life and property against natural disasters, to safeguarding the environment and to enhancing the economic and social well-being of all sectors of society in areas such as food security, water resources and transport. It promotes cooperation in the establishment of networks for making meteorological, climatological, hydrological and geophysical observations, as well as the exchange, processing and standardization of related data, and assists technology transfer, training and research. In promoting this cooperation, WMO facilitates the free and unrestricted exchange of data and information, products and services in real- or near-real time on matters relating to safety and security of society, economic welfare and the protection of the environment, and in so doing, it contributes to policy formulation in these areas at national and international levels. Playing a leading role in international efforts to monitor and protect the environment and in collaboration with other United Nations agencies and the National Meteorological and Hydrological Services, WMO supports the implementation of a number of environmental conventions and is instrumental in providing advice and assessments to governments on related matters.

### Energy at WMO

WMO programmes address relevant chapters in Agenda 21 and act within the scope of the implementation of the decisions taken by the Conference of the Parties to the Framework Convention on Climate Change. In 1988 the WMO established, with UNEP, the Intergovernmental Panel on Climate Change and continues to provide its support. Different forms of energy production, including hydropower, biomass energy, solar and wind energy, draw on resources which are significantly dependent on climate conditions. One thrust in WMO programmes is the provision of guidance material and capacity-building for the needs and requirements of energy sector services. WMO promotes the use of weather, climate and water information for management of risk and development of sound adaptation strategies throughout the various elements of the energy sector.

Services provided by WMO include:

- Provision of guidance material and implementation of training seminars, and demonstration projects focusing on use of climate information in development of new and renewable sources of energy such as biomass, hydropower, solar and wind energy, for management of climate-related risks and for development of sound adaptation strategies;

- Support to development of energy-related assessments within the frame work of the UNEP/WMO Intergovernmental Panel on Climate Change
- Development of climate indices relevant to the energy sector, with which to consistently characterize the climate sensitivity of energy subsectors
- Promotion of participation of the users in the energy sector in Climate Outlook Forums at regional and national scales





## SELECTED PUBLICATIONS

5

UN-Energy and its members play a vital role in synthesizing and disseminating information to various audiences. Together, they possess significant specialized expertise in the field of energy, and they keep on generating new knowledge and drawing on invaluable experience gained through their programmes and projects. UN-Energy disseminates this expertise through a great number of market analyses, handbooks, guidelines, compilations of lessons learned, strategy analyses and development forecasts.

This chapter presents all UN-Energy publications and a snapshot of publications by UN-Energy's members which have been published since 2008, sorted alphabetically by UN-Energy members. The list below synthesizes the content of this chapter. In the electronic version of this document, clicking on an item in this list will direct the reader to a brief overview of the publication, which can then be directly accessed by clicking on the link at the bottom of the overview.

## UN-Energy publications

- Policies and Measures to realize Industrial Energy Efficiency and mitigate Climate Change (2009)
- Assessing Policy Options for Increasing the Use of Renewable Energy for Sustainable Development: Modeling Energy Scenarios for Sichuan Province, China (2007)
- Sustainable Bioenergy: A Framework for Decision Makers (2007)
- Assessing Policy Options for Increasing the Use of Renewable Energy for Sustainable Development: Modelling Energy Scenarios for Ghana (2006)
- Energy in the United Nations: An Overview of UN-Energy Activities (2006)
- The Energy Challenge for Achieving the Millennium Development Goals (2005)
- Energy for Sustainable development: Policy Options for Africa (2008)

## Energy access

- Investing in Renewable Energy: The GEF Experience (2009)
- The energy access situation in developing countries: A review focusing on the Least Developed Countries and Sub-Saharan Africa (2009)
- Expanding Energy Access in Developing Countries: The Role of Mechanical Power (2009)
- Delivering Energy Services for Poverty Reduction: Success Stories from Asia and the Pacific (2008)
- Gestión de la industria petrolera en período de altos precios del petróleo en países seleccionados de América Latina (2009)
- Situación y perspectivas del gas natural licuado en América del Sur (2008)
- Coping with Oil Price Volatility (2008)
- Designing Sustainable Off-Grid Rural Electrification Projects: Principles and Practices (2008)
- Does Private Sector Participation Improve Performance in Electricity and Water Distribution? (2008)
- Residential Electricity Subsidies in Mexico: Exploring Options for Reform and for Enhancing the Impact on the Poor (2009)
- Restoring Balance: Bangladesh's Rural Energy Realities (2010)
- The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits (2008)
- Building Regional Power Pools: A Toolkit (2008)

## Renewable energy

- Algae-based biofuels—A review of challenges and opportunities for developing countries (2009)
- Jatropha: A Smallholder Bioenergy Crop—The Potential for Pro-Poor Development (2010)

- The State of Food and Agriculture 2008—Biofuels: prospects, risks and opportunities (2008)
- Fuelling exclusion? The biofuels boom and poor people's access to land (2008)
- The GBEP Common Methodological Framework for GHG Lifecycle Analysis of Bioenergy (2009)
- Study on “small-scale bioenergy initiatives: Brief description and preliminary lessons on livelihood impacts from case studies in Asia, Latin America and Africa (2009)
- Making Sustainable Biofuels Work for Smallholder Farmers and Rural Households — Issues and Perspectives (2009)
- Investing In Renewable Energy: The GEF Experience (2009)
- The Biofuels Market: Current Situation and Alternative Scenarios (2009)
- World Trade Law and Renewable Energy: The Case of Non-Tariff Barriers (2008)
- Sustainable Development: Promotion of New and Renewable Sources of Energy (Report of the Secretary-General) (2009)
- Biomass Energy for Cement Production: Opportunities in Ethiopia (2009)
- Promotion of Wind Energy : Lessons Learned From International Experience and UNDP-GEF Projects (2008)
- Policy brief: Renewable energy for the agricultural sector to enhance energy security and food security (2009)
- Increasing the Competitiveness of Small and Medium-Sized Enterprises Through the Use of Environmentally Sound Technologies: Assessing the Potential for the Development of Second-Generation Biofuels in the ESCWA Region (2009)
- Fact sheets on best practices and tools for large-scale deployment of renewable energy and energy efficiency techniques (2009)
- Biocombustibles líquidos para transporte en América Latina y el Caribe (2008)
- Design and feasibility study of an ethanol distillery in Guyana (2009)
- “Tablero de comando” para la promoción de los biocombustibles en Paraguay (2009)
- Biocombustibles y comercio internacional: una perspectiva latinoamericana (2009)
- The contribution of biofuels to the sustainability of development in Latin America and the Caribbean: elements for formulating public policy (2008)
- “Tablero de comando” para la promoción de los biocombustibles en Ecuador (2008)
- Aportes de los biocombustibles a la sustentabilidad del desarrollo en América Latina y el Caribe: Elementos para la formulación de políticas públicas (2008)
- Lessons Learned and Experiences in Solar Rural Electrification (2009)
- Renewable energy policy in the Comoros (2009)
- The Global Financial Crisis and its Impact on Renewable Energy Finance (2009)
- Towards Sustainable Production and Use of Resources: Assessing Biofuels (2009)
- Trade Offs, Risks and Opportunities Linked to Bioenergy for Sustainable Development (2009)
- Bioenergy Issue Paper Series (2009)
- Biofuels and Environmental Impacts—Scientific Analysis and Implications for Sustainability (2009)
- REN21 Renewables Global Status Report: 2009 Update (2009)
- Navigating bioenergy: Contributing to informed decision making on bioenergy issues (2009)
- Industrial biotechnology and biomass utilization (2009)
- Scaling up Renewable Energy (2009)
- Small hydropower in selected countries in West Africa (2009)
- Guidebook on Modern Bioenergy Conversion Technologies in Africa (2009)
- Scaling up Renewable Energy in Africa (2009)

- Action Plan Adopted by the International Conference on Renewable Energy in Africa—Scaling up Renewable Energy in Africa (2009)
- Renewable Energy Market Transformation Initiative—Scaling Up Deployment of Grid-Connected Renewable Energy Technologies for Power Supply Diversification (2010)
- Accelerating Clean Energy Technology Research, Development, and Deployment—*Lessons from Non-energy Sectors* (2008)
- Beyond Bonn: World Bank Group Progress on Renewable Energy and Energy Efficiency (2010)
- Directions in Hydropower (2009)
- IPCC Scoping meeting on Renewable Energy Sources: Proceedings (2008)

### Energy efficiency

- Investing in Energy Efficiency: The GEF Experience (2009)
- Transfer of Environmentally Sound Technologies: The GEF Experience (2008)
- Investing in Sustainable Urban Transport: The GEF Experience (2009)
- Investor Interest and Capacity-Building Needs. Financing Energy Efficiency Investments for Climate Change Mitigation Project (2009)
- Eco-efficiency Indicators: Measuring Resource-use Efficiency and the Impact of Economic Activities on the Environment (2009)
- Guidelines for Energy Efficiency in the Tourism Sector: Strategy, Design, Systems and Operations Approach (2009)
- Situación y perspectivas de la eficiencia energética en América Latina y El Caribe (2009)
- Estudio sobre empresas energointensivas y su posible contribución a programas de eficiencia energética (2008)
- Better Buildings (2010)
- Energy Efficiency and the Finance Sector (2009)
- Sustainable Urban Energy Planning (2009)
- Policies for Promoting Industrial Energy Efficiency in Developing Countries and Transition Economies (2008)
- An Analytical Compendium of Institutional Frameworks for Energy Efficiency Implementation (2008)
- Large-Scale Residential Energy Efficiency Programs Based on CFLs Approaches, Design Issues, and Lessons Learned (2009)
- Financing Energy Efficiency—Lessons from Brazil, China, India, and Beyond (2008)
- Public Procurement of Energy Efficiency Services: Lessons from International Experience (2009)

### Energy policies, regulations, strategies and markets

- Trade and Environment Review 2009/2010: Promoting poles of clean growth to foster the transition to a more sustainable economy (2009)
- Energy Security and Sustainable Development in Asia and the Pacific (2008)
- Internacionalización y expansión de las empresas eléctricas españolas en América Latina (2009)
- Las negociaciones internacionales en el sector energético y sus implicancias para América Latina y el Caribe (2009)
- Energía y cambio climático: oportunidades para una política energética integrada en América Latina y el Caribe (2008)
- Training Package on “Sustainable Energy Regulation and Policymaking for Africa” (2009)



- Energy, Development and Security. Energy Issues in the Current Macroeconomic Context (2008)
- Towards an Integrated Energy Agenda Beyond 2020 (2009)
- The Future of the Natural Gas Market in Southeast Europe (2010)

## Energy and development

- Cuba. A Country Profile on Sustainable Energy Development (2008)
- Integrated Energy Planning for Sustainable Development (2008)
- A Global Green New Deal for Climate, Energy, and Development (2009)
- Energy in National Decentralization Policies: A review focusing on LDCs and Sub-Saharan Africa (2009)
- Contribution of Energy Services to the Millennium Development Goals and to Poverty Alleviation in Latin America and the Caribbean (2009)
- Bridging the Divide Between Poverty Reduction and Climate Change through Sustainable and Innovative Energy Technologies: Scaling up Sustainable Energy Innovations that Can Address Climate Change Concerns and Poverty Reduction Needs (2009)
- Charting a New Low-Carbon Route to Development: A primer on integrated climate change planning for regional governments (2009)
- Cross-border Energy Trade and its Impact on the Poor—Synthesis Report (2008)
- MDG Report 2009 (2009)
- Sustainable Development Report on Africa (SDRA)—Five Year Review of the Implementation of the World Summit on Sustainable Development Outcomes in Africa (WSSD+5) (2008)
- Assessing Progress in Africa towards the Millennium Development Goals MDG Report 2008
- Enhancing regional cooperation on energy issues towards achieving sustainable development and the Millennium Development Goals in ESCWA member countries (2009)
- Contribution of energy services to the Millennium Development Goals and to poverty alleviation in Latin America and the Caribbean (2009)
- Energy Bulletin Series by the International Sustainable Energy Development Centre in Moscow, under the auspices of UNESCO (2008-2009)
- White Book “Global Energy and Sustainable Development” (2009)
- Why Clean Energy Public Investment Makes Economic Sense—The Evidence Base (2009)
- Energy, Development and Security—Energy issues in the current macroeconomic context (2008)
- Evaluating household energy and health interventions: a catalogue of methods (2008)

## Energy finance

- Small Scale Finance for Modern Energy Services and the Role of Government (2009)
- Financing Global Climate Change Mitigation—Sources of Financing Energy Efficiency and Renewable Investments (ECE Energy Series No. 37/UN-Energy, 2010)
- Public Finance Mechanisms to Mobilise Investment in Climate Change Mitigation (2008)
- Global Trends in Sustainable Energy Investment 2009 Report
- Catalysing Low-Carbon Growth in Developing Economies (2009)



- The UNEP-SEFI Public Finance Alliance (2008)
- Public Venture Capital Study (2008)
- Investing in a Climate for Change: Engaging the Finance Sector (2008)
- The materiality of climate change: How finance copes with the ticking clock—The perspective of capital markets (2009)
- Reports on financing options, long-term strategy and performance indicators (2009)

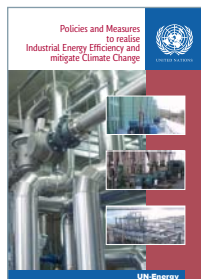
### Climate change and carbon markets

- Climate Change: Technology Development and technology Transfer—Background Paper (2008)
- UN DESA Policy Brief # 24: Climate Change and the Energy Challenge (2009)
- Handbook for Conducting Technology Needs Assessment for Climate Change (2009)
- Bio-Carbon Opportunities in Eastern & Southern Africa (2009)
- Sealing an Equitable Deal in Copenhagen and Beyond by Integrating Poverty Reduction Efforts with Climate Change Goals (2009)
- Increasing Access to the Carbon Market (2008)
- CDM PDD Guidebook: Navigating the Pitfalls (2008)
- A Reformed CDM—Including new Mechanisms for Sustainable Development (2008)
- Reforming Energy Subsidies—Opportunities to Contribute to the Climate Change Agenda (2008)
- Analysis of Technology Transfer in CDM Projects (2008)
- Handbook on conducting technology needs assessment for climate change (2009)
- Climate Change and the World Bank Group: Phase I: An Evaluation of World Bank Win-Win Energy Policy Reforms (2009)
- World Development Report 2010 : Development and Climate Change (2009)

### Nuclear energy

- Nuclear Technology and Economic Development in the Republic of Korea (2009)
- IAEA Tools and Methodologies for Energy System Planning and Nuclear Energy System Assessments (2009)
- Energy, Electricity and Nuclear Power Estimates for the Period up to 2030—RDS-1/29 (2009)
- Nuclear Technology Review 2009 (2009)
- Climate Change and Nuclear Power 2009
- Financing of New Nuclear Power Plants—IAEA Nuclear Energy Series NG-T-4.2 (2008)
- Prospects for Nuclear Energy in the 21st Century
- Special issue of the International Journal of Global Energy Issues Vol 30, Nos. 1/2/3/4 (2008)

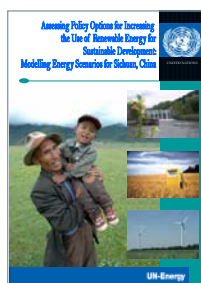
## UN-Energy publications



### Policies and Measures to realize Industrial Energy Efficiency and mitigate Climate Change (2009)

This publication presents the energy efficiency potential in industry. It describes possible policies and programmes to realize that potential and draws key lessons from past experiences. It also provides a set of recommendations in line with the Bali Action Plan and argues that the post-Kyoto agreement could help provide the foundation for scaling up industrial energy efficiency to levels that reflect its share of the global mitigation potential.

[http://esa.un.org/un-energy/pdf/unido\\_publication\\_small.pdf](http://esa.un.org/un-energy/pdf/unido_publication_small.pdf)



### Assessing Policy Options for Increasing the Use of Renewable Energy for Sustainable Development: Modelling Energy Scenarios for Sichuan Province, China (2007)

This report analyses alternative provincial policies to increase the share of renewables in the energy supply mix of Sichuan, China. The study combines the IAEA models for analysing national energy systems with data provided by UNEP, UN DESA and other public sources. It provides generic insights on policy options to promote the use of renewable energy sources. This report is one out of two related UN-Energy studies. The second report analyses renewable energy policies in Ghana.

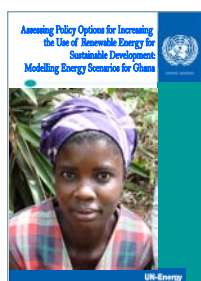
[http://esa.un.org/un-energy/pdf/Sichuan%20Case%20Study%20Final\\_n.pdf](http://esa.un.org/un-energy/pdf/Sichuan%20Case%20Study%20Final_n.pdf)



### Sustainable Bioenergy: A Framework for Decision Makers (2007)

Sustainable Bioenergy: A Framework for Decision Makers intends to contribute to international discussions on the strategies and policies needed to ensure economic, sustainable and equitable development of bioenergy. It points to key social, economic and ecological sustainability issues raised by the rapid development of bioenergy in both small- and large-scale applications. The paper is intended to raise key questions and explain the principal trade-offs involved in bioenergy development. It provides a framework for decision-makers on key sustainability issues and addresses action at national and international level.

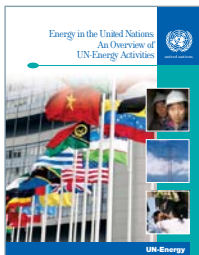
<http://esa.un.org/un-energy/pdf/susdev.Biofuels.FAO.pdf>



### Assessing Policy Options for Increasing the Use of Renewable Energy for Sustainable Development: Modelling Energy Scenarios for Ghana (2006)

This study analyses alternative national policies to increase the share of renewables in the energy supply mix of Ghana. The study combines the IAEA models for analysing national energy systems with data provided by the Energy Commission of Ghana, UNEP, FAO and UNIDO. It provides generic insights on policy options to promote the use of renewable energy sources. This report is one out of two related UN-Energy studies. The second report analyses renewable energy policies in Sichuan Province, China.

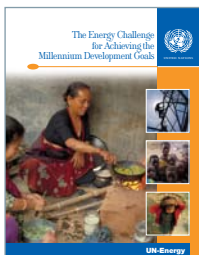
<http://esa.un.org/un-energy/pdf/Ghana.pdf>



### Energy in the United Nations: An Overview of UN-Energy Activities (2006)

Energy is one of the topmost sectors on the agenda of issues in need of global management. Alliances and networks of concerted effort are needed to address global energy issues, which needs to involve governments, the private sector, civil society and the whole United Nations system. This report showcases what each UN-Energy member is doing across the spectrum and why this work is important. It highlights collaboration among UN-Energy members as well as with non-UN stakeholders, points to successful activities and identifies areas for future cooperation to strengthen communication and collaboration on energy.

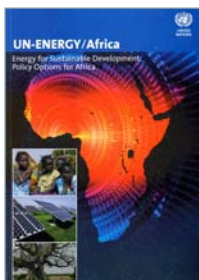
[http://esa.un.org/un-energy/pdf/un\\_energy\\_overview.pdf](http://esa.un.org/un-energy/pdf/un_energy_overview.pdf)



### The Energy Challenge for Achieving the Millennium Development Goals (2005)

This report focuses on the centrality of providing energy services in the pursuit of the Millennium Development Goals (MDGs). The report reflects the insights and experience of participating United Nations organizations. It presents specific recommendations for linking production and access to energy services to poverty reduction programmes and national MDG campaign and strategies. The publication informs and vitalizes dialogue on national and global policy choice, and supports public and private sector investment in energy services to meet the MDGs.

<http://esa.un.org/un-energy/pdf/UN-ENRG%20paper.pdf>



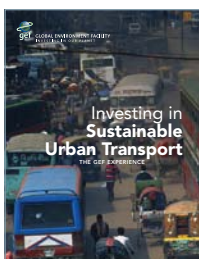
### Energy for Sustainable development: Policy Options for Africa (2008)

This publication reviews the activities of several United Nations and other agencies in the area of energy and sustainable development in Africa. The book underscores the rapid changes that are taking place in the energy sector in Africa. From the liberalization of the generation and distribution of electricity within new regulated frameworks, to the promotion of energy access and the dissemination of renewable energy technologies for reliable and affordable energy supply.

[http://www.uneca.org/eca\\_resources/Publications/UNEA-Publication-toCSD15.pdf](http://www.uneca.org/eca_resources/Publications/UNEA-Publication-toCSD15.pdf)

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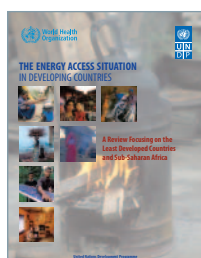
## Energy access



### Investing in Renewable Energy: The GEF Experience (2009)

The world is at critical crossroads for the future of energy. Climate change, increasing dependence on oil and other fossil fuels, growing imports and rising energy costs are making the developing world more vulnerable than ever before. These challenges call for a comprehensive and ambitious response in the renewable energy field. The renewable energy sector is the one energy sector that stands out—for its ability to reduce greenhouse gas emissions and pollution and to exploit local and decentralized energy sources.

[http://www.thegef.org/gef/sites/thegef.org/files/publication/gef\\_renewenergy\\_CRA\\_rev.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/gef_renewenergy_CRA_rev.pdf)



### The energy access situation in developing countries: A review focusing on the Least Developed Countries and Sub-Saharan Africa (2009)

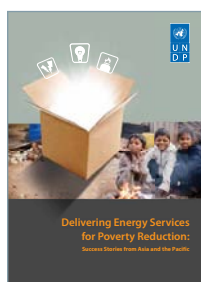
A joint publication between UNDP and WHO, this report takes stock of the current energy access situation in developing countries. It covers a range of energy access data available from developing countries that is not currently accessible in one report and, at the same time, is also often neglected in global energy discussions. A broad range of energy access data is critical not only for understanding countries' energy access situation, but also for developing policies and programmes that address energy poverty and for financing the expansion of access to modern energy services.

[http://content.undp.org/go/cms-service/stream/asset/?asset\\_id=2205620](http://content.undp.org/go/cms-service/stream/asset/?asset_id=2205620)

### Expanding Energy Access in Developing Countries: The Role of Mechanical Power (2009)

This report, which is a product of joint work between UNDP and Practical Action, highlights the contribution of mechanical power to energy access in developing countries. It recommends that mechanical power as an energy service should be given the same consideration as other modern energy services by policymakers/practitioners responsible for improving energy access to poor communities worldwide.

[http://practicalaction.org/docs/consulting/UNDP\\_Mechanical\\_Power.pdf](http://practicalaction.org/docs/consulting/UNDP_Mechanical_Power.pdf)



### Delivering Energy Services for Poverty Reduction: Success Stories from Asia and the Pacific (2008)

This report outlines experiences from UNDP and its partners in designing and implementing energy projects in Asia and the Pacific. It provides evidence to support the case that improved access to energy services supports poverty alleviation and the achievement of the Millennium Development Goals.

<http://content.undp.org/go/newsroom/publications/environment-energy/www-ee-library/sustainable-energy/delivering-energy-services-for-poverty-reduction-success-stories.en>

### Gestión de la industria petrolera en período de altos precios del petróleo en países seleccionados de América Latina (2009)

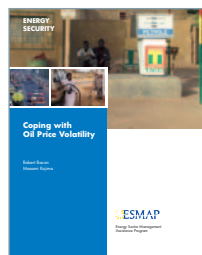
This paper analyses governments' policy responses in selected countries of the region—during the period 2006-2008—to changes in the international price of oil. Countries considered are: Argentina, Bolivia (Plurinational State of), Brazil, Colombia, Chile, Ecuador, Mexico, Peru, and Venezuela (Bolivian Republic of).

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/2/38192/P38192.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>

### Situación y perspectivas del gas natural licuado en América del Sur (2008)

This paper analyses the status of gas production integration in South America following the new conditions that arose in the region in 2004 and in concordance with the new scenario of international crude prices and the struggle by exporting countries to improve their share of revenue generation. The paper examines the outlook for reserves and production, and the corresponding commitments for trade between, on the one hand, Argentina and Chile, Uruguay and Brazil, and on the other, Bolivia (Plurinational State of) with Brazil and Argentina.

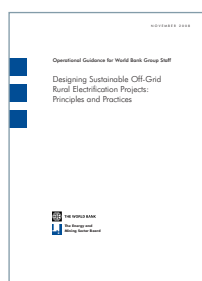
<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/8/33368/P33368.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



### Coping with Oil Price Volatility (2008)

This study is a sequel to *Coping with Higher Oil Prices* (Bacon and Kojima, 2006) and is part of a broader assessment of energy security undertaken by the World Bank. The previous report dealt with higher oil price levels; this report focuses on fluctuations around trends in oil prices. It examines measurements of oil price volatility and evaluates several different approaches to coping with oil price volatility: hedging, security stocks, price-smoothing schemes and reducing dependence on oil including diversification. It does not deal with the impact of oil price volatility on countries' macroeconomic performance or with macroeconomic policy responses; these generally have more to do with coping with higher price levels than with higher volatility per se. The study examines oil price volatility largely from the point of view of consumers and does not cover the management of revenue volatility by large oil exporters.

[http://www.esmap.org/filez/pubs/8142008101202\\_coping\\_oil\\_price.pdf](http://www.esmap.org/filez/pubs/8142008101202_coping_oil_price.pdf)



### Designing Sustainable Off-Grid Rural Electrification Projects: Principles and Practices (2008)

Based on practical knowledge and international experience accumulated through past and ongoing World Bank operations, this Note aims to provide World Bank staff and others interested in off-grid electrification with useful guidelines for designing sustainable off-grid projects. Given the unique features of projects and country situations, the note does not seek to prescribe solutions for success. Rather, it offers basic design principles and sound practices for effective decision-making.

<http://siteresources.worldbank.org/EXTENERGY2/Resources/OffgridGuidelines.pdf?resourceurlname=OffgridGuidelines.pdf>

### Does Private Sector Participation Improve Performance in Electricity and Water Distribution? (2008)

Does Private Sector Participation Improve Performance in Electricity and Water Distribution? This question has proven deceptively difficult to answer in the context of utilities in developing economies. The authors examine the question of private versus public performance in a natural monopoly setting. They address the shortfalls of earlier research and arrive at fact-based conclusions that are robust globally. Using a data set of more than 1,200 utilities in 71 developing and transition economies—the largest known data set in the area—this study finds that privately operated utilities convincingly outperform state-run ones in operational performance and labour productivity.

[http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item\\_id=8808505](http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item_id=8808505)

### Residential Electricity Subsidies in Mexico: Exploring Options for Reform and for Enhancing the Impact on the Poor (2009)

Large and growing subsidies to residential consumers in Mexico have become a major policy concern. This report explains the growth of subsidies, the current distribution of subsidies across income classes, and uses utility and household survey data to simulate how alternative subsidy mechanisms could improve distributional and fiscal performance. The goal is to help inform discussion in Mexico about how to reduce subsidies and redirect them toward the poor. The findings also offer lessons for other countries that are planning tariff reforms in their electricity sectors.

[http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item\\_id=8964063](http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item_id=8964063)



### Restoring Balance: Bangladesh's Rural Energy Realities (2010)

Rural energy's importance to the Bangladesh economy cannot be underestimated. The problems rural people face in obtaining safe, clean and reliable energy supplies are not minor inconveniences. People are cooking with biomass fuels including large amounts of leaves and grass that expose them to harmful indoor air pollution. They use kerosene or sometimes candles which give off a dim light that hampers studying and reading in the evening. Finally, rural productivity suffers because of lack of access to modern energy. However, the picture also is not all bleak. This study underscores how improved access to rural energy services can create multiple benefits for rural life—from income and labour productivity to education and women's health. Enhancement of programmes for improved stoves, rural electrification, renewable energy and greater access to commercial liquid fuels can significantly improve both the rural productivity and enhance the quality of life in rural Bangladesh.

[http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item\\_id=9466110](http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item_id=9466110)

### The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits (2008)

Rural electrification can have many benefits—not only bringing lighting, but improving the quality of health care, spreading information and supporting productive enterprises. The extent of these benefits has been questioned, arguing that they may be insufficient to justify the investment costs. This book quantifies these benefits. It finds that the benefits can indeed be high, substantially outweighing the costs and that consumer willingness to pay is generally sufficient to achieve financial sustainability. However, benefits could be increased further by providing smart subsidies to assist connections for poorer households, promote productive uses and further consumer education.

[http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item\\_id=8002955](http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item_id=8002955)

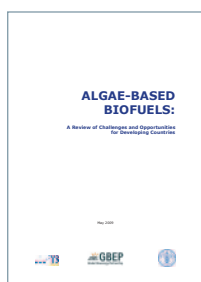


### Building Regional Power Pools: A Toolkit (2008)

The purpose of the toolkit is to facilitate knowledge transfer among World Bank Group staff and clients on how to design and prepare projects that support the development of cross-border power transmission infrastructure within the framework of regional power pooling mechanisms.

[http://siteresources.worldbank.org/EXTENERGY2/Resources/toolkit\\_book\\_final.pdf?resourceurlname=toolkit\\_book\\_final.pdf](http://siteresources.worldbank.org/EXTENERGY2/Resources/toolkit_book_final.pdf?resourceurlname=toolkit_book_final.pdf)

## Renewable energy

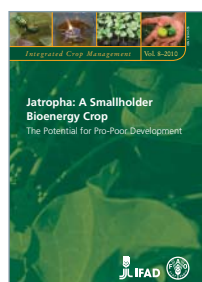


### Algae-based biofuels—A review of challenges and opportunities for developing countries (2009)

Algae have recently received a lot of attention as a new biomass source for the production of renewable energy. Some of the main characteristics which set algae apart from other biomass sources are that they can have a high biomass yield per unit of light and area, can have a high oil or starch content, do not require agricultural land, fresh water is not essential, and nutrients can be supplied by wastewater, and CO<sub>2</sub> by combustion gas.

<ftp://ftp.fao.org/docrep/fao/011/ak333e/ak333e00.pdf>

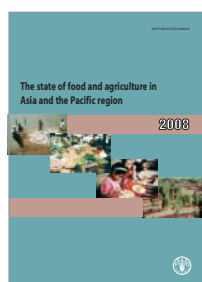




### Jatropha: A Smallholder Bioenergy Crop—The Potential for Pro-Poor Development (2010)

As developing countries face increasing local demand for energy in rural areas, they are also dealing with both economic and environmental pressure on agricultural lands. The possibility of growing energy crops such as *Jatropha Curcas* L. has the potential to enable smallholder farmers, producers and processors to cope with these pressures. However, many of the actual investments and policy decisions on developing jatropha as an oil crop have been made without the backing of sufficient science-based knowledge. Realizing the true potential of jatropha requires separating facts from the claims and half-truths.

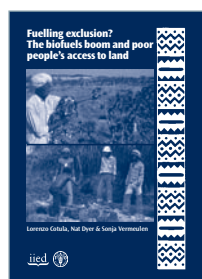
<http://www.fao.org/docrep/012/i1219e/i1219e.pdf>



### The State of Food and Agriculture 2008—Biofuels: prospects, risks and opportunities (2008)

The State of Food and Agriculture 2008 explores the implications of the recent rapid growth in production of biofuels based on agricultural commodities. The boom in liquid biofuels has been largely driven by policies in developed countries in support of climate-change mitigation, energy security and agricultural development. The growing demand for agricultural commodities for the production of biofuels is having significant repercussions on agricultural markets, and concerns are mounting over their negative impact on the food security of millions of people across the world. At the same time, the environmental impacts of biofuels are also coming under closer scrutiny. Biofuels also offer the opportunity for agricultural and rural development—if appropriate policies and investments are put in place.

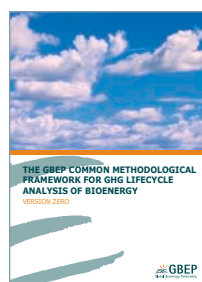
<http://www.fao.org/publications/sofa-2008/en/>



### Fuelling exclusion? The biofuels boom and poor people's access to land (2008)

Recent years have witnessed a rapid and accelerating expansion of bioethanol and biodiesel production. Parallel to these developments, the policy debate about the merits and demerits of biofuels is growing and changing rapidly. This study contributes to these debates through examining the current and likely future impacts of the increasing spread of biofuels on access to land in producer countries, particularly for poorer rural people. The study draws on a literature review and on intelligence and on information provided by key informants by email or telephone. It aims to pave the way for future empirical research on the links between the spread of biofuels and access to land, through developing a conceptual framework for such research and through taking stock of data available in the literature.

<http://www.iied.org/pubs/pdfs/12551IIED.pdf>



### The GBEP Common Methodological Framework for GHG Lifecycle Analysis of Bioenergy (2009)

A key benefit of bioenergy for transport and for stationary heat and electricity generation is its potential to reduce greenhouse gas (GHG) emissions relative to replaced fossil fuels. This reduction can be difficult to calculate, given the diverse and complex production and use systems for bioenergy and for the fossil fuels they replace. In order to facilitate emissions comparisons between different bioenergy production systems relative to fossil fuels, the Task Force on GHG Methodologies of the Global Bioenergy Partnership has produced a draft methodological framework intended to be appropriate for use in the lifecycle analysis (LCA) of bioenergy production and use. The framework is intended to provide a template for LCA that is transparent and that can be applied to a wide range of bioenergy systems.

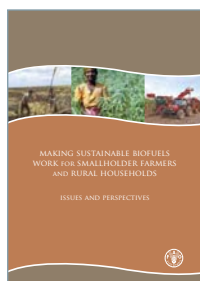
[http://www.globalbioenergy.org/fileadmin/user\\_upload/gbep/docs/2009\\_events/7th\\_SC\\_NY/GBEP\\_GHG\\_report\\_2306.pdf](http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/7th_SC_NY/GBEP_GHG_report_2306.pdf)



### Study on “small-scale bioenergy initiatives: Brief description and preliminary lessons on livelihood impacts from case studies in Asia, Latin America and Africa (2009)

This report is based on a series of 15 international case studies conducted between September and November 2008 under a joint initiative of FAO and the PISCES Energy Research Programme Consortium funded by DFID (UK Department for International Development). The case studies focused on developing an improved understanding of the linkages between livelihoods and small-scale bioenergy initiatives. The focus of the study was on the impacts that different types of local level bioenergy initiatives can have on rural livelihoods in different contexts in the developing world. Livelihoods are understood as the enhancement of the full range of natural, financial, human, social and physical capitals on a sustainable ongoing basis.

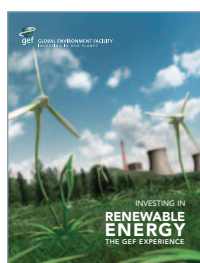
<http://www.fao.org/docrep/011/aj991e/aj991e00.htm>



### Making Sustainable Biofuels Work for Smallholder Farmers and Rural Households—Issues and Perspectives (2009)

This paper provides an overview of the main risks and opportunities that may arise from liquid biofuel production and use in developing countries. Both the potential environmental impacts and the socio-economic effects of liquid biofuel production and use are discussed, focusing, in particular, on the household-level implications. A few country-levels impacts, which might trickle down to the household level, are discussed as well. Recommendations on how to minimize the risks and maximize the opportunities of liquid biofuel production and use are provided in the final section of the paper.

<http://www.fao.org/docrep/012/i0891e/i0891e00.htm>



### Investing In Renewable Energy: The GEF Experience (2009)

The world is at critical crossroads for the future of energy. Climate change, increasing dependence on oil and other fossil fuels, growing imports, and rising energy costs are making the developing world more vulnerable than ever before. These challenges call for a comprehensive and ambitious response in the renewable energy field. The renewable energy sector is the one energy sector that stands out—for its ability to reduce greenhouse gas emissions and pollution and to exploit local and decentralized energy sources.

[http://www.thegef.org/gef/sites/thegef.org/files/publication/gef\\_renewenergy\\_CRA\\_rev.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/gef_renewenergy_CRA_rev.pdf)

### The Biofuels Market: Current Situation and Alternative Scenarios (2009)

At present, biofuels are once again at the centre stage of the debate on energy, partially in response to circumstances similar to those that occurred more than 30 years ago, namely high and volatile oil prices and oil supply instability. Governments seeking to curb emissions are now promoting biofuels because of their potentially cleaner emissions profile as compared to fossil fuels. The intent of this publication is to present and discuss alternative decision paths that countries may follow and the possible implications as a contribution to the programme of work of the Global Bioenergy Partnership. The discussions will zero in on mechanisms and issues that need to be addressed when designing and implementing sound biofuels strategies.

[http://www.unctad.org/en/docs/ditcbcc20091\\_en.pdf](http://www.unctad.org/en/docs/ditcbcc20091_en.pdf)

### World Trade Law and Renewable Energy: The Case of Non-Tariff Barriers (2008)

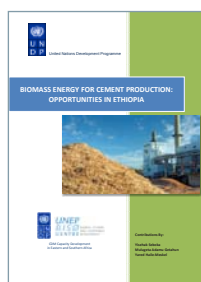
This study considers the question of non-tariff barriers and the question of non-tariff barriers and renewable energy from the perspective of the law of the World Trade Organization. The first part of the study examines whether and to what extent, under the law of the WTO government, policies to promote renewable energy may be disciplined as non-tariff barriers. The second part addresses itself to whether and to what extent WTO law could be used to challenge or discipline policies (regulatory barriers) that disadvantage renewable energy.

[http://www.unctad.org/trade\\_env/test1/publications/UNCTAD\\_DITC\\_TED\\_2008\\_5.pdf](http://www.unctad.org/trade_env/test1/publications/UNCTAD_DITC_TED_2008_5.pdf)

### Sustainable Development: Promotion of New and Renewable Sources of Energy (Report of the Secretary-General) (2009)

This report from the Secretary General aims to provide an overview on new and renewables sources of energy investments in the world. It identifies the main barriers to the development of such technologies and their transfer, and suggests a number of policy options to be explored.

[http://www.un.org/esa/dsd/resources/res\\_docugaecos\\_64.shtml](http://www.un.org/esa/dsd/resources/res_docugaecos_64.shtml)  
[http://siteresources.worldbank.org/EXTENERGY2/Resources/Directions\\_in\\_Hydropower\\_FINAL.pdf?resourceurlname=Directions\\_in\\_Hydropower\\_FINAL.pdf](http://siteresources.worldbank.org/EXTENERGY2/Resources/Directions_in_Hydropower_FINAL.pdf?resourceurlname=Directions_in_Hydropower_FINAL.pdf)



### Biomass Energy for Cement Production: Opportunities in Ethiopia (2009)

Biomass and biomass residues, if sourced in an environmentally and socially sustainable fashion, represent a vast—and largely untapped—renewable energy source for the countries of sub-Saharan Africa. The guide seeks to outline the potential, taking the Ethiopian cement sector as a specific example of how biomass energy might be deployed in practice.

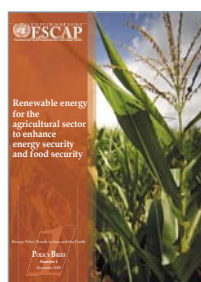
<http://www.undp.org/climatechange/library/mitigation.shtml>



### Promotion of Wind Energy : Lessons Learned From International Experience and UNDP-GEF Projects (2008)

The report provides a review of the active UNDP-GEF wind energy portfolio. It looks at the design, costs and efficiency of existing projects, drawing on the experience of 14 wind energy projects that have been financed through UNDP to help national governments implement wind energy public policies.

[http://www.undp.org/GEF/documents/publications/windpower\\_web.pdf](http://www.undp.org/GEF/documents/publications/windpower_web.pdf)



### Policy brief: Renewable energy for the agricultural sector to enhance energy security and food security (2009)

This publication gives an overview of the activities in renewable energy for the agricultural sector, with the intention to enhance energy security and food security.

<http://www.unescap.org/esd/energy/publications/policybrief/policy%20brief%20no%201%20dec%202009.pdf>

### Increasing the Competitiveness of Small and Medium-Sized Enterprises Through the Use of Environmentally Sound Technologies: Assessing the Potential for the Development of Second-Generation Biofuels in the ESCWA Region (2009)

This study examines the opportunities and constraints associated with the development of second-generation biofuels in the ESCWA region, based on a review of existing environmentally sound technologies that can be accessed by small and medium enterprises. Agricultural waste generated by three sectors of importance to the ESCWA region is targeted for analysis, namely, the olive oil, sugar (from sugarcane and sugar beet) and dairy industries. Country case studies are offered to elaborate the analysis-based financial and environmental assessments; and a series of recommendations are provided aimed at assisting decision makers and entrepreneurs to pursue developments in the second-generation biofuel sector using environmentally sound technologies.

<http://www.escwa.un.org/information/publications/edit/upload/sdpc-09-5.pdf>

### Fact sheets on best practices and tools for large-scale deployment of renewable energy and energy efficiency techniques (2009)

The fact sheet reviews large-scale renewable energy application technologies including wind and solar technologies, and existing large-scale renewable energy applications covering wind global existing capacity and solar global existing capacity. The fact sheet also tackles investments in renewable energy projects and the commercial viability of renewable energy projects. Renewable energy potentials and large-scale renewable energy projects in the ESCWA Region are also reviewed. The fact sheet then reviews available financing mechanisms and ways to promote the deployment of large-scale renewable energy (RE) and energy efficiency (EE) techniques.

<http://www.escwa.un.org/information/publications/edit/upload/sdpc-09-TP3.pdf>

### Biocombustibles líquidos para transporte en América Latina y el Caribe (2008)

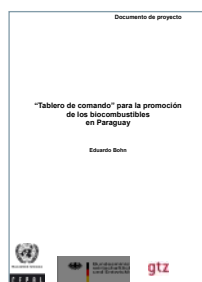
The ethanol initiative is active under the Latin America and the Caribbean macro-economic scenario, which can support and create mechanisms that will aggregate value to the ethanol sales price via the elimination of import duties and consumption taxes, in addition to other incentives that may eventually be available to make the project viable. This publication summarizes the current situation of ethanol production, use and potential over the region.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/36417/P36417.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xslt>

### Design and feasibility study of an ethanol distillery in Guyana (2009)

This study envisages the basic technical and economic-financial model for the implementation of a fuel ethanol distillery plant in Skeldon, Guyana at the Guyana Sugar Corporation's (Guysuca) new Skeldon Industrial site.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/38277/P38277.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



#### “Tablero de comando” para la promoción de los biocombustibles en Paraguay (2009)

Interest in the production and use of biofuels has reached high levels throughout the world today. This interest is based on two main motivations: concern for the environment and the continuing trend of rising oil prices. This publication examines the positives and negatives involved in the development of biofuels in Paraguay.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/35607/P35607.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xslt>

#### Biocombustibles y comercio internacional: una perspectiva latinoamericana (2009)

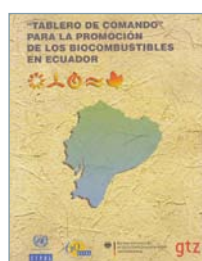
This paper discusses the issue of biofuel exports by Latin American and Caribbean countries in the face of the productive regional potentials and global market institutional constraints, particularly in dealing with multilateral treaties of the Doha Round. It identifies that few Latin American countries could become exporters following the example of other countries where production of biofuels has great prospects for expansion.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/36181/P36181.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xslt>

#### The contribution of biofuels to the sustainability of development in Latin America and the Caribbean: elements for formulating public policy (2008)

The present study adopts an integral, intersectoral approach to the problem of biofuels policy and to the issue of the sustainability of development in the region's countries.

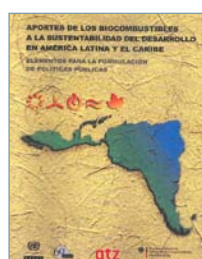
<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/34977/P34977.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



#### “Tablero de comando” para la promoción de los biocombustibles en Ecuador (2008)

Interest in the production and use of biofuels has reached high levels throughout the world today. This interest is based on two main motivations: concern for the environment and the continuing trend of rising oil prices. This publication examines the positives and negatives involved in the development of biofuels in Ecuador.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/9/33219/P33219.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



#### Aportes de los biocombustibles a la sustentabilidad del desarrollo en América Latina y el Caribe: Elementos para la formulación de políticas públicas (2008)

This paper argues that the global rationality that should prevail in public policy formulation for the production and use of biofuels is multidimensional and therefore requires a centralized leadership. This is in addition to the political authority of power, which requires the participation of agricultural policy authorities, industry and transport, finance, natural resources and environment, the social sector, and health. Only with prior approval and information is it possible to formulate a coherent policy on biofuels. Once we reach that consensus within the public authority, it is important to assess the reactions of the stakeholders of civil society and incorporate their contributions to the proposed policy developed. Therefore, the playing field for investment should correspond to the global rationality and not just private rationality.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/6/32836/P32836.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



### Lessons Learned and Experiences in Solar Rural Electrification (2009)

The publication aims at providing the lessons learned and experiences from the rural electrification, using solar energy systems with a special emphasis on developing countries. This document covers the implementation of autonomous electrification solar systems and presents case studies on solar home systems, multiuser solar hybrid micro grids projects and systems for community services. Furthermore, it targets the different stakeholders concerned by the decentralized rural electrification based on solar energy, as well as related decision/policymakers, project managers, technical staff, local communities, etc.

In Progress

### Renewable energy policy in the Comoros (2009)

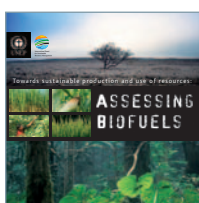
The document provides a renewable energy strategy/policy for the Comoros. The energy needs and the main economic and technical constraints are analysed, as the potential for renewable energy. It also reviews the existing energy measures and defines recommendations for implementing the proposed Comoros Renewable Energy Policy (COREP). The renewable energy technology considered takes into account the local specificities as well as a market-based analysis. This document targets mainly the decision/policymakers, the governmental and non-governmental organizations, as well as the different institutions and publics concerned by the energy sector, and the use of renewable energy sources in the Comoros.

In Progress

### The Global Financial Crisis and its Impact on Renewable Energy Finance (2009)

This study examines the impact of the global financial crisis on the renewable energy sector drawing upon both survey-based empirical research and transaction-based data analysis.

<http://sefi.unep.org/english/home/publications.html>



### Towards Sustainable Production and Use of Resources: Assessing Biofuels (2009)

Putting technology and policy development into perspective, this report intends to provide relevant information on the assessment of the environmental and social costs and benefits of biofuels.

<http://www.unep.fr/energy/bioenergy>



### Trade Offs, Risks and Opportunities Linked to Bioenergy for Sustainable Development (2009)

A look at a range of opportunities and challenges, highlighting that trade offs between different objectives need to be made based on assessments and resource efficiency, and considering options to mitigate risks, including policy and market instruments.

<http://www.unep.fr/energy/bioenergy>





### Bioenergy Issue Paper Series (2009)

The first issue of the series looks at land use, land use change and bioenergy, considering the enhanced competition for land and the increased risk of land use changes.

<http://www.unep.fr/energy/bioenergy>



### Biofuels and Environmental Impacts—Scientific Analysis and Implications for Sustainability (2009)

This UNESCO-SCOPE-UNEP policy brief examines whether biofuels can deliver the benefits that are motivating countries and companies to invest heavily in their production.

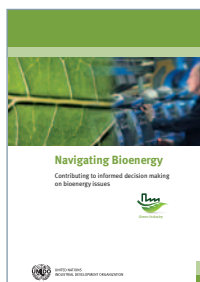
<http://unesdoc.unesco.org/images/0018/001831/183113e.pdf>



### REN21 Renewables Global Status Report: 2009 Update (2009)

This report provides an integrated picture of the global renewable energy situation in the midst of an historic and global economic crisis. It shows that renewable energy expansion is policy driven, making stable and predictable government strategies key to the sector.

<http://www.ren21.net/globalstatusreport/g2009.asp>



### Navigating bioenergy: Contributing to informed decision making on bioenergy issues (2009)

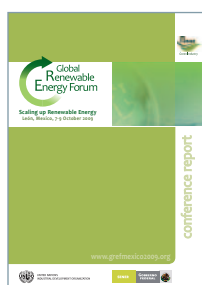
Bioenergy forms part of UNIDO's Green Industry Initiative, which focuses on clean and renewable energy for industrial applications. "Navigating Bioenergy" provides an overview of some of the most frequently discussed bioenergy topics and aims to assist both policymakers and practitioners in gaining a more comprehensive understanding of the issues involved. It seeks to disseminate best practices on bioenergy and share UNIDO's own experience and expertise in the field. "Navigating Bioenergy" shall contribute to advancing the development of bioenergy on the road to securing a sustainable future.

<http://www.unido.org/index.php?id=1000595>

### Industrial biotechnology and biomass utilization (2009)

This report is a follow-up to the Expert Group Meeting on “Industrial Biotechnology and Biomass Utilization: Prospects and Challenges for the Developing World”, convened at UNIDO’s headquarters, Vienna, Austria in December 2005. The report intends to support ideas for the creation and/or deployment of technology platforms and policy frameworks for biomass conversion and industrial development. The report is divided into three parts. Part I provides an overview and background on the emerging bio-economy, with emphasis on the role of agricultural biomass resources for industrial biotechnology and renewable energy in supporting sustainable development and economic competitiveness. Part II provides nine papers that illustrate representative issues related to resource use, conversion options and the development of new product markets. Part III provides documentation from the workshop, including summaries of presentations and information on the workshop participants.

[http://www.unido.org/fileadmin/user\\_media/Publications/Pub\\_free/Industrial\\_biotechnology\\_and\\_biomass\\_utilisation.pdf](http://www.unido.org/fileadmin/user_media/Publications/Pub_free/Industrial_biotechnology_and_biomass_utilisation.pdf)



### Scaling up Renewable Energy (2009)

*Global Renewable Energy Forum 2009, León, Mexico, 7-9 October 2009—Conference Report*

The Global Renewable Energy Forum 2009, co-organized by UNIDO and the Mexican Ministry of Energy (SENER), brought together over 2,500 participants from 73 countries, representing policymakers, civil servants, scientists, energy experts and civil society. The role of renewable energy in the context of the most pressing global challenges was discussed with a special attention to: creating a suitable environment for proactive dialogue to strengthen interregional cooperation and encourage innovative multi-stakeholder partnerships aimed at scaling up renewable energy; providing a platform for highlighting leadership in regard to the promotion of renewable energy; and promoting the exchange of views among various stakeholders. This report provides a synthesis of the key issues addressed and recommendations stemming from the Forum.

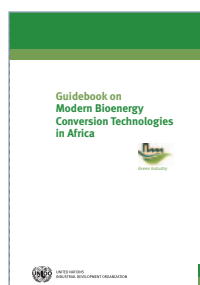
<http://www.grefmexico2009.org/index.php?id=1>



### Small hydropower in selected countries in West Africa (2009)

Experts from Benin, Burkina Faso, Ghana, Liberia, Mali, the Niger, Nigeria, Senegal and Togo attended the Expert Group Meeting on Small Hydropower Development in West Africa, held in Abuja (Nigeria) from 6 to 8 August 2007. The Expert Group Meeting was a forum to assess the potential for such power sources in those countries and to devise development strategies. Specifically, the meeting intended to identify and establish a network of experts on small hydropower in the participating countries, gather information on the potential for small hydropower and on existing policies for it and to share experiences in small hydropower development in other countries in Africa and in Asia. It was also intended to introduce the UNIDO Regional Centre for Small Hydropower in Africa and the possibility of technical assistance for small hydropower development for all countries in the region. The document presents a synthesis of country papers presented during the meeting.

<http://www.unido.org/index.php?id=1000595>

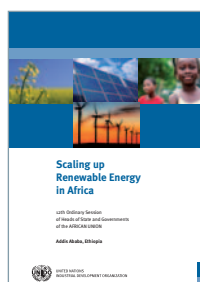


### Guidebook on Modern Bioenergy Conversion Technologies in Africa (2009)

This guidebook is intended to serve as a resource for countries in Africa in their consideration of options to develop bioenergy production capacity in the region. Some level of bioenergy production capacity already exists in Africa, although not on very large scale. The possibilities for the production of bioenergy are manifest in the short term through the use of feedstocks such as jatropha, sugar cane and sweet sorghum, and in the long term through the use of agricultural, municipal and industrial waste. This guidebook provides:

- (a) information on the production processes for the priority types of bioenergy in Africa;
- (b) information on application technologies for the various types of bioenergy that are currently suitable to Africa, in order to help investors and policymakers understand exactly how the technology will benefit African society;
- (c) information on associated economic and environmental effects in relation to priority modern bioenergy conversion technologies;
- (d) selected case studies highlighting experiences in different African countries and lessons learned to date.

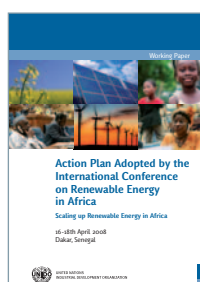
<http://www.unido.org/index.php?id=1000595>



### Scaling up Renewable Energy in Africa (2009)

This paper proposes the scaling up of renewable energy to levels that would have a significant impact on Africa's energy scene. Suggested measures include deliberate interventions on policy and institutional environment; technology acquisition, development and integration; investment mobilization; and regional integration, networking and capacity-building. Policy makers in Africa are recommended to recognize the potential role of renewable energy in meeting the energy challenges being faced by the region, and to take a proactive role in implementing the recommendations of this paper. There is an urgent need for an integrated and coordinated approach at regional level to scale up the deployment of renewable energy technologies in order to enhance access to modern energy services, improve energy security and support economic and social development.

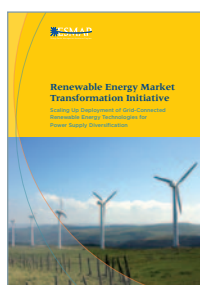
<http://www.unido.org/index.php?id=1000595>



### Action Plan Adopted by the International Conference on Renewable Energy in Africa—Scaling up Renewable Energy in Africa (2009)

The African Union, the Government of Senegal, the German Federal Ministry for Economic Cooperation and Development, and UNIDO jointly organized the International Conference on Renewable Energy in Africa on 16 to 18 April, in Dakar, Senegal with the theme, "Making Renewable Energy Markets Work For Africa—Policies, Industries and Financing for Scaling Up". As a result of this Conference, the Dakar Declaration on scaling up renewable energy in Africa was adopted. This Action Plan, which forms part of the Declaration, aims to address barriers to the creation of the establishment of functional markets. Based on experience from different projects, it is envisaged that once these barriers are overcome, market forces will adequately support the widespread adoption of renewable energy technologies across Africa.

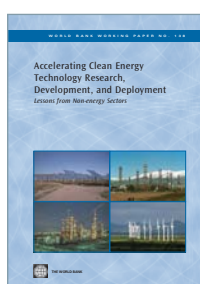
<http://www.unido.org/index.php?id=1000595>



### Renewable Energy Market Transformation Initiative—Scaling Up Deployment of Grid-Connected Renewable Energy Technologies for Power Supply Diversification (2010)

The Energy Sector Management Assistance Program (ESMAP) is supporting the renewable energy development process through the Renewable Energy Market Transformation Initiative (REMTI). REMTI will help countries address the preparatory work needed in the earlier stages of programme development by providing technical assistance, knowledge sharing activities and capacity-building training to facilitate access to financing.

[http://www.esmap.org/filez/pubs/232010101922\\_FINAL\\_REMTI-Brochure-WebSP.pdf](http://www.esmap.org/filez/pubs/232010101922_FINAL_REMTI-Brochure-WebSP.pdf)



### Accelerating Clean Energy Technology Research, Development, and Deployment—*Lessons from Non-energy Sectors* (2008)

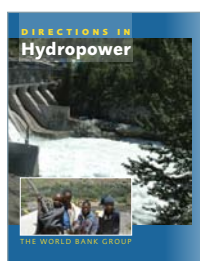
While there are many promising clean energy technologies, most are currently too costly, lack the technical reliability needed for widespread deployment, or both. The research, development and deployment (RD&D) activities needed to commercialize these clean energy technologies have—after a period of significantly reduced activity—increased substantially over the last two to three years. However, these renewed efforts will face significant barriers that impact the ability to develop and deploy promising clean energy options. To overcome these barriers and introduce new technologies that deliver the massive scope of emissions reductions in the urgent time frame required, new and creative approaches to energy RD&D will be needed. To introduce new thinking in addressing these concerns, this paper examines four cases from outside the energy sector where creative approaches to RD&D have successfully overcome similar barriers. Lessons learned from these case studies provide important insights that can be applied to accelerate the commercialization of clean energy technologies.

[http://www.esmap.org/filez/pubs/49200942554\\_9780821374818\\_accelerating\\_clean\\_energy.pdf](http://www.esmap.org/filez/pubs/49200942554_9780821374818_accelerating_clean_energy.pdf)

### Beyond Bonn: World Bank Group Progress on Renewable Energy and Energy Efficiency (2010)

The fifth in the series documenting the World Bank Group's progress in supporting renewable energy and energy efficiency, this report details the successes of, and lessons learned from, the investments made by the World Bank Group over the past five years. The case studies provide specific examples of financial and technical innovations that the World Bank Group has employed for financing of energy efficiency and renewable energy projects.

[http://siteresources.worldbank.org/EXTENERGY2/Resources/RE\\_EE\\_FY09\\_Full.pdf](http://siteresources.worldbank.org/EXTENERGY2/Resources/RE_EE_FY09_Full.pdf)



### Directions in Hydropower (2009)

This document summarizes key issues in scaling up hydropower for poverty alleviation and sustainable development. It outlines the rationale and context for sector expansion, as well as the risks. It describes the World Bank Group's role in scaling up and sets priorities for supporting sustainable hydropower in a two-track approach comprising lending and non-lending activities.

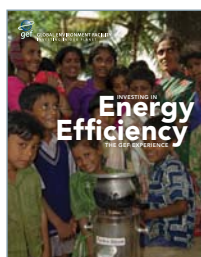
[http://siteresources.worldbank.org/EXTENERGY2/Resources/Directions\\_in\\_Hydropower\\_FINAL.pdf?resourceurlname=Directions\\_in\\_Hydropower\\_FINAL.pdf](http://siteresources.worldbank.org/EXTENERGY2/Resources/Directions_in_Hydropower_FINAL.pdf?resourceurlname=Directions_in_Hydropower_FINAL.pdf)

### IPCC Scoping meeting on Renewable Energy Sources: Proceedings (2008)

This report describes the proposed structure of a new IPCC Special Report on renewable energy sources and contains an important set of scientific papers on renewable energy sources and climate change mitigation.

<http://www.ipcc.ch/pdf/supporting-material/proc-renewables-lubeck.pdf>

## Energy efficiency



### Investing in Energy Efficiency: The GEF Experience (2009)

The GEF promotes energy efficiency, helping to remove barriers preventing the large-scale application, implementation and dissemination of cost-effective, energy-efficient technologies and practices. GEF supports market transformation of energy-efficient appliances and widespread adoption of energy-efficient technologies and sustainable financial mechanisms in industry and building sectors.

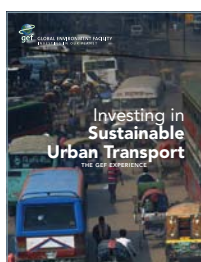
<http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf>



### Transfer of Environmentally Sound Technologies: The GEF Experience (2008)

The GEF, over its 18-year history, has extensive experience in the transfer of climate change mitigation technologies. Transfer of environmentally sound technologies (ESTs) is playing a crucial role in the global response to climate change. Lessons learned at the GEF will help improve the efficiency and efficacy of future efforts to transfer ESTs to developing countries.

[http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF\\_TTbrochure\\_final-lores.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF_TTbrochure_final-lores.pdf)



### Investing in Sustainable Urban Transport: The GEF Experience (2009)

Investing in sustainable transport reduces carbon dioxide emissions and helps mitigate the potential impacts of climate change. But making these investments also pays off at the local level: we work with stakeholders to expand clean public transportation choices that also have the added benefits of lowering air pollution and reducing traffic congestion. This publication details our efforts in the field toward realizing sustainable urban transport all over the world.

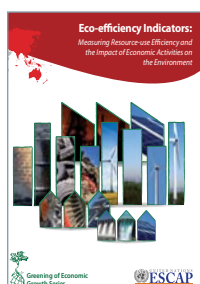
[http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Urban-Transportation\\_0.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Urban-Transportation_0.pdf)



### Investor Interest and Capacity-Building Needs. Financing Energy Efficiency Investments for Climate Change Mitigation Project (2009)

The publication presents energy overview, financial environment, project development and finance capacities, and investor interest of the participating countries (Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Kazakhstan, Republic of Moldova, Romania, Russian Federation, Serbia, the former Yugoslav Republic of Macedonia and Ukraine) of the Financing Energy Efficiency and Renewable Energy Investments for Climate Change Mitigation (FEEI) project, as well as business development course programme to provide necessary capacity-building. The FEEI project aims at developing investment projects and strengthening capacities for development of energy efficiency; providing assistance to national and municipal authorities to introduce reforms needed to support investment projects; and supporting banks and commercial companies to invest in these projects through professionally managed investment funds.

[http://www.unece.org/energy/se/pdfs/eneff/eneff\\_pub/InvInt\\_CapBuilNeeds\\_ese32\\_e.pdf](http://www.unece.org/energy/se/pdfs/eneff/eneff_pub/InvInt_CapBuilNeeds_ese32_e.pdf)



### Eco-efficiency Indicators: Measuring Resource-use Efficiency and the Impact of Economic Activities on the Environment (2009)

This publication is produced as an output of an ESCAP project entitled “Pursuing Green Growth by improving eco-efficiency of economic growth in Asia and the Pacific” under the Korea-ESCAP Cooperation Fund.

[http://www.unescap.org/esd/environment/publications/EEI/ESCAP\\_EEI%20Publication%202561.pdf](http://www.unescap.org/esd/environment/publications/EEI/ESCAP_EEI%20Publication%202561.pdf)



### Guidelines for Energy Efficiency in the Tourism Sector: Strategy, Design, Systems and Operations Approach (2009)

The tourism sector is rapidly developing worldwide, to become a prominent economic sector. With a percentage share of the real gross domestic product (GDP) for the travel and tourism sector varying between 3.73 per cent in Kuwait and 28.09 per cent in Lebanon, the sector forms an important economic driver in the ESCWA region. This publication gives an overview of the guidelines for energy efficiency in the tourism sector.

<http://www.escwa.un.org/information/pubdetails.asp?division=SDPD>

### Situación y perspectivas de la eficiencia energética en América Latina y El Caribe (2009)

The present study aims to analyse the situation and prospects for the actions and instruments related to energy efficiency in the 26 countries of Latin America and the Caribbean, members of the Latin American Energy Organization (OLADE).

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/37451/P37451.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>

### Estudio sobre empresas energointensivas y su posible contribución a programas de eficiencia energética (2008)

This publication proposes a mapping of energy-intensive companies in the region and presents an overview of their contribution to energy efficiency programmes.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/5/34205/P34205.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>

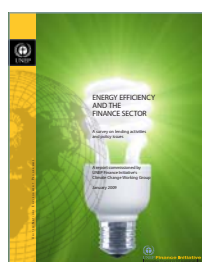




### Better Buildings (2010)

This publication is a result of a regional training and demonstration workshop organized by UNESCO, together with the Friends of the Environment Centre and with the support of UNEP and United Nations Information Centre (UNIC). It brought together international and Arab experts, in November 2007 in Doha, Qatar, with the aim to exchange innovative technology information, and experiences. Better Buildings is a contribution that encourages improved buildings in view of energy, freshwater, and waste management. The publication provides a number of aspects on how this can be achieved including through awareness, education, as well as the development and application of good science and technology-based concepts.

<http://unesdoc.unesco.org/images/0018/001866/186626e.pdf>



### Energy Efficiency and the Finance Sector (2009)

This report provides an evidence base on the status quo, the barriers and possible ways forward in the field of energy efficiency finance.

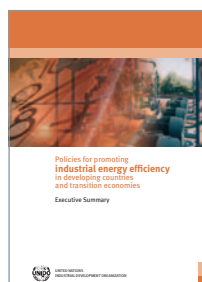
[http://www.unepf.org/publications/climate\\_change/index.html](http://www.unepf.org/publications/climate_change/index.html)



### Sustainable Urban Energy Planning (2009)

The main purpose of this handbook is to assist people who are working in or with local government to develop sustainable energy and climate action plans and implementation programmes. There can be no single recipe for all cities—so it is up to each local government to develop its own innovative and appropriate plans based on local resources and needs.

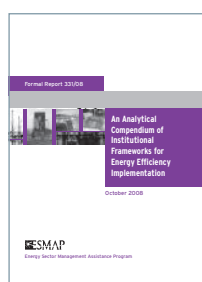
<http://www.unhabitat.org/pmss/Publications.aspx?page=ByTheme&parentcategoryID=263&categoryID=356>



### Policies for Promoting Industrial Energy Efficiency in Developing Countries and Transition Economies (2008)

This paper presents a portfolio of policy options under the organizing structure of an Industrial Standards Framework that are designed to promote the organizational culture change needed for industrial energy efficiency to be both realized and sustained over time. The Industrial Standards Framework proposes a link between the forthcoming International Organization for Standardization (ISO) energy management system and industrial energy efficiency.

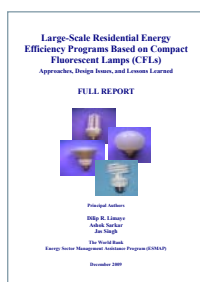
<http://www.unido.org/index.php?id=1000596>



### An Analytical Compendium of Institutional Frameworks for Energy Efficiency Implementation (2008)

Despite considerable attention devoted to energy-efficiency policies and programmes, there has been little formal assessment of the institutional aspects of energy efficiency implementation. The World Bank's Energy Sector Management Assistance Program (ESMAP) initiated this study to examine the interplay of structure, role and function of institutional frameworks supporting energy efficiency implementation.

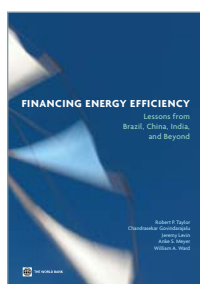
[http://www.esmap.org/filez/pubs/10292008124258\\_EE\\_Institutional.pdf](http://www.esmap.org/filez/pubs/10292008124258_EE_Institutional.pdf)



### Large-Scale Residential Energy Efficiency Programs Based on CFLs Approaches, Design Issues, and Lessons Learned (2009)

Based on previous work experience, the WBG and ESMAP came to the conclusion there was a critical mass of operational documents and experience that would aid the design of new compact fluorescent lamp (CFL)-based residential energy efficiency programmes in additional WBG member countries. Thus, ESMAP developed this “CFL Toolkit” to compile and share important operational (design, financing and implementation) elements, documents, lessons learned, results and other relevant data into a user-friendly format. The toolkit seeks to share operational documents from past projects to help inform new ones. It includes key implementation/operational aspects, such as economic analysis and financial analysis (including carbon financing), elements of programme design, methodologies and survey instruments for market assessment and potential, procurement guidelines, technical specifications, bidding documents, consumer surveys, awareness campaign information, environmental and safety issues related to CFLs, programme evaluations, and associated Terms of Reference (TORs) for various project activities.

[http://www.esmap.org/filez/pubs/119201034511\\_CFL\\_Toolkit\\_Report\\_011910Final.pdf](http://www.esmap.org/filez/pubs/119201034511_CFL_Toolkit_Report_011910Final.pdf)



### Financing Energy Efficiency—Lessons from Brazil, China, India, and Beyond (2008)

Greater energy efficiency is key for shifting country development paths toward lower-carbon economic growth. Especially in developing countries and transition economies, vast potential for energy savings opportunities remain unrealized even though current financial returns are strong. *Financing Energy Efficiency: Lessons from Brazil, China, India, and Beyond* examines the nature of this dilemma and how it may be overcome in practical and operational terms.

[http://www.esmap.org/filez/pubs/211200830655\\_financing\\_energy\\_efficiency.pdf](http://www.esmap.org/filez/pubs/211200830655_financing_energy_efficiency.pdf)

### Public Procurement of Energy Efficiency Services: Lessons from International Experience (2009)

This book looks at a largely untapped energy efficiency market, the public sector. Efficiency potential in this sector is substantial, but implementing energy savings programmes have been complicated by a number of factors, including limited incentives to lower energy costs, rigid budgeting and procurement procedures, and limited access to financing.

[http://www.esmap.org/filez/pubs/1142010120631\\_Public\\_Procurement\\_of\\_Energy\\_Efficiency\\_Services.pdf](http://www.esmap.org/filez/pubs/1142010120631_Public_Procurement_of_Energy_Efficiency_Services.pdf)

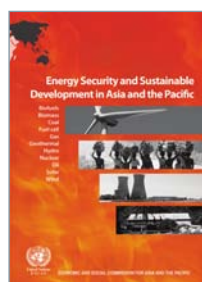
## Energy policies, regulations, strategies and markets



### Trade and Environment Review 2009/2010: Promoting poles of clean growth to foster the transition to a more sustainable economy (2009)

UNCTAD's Trade and Environment Review 2009/2010 focuses on promoting poles of clean growth to foster the transition to a more sustainable economy in developing countries that enhance resilience to the inter-related economic, food and climate crises. The paper singles out three areas of sustainable, "green" growth that are of particular and strategic importance for the low-income and least developed countries: enhancing energy efficiency, often implemented in combination with material and resource efficiency; mainstreaming sustainable agriculture, including organic agriculture; and harnessing the use of off-grid renewable energy technologies for sustainable rural development.

[http://www.unctad.org/trade\\_env/test1/publications/UNCTAD\\_DITC\\_TED\\_2009\\_2\\_web6pwd.pdf](http://www.unctad.org/trade_env/test1/publications/UNCTAD_DITC_TED_2009_2_web6pwd.pdf)



### Energy Security and Sustainable Development in Asia and the Pacific (2008)

Over the past few years, energy security and sustainable development have moved up the global agenda. There are two main reasons for this: first, the impact of high and often volatile energy prices; second, concerns over environmental sustainability and particularly over the global climate. Both issues are critically important for Asia and the Pacific—a region in which impressive economic growth has boosted the demand for energy and put corresponding strains on the environment.

<http://www.unescap.org/publications/detail.asp?id=1286>



### Internacionalización y expansión de las empresas eléctricas españolas en América Latina (2009)

In this new book ECLAC presents an analysis of the processes of internationalization, expansion and investment in Spanish electricity companies in Latin America over the past two decades. It also examines ECLAC's contribution to the development and modernization of this industry in the region and who has had a significant impact on energy and regulatory policies of sector.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/9/36979/P36979.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>

### Las negociaciones internacionales en el sector energético y sus implicancias para América Latina y el Caribe (2009)

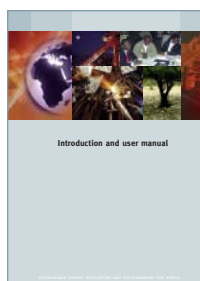
The study aims to make a diagnosis on the state of negotiations in the field of energy activity, with emphasis on services. It establishes the main lines of discussion arising from the proposals submitted by countries for liberalization.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/4/35464/P35464.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>

### Energía y cambio climático: oportunidades para una política energética integrada en América Latina y el Caribe (2008)

Over the next decade, this region will face a new international environment in energy that will be characterized by two major structural and exogenous changes, which are independent of the policies that the countries of Latin America and the Caribbean may or may not adopt. These changes in the international arena represent new conditions which are beyond the scope of direct control or influence from public policies that the countries in the region have the ability to deploy nationwide. This publication examines these new challenges that must be faced and integrated into national development priorities and within the objectives of the energy policies that the countries in the region must respond to.

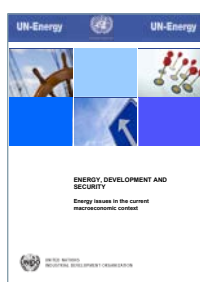
<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/35097/P35097.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



### Training Package on “Sustainable Energy Regulation and Policymaking for Africa” (2009)

This manual, a collaboration between UNIDO and the Renewable Energy & Energy Efficiency Partnership (REEEP), aims to reverse the existing lack of capacity and knowledge on how to foster regulatory and policy environments that will better aid the adoption of more long-term economically and environmentally sustainable methods of energy supply and utilization, in the industrial, commercial and urban domestic sectors and in the rural energy environment in the developing countries. The main focus of the training package is on: energy regulation and power sector reform; increased renewable energy technology penetration for rural electrification; and the sustainable use of energy through energy efficiency in industrial, commercial and domestic sectors (including energy efficiency in buildings).

<http://www.unido.org/index.php?id=1000755>



### Energy, Development and Security. Energy Issues in the Current Macroeconomic Context (2008)

The United Nations system has become increasingly involved in promoting the development, transfer and diffusion of clean energy technology and services. There remains, however, much more to be done if we are to ensure that the world's poor have access to sustainable and reliable energy supplies. The scale of the investments that will be needed in the energy sector in the next 30 years—some US\$ 20 trillion—can seem daunting. The international community therefore needs to work together to identify how this can be best achieved and to decide on the most effective role of the United Nations system in these efforts.

[http://www.unido.org/fileadmin/user\\_media/Publications/documents/energy\\_development\\_and\\_security.pdf](http://www.unido.org/fileadmin/user_media/Publications/documents/energy_development_and_security.pdf)



### Towards an Integrated Energy Agenda Beyond 2020 (2009)

#### *International Energy Conference, Vienna, Austria, 22-24 June 2009- Conference Report*

The objective of the Vienna Energy Conference was to provide an opportunity for public-sector policymakers, together with the private sector, civil society representatives, experts from United Nations organizations, energy communities and related experts—from developing and industrialized countries—to discuss energy issues and related development challenges in the context of the current global economic crisis. In addition, the Conference explored mechanisms for greater international cooperation and the role of the United Nations in the field of energy. This conference report is not intended to review all the topics or issues discussed at the meeting. Rather, it focuses on the key outcomes from the Conference using discussion material from the meeting to support the recommendations.

<http://www.unido.org/index.php?id=1000599>

### The Future of the Natural Gas Market in Southeast Europe (2010)

The objective of the study is to assess the scope for increased gasification in the countries and areas of South East Europe, including Albania, Montenegro, Macedonia, Kosovo, Serbia, Croatia and Bosnia and Herzegovina.

[http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item\\_id=8964416](http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item_id=8964416)

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## Energy and development

### Cuba. A Country Profile on Sustainable Energy Development (2008)

This report presents a comprehensive assessment of the Cuban energy system performed within a sustainable development framework. The study is one of a series of national studies being conducted by the IAEA in cooperation with a number of national and international organizations under a unique “Partnership” initiative officially registered with the United Nations Commission on Sustainable Development.

<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>



### Integrated Energy Planning for Sustainable Development (2008)

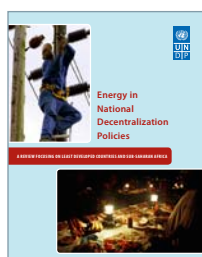
Today's energy planners must strive to balance many conflicting factors. At the most basic level, they must seek to balance energy needs (demand) and energy resources (supply) across two dimensions: ensuring access to adequate, affordable and secure energy services to satisfy human needs and achieve socioeconomic development; promoting production and use of energy services in ways that are consistent with the pursuit of sustainability.

<http://www.iaea.org/OurWork/ST/NE/Pess/publications.shtml>

### A Global Green New Deal for Climate, Energy, and Development (2009)

This paper lays out a strategy—a Global Green New Deal—for reducing greenhouse gas emissions without sacrificing development. The crux of the strategy relies on a big investment push that quickly lowers the cost of renewable energy. Affordable, abundant and accessible renewable energy, the paper highlights, can forestall dangerous climate change and sustainably power economic growth and development for all. The strategy can also help power a job-rich global economic recovery.

[http://www.un.org/esa/dsd/resources/res\\_pdfs/publications/sdt\\_cc/cc\\_global\\_green\\_new\\_deal.pdf](http://www.un.org/esa/dsd/resources/res_pdfs/publications/sdt_cc/cc_global_green_new_deal.pdf)



### Energy in National Decentralization Policies: A review focusing on LDCs and sub-Saharan Africa (2009)

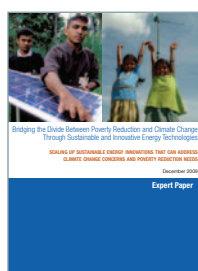
Based on the review of more than 600 documents and sources available online, this study endeavours to improve the present understanding of whether and how energy is taken into consideration within national decentralization policies and programmes in Least Developed Countries and in sub-Saharan Africa.

[http://www.undp.org/energy/docs/Energy\\_Decentralization\\_r8.pdf](http://www.undp.org/energy/docs/Energy_Decentralization_r8.pdf)

### Contribution of Energy Services to the Millennium Development Goals and to Poverty Alleviation in Latin America and the Caribbean (2009)

This joint initiative of ECLAC, UNDP, and the Club of Madrid reaffirms the importance of energy access in poverty reduction of the most vulnerable groups and in achieving the MDGs in Latin America and the Caribbean. The report recommends strengthening governmental planning and processes to scaling up pro-poor programmes for the provision of energy access in rural communities.

[http://www.clubmadrid.org/img/secciones/2009\\_Energy\\_MDG\\_ALC\\_ENG\\_Summary.pdf](http://www.clubmadrid.org/img/secciones/2009_Energy_MDG_ALC_ENG_Summary.pdf)



### Bridging the Divide Between Poverty Reduction and Climate Change through Sustainable and Innovative Energy Technologies: Scaling up Sustainable Energy Innovations that Can Address Climate Change Concerns and Poverty Reduction Needs (2009)

This expert report highlights the need to bridge the divide between climate change and poverty reduction through innovative energy technologies and to bring about transformational impacts to address these dual challenges. The report argues that providing financing for innovative ideas, low-cost, low-emission and pro-poor technologies are effective measures to harness their potential.

<http://www.undp.org/energy>

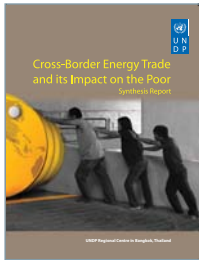


### Charting a New Low-Carbon Route to Development: A primer on integrated climate change planning for regional governments (2009)

This Primer introduces a set of approaches to help sub-national authorities through the whole process of designing their Integrated Territorial Climate Plan (ITCP). It aims to provide a better understanding of the instruments available for regional and local governments to become engaged in climate change mitigation and adaptation as an integral part of their development and planning processes. The Primer is divided into two parts—Part I: Scaling Up Efforts to Address Climate Change and Part II: Preparing an Integrated Territorial Climate Plan.

[http://www.undp.org/climatechange/library\\_mitigation.shtml](http://www.undp.org/climatechange/library_mitigation.shtml)

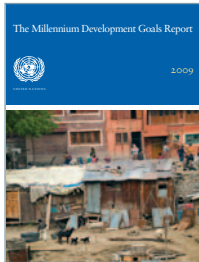




### Cross-border Energy Trade and its Impact on the Poor—Synthesis Report (2008)

This study takes place in the context of increasing cross-border energy trade and changing geographical and technological patterns in trade. The report is based on almost two years of evidence-based research and extensive consultations with experts to review the state of cross-border energy trade and to recommend policy strategies aimed at minimizing the negative impacts of such trade on the poor while enhancing its benefits.

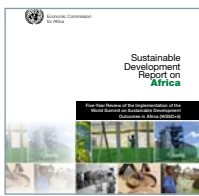
[http://regionalcentrebangkok.undp.or.th/practices/energy\\_env/rep-por/publications.html](http://regionalcentrebangkok.undp.or.th/practices/energy_env/rep-por/publications.html)



### MDG Report 2009 (2009)

The objective of this report is to provide the latest Africa-specific MDGs analysis and to contribute to the development of policies to accelerate progress toward achievement of the MDGs in the African region. The report is recommended to all stakeholders in African development and more importantly to the member States of UNECA.

<http://www.un.org/millenniumgoals/pdf/MDG%20Report%202009%20ENG.pdf>



### Sustainable Development Report on Africa (SDRA)—Five Year Review of the Implementation of the World Summit on Sustainable Development Outcomes in Africa (WSSD+5) (2008)

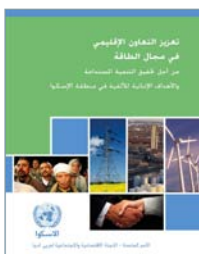
The report is intended to be an important medium for monitoring and assessing sustainable development in Africa, and is, among other things, aimed at promoting a balanced integration of the three pillars (Economic, Environmental and Social) of sustainable development.

[http://www.uneca.org/eca\\_resources/Publications/books/sdra/index.htm](http://www.uneca.org/eca_resources/Publications/books/sdra/index.htm)

### Assessing Progress in Africa towards the Millennium Development Goals MDG Report 2008

This report is the third in the series presenting the progress made since the last report. It discusses how far the African continent still needs to travel, at what speed, and what is needed to reach the Millennium Development Goals.

<http://www.uneca.org/cfm/2008/docs/AssessingProgressinAfricaMDGs.pdf>



### Enhancing regional cooperation on energy issues towards achieving sustainable development and the Millennium Development Goals in ESCWA member countries (2009)

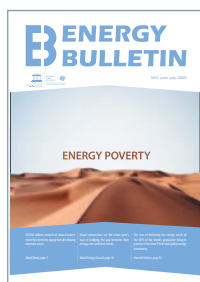
The study covers the links between energy and development, and the role that regional cooperation on energy issues plays in achieving sustainable development and Millennium Development Goals in the ESCWA region. The study reviews progress achieved and lessons learned from regional cooperation in the field of energy, in addition to future prospects and future opportunities for enhancing regional cooperation in the field. The study highlights the importance of activating the regional cooperation mechanisms, creating power sector markets, and putting comprehensive strategies and measures to promote the involvement of the private sector in the development process. The study also highlights the need to benefit from available international experience, and to undertake joint scientific research activities and build capacities in the field.

<http://www.escwa.un.org/information/pubdetails.asp?division=SDPD>

### Contribution of energy services to the Millennium Development Goals and to poverty alleviation in Latin America and the Caribbean (2009)

This document describes the results of the joint effort of ECLAC, UNDP and the Club of Madrid, which highlighted the crucial role of access to energy services in the attainment of the Millennium Development Goals in the region.

<http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/6/37506/P37506.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xsl>



### Energy Bulletin Series by the International Sustainable Energy Development Centre in Moscow, under the auspices of UNESCO (2008-2009)

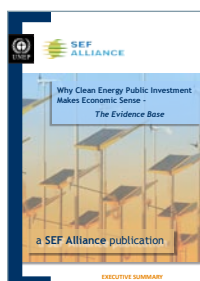
Energy Bulletin series (six editions published): No. 1: Humanitarian Principles of Sustainable Energy Development, June 2008; No. 2: Alternative and Renewable Energy Sources, October-November 2008; No. 3: Role and Impact of Alternative and Renewable Energy Sources for Development and Climate Change Mitigation, January-February 2009; No. 5: Energy Poverty, June-July 2009; No. 6: Technologies and Sciences: Renewable Energy Resources in the New Millennium, January 2010.

[http://isedc.com/page\\_pid\\_93\\_lang\\_2.aspx](http://isedc.com/page_pid_93_lang_2.aspx)

### White Book “Global Energy and Sustainable Development” (2009)

The book constitutes a guide for energy policy making and is devoted to the analysis of current status and trends of the global and sustainable energy development as the main topic on the international agenda for the twenty-first century. Special emphasis is made on issues related to the innovative energy-ecology-economy development. The book presents an in-depth analysis of the various energy scenarios and forecasts made by several organizations (IEA, Organization of the Petroleum Exporting Countries (OPEC), World Bank, World Energy Forum), national services (Energy Information Administration of the United States) as well as those developed by the Russian experts. In this regard, a special attention has been paid to the energy and economy development of the BRIC countries (Brazil, Russian Federation, India and China) and other developed countries as well as the assessment of their role in global energy development. The book is addressed to energy experts and economists, engineers and environmentalists, policy makers and the general public.

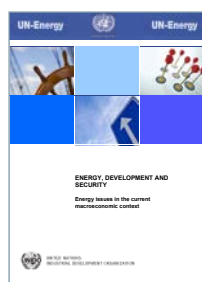
[http://isedc.com/page\\_pid\\_93\\_lang\\_2.aspx](http://isedc.com/page_pid_93_lang_2.aspx)



### Why Clean Energy Public Investment Makes Economic Sense—The Evidence Base (2009)

This report assesses the evidence base for countercyclical investment in sustainable energy as a sound response to global economic recession, providing a comprehensive analysis of why and how clean energy public investment makes economic sense.

<http://www.sefalliance.org/english/publications.html>



### Energy, Development and Security—Energy issues in the current macroeconomic context (2008)

Ensuring access to sustainable and cleaner energy is a key objective for the international community. It is clear that we will not be able to meet the Millennium Development Goals and the development needs of the poor without increasing their access to energy. And without a shift to cleaner energy supplies it will be impossible to adequately tackle climate change. At its October 2008 session, the United Nations Chief Executives Board discussed the many dimensions of this complex issue. The paper reproduced here was prepared at my request by the Director-General of UNIDO, in his capacity as Chair of UN-Energy, and stimulated a lively session. I recommend it to member States and to a wide global audience.

[http://www.unido.org/fileadmin/user\\_media/Publications/documents/energy\\_development\\_and\\_security.pdf](http://www.unido.org/fileadmin/user_media/Publications/documents/energy_development_and_security.pdf)

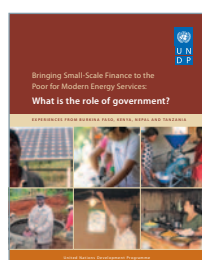


### Evaluating household energy and health interventions: a catalogue of methods (2008)

This publication discusses evaluation options in the areas of Adoption, Market development, Performance, Pollution levels and personal exposure, Health and safety, Time, Socio-economic and other impacts and Environmental impacts. It provides methods that range from simple questionnaires to complex monitoring techniques, and outlines practical issues related to study design, ethical considerations, data analysis and reporting. Ultimately, this catalogue of methods is intended to help governmental agencies, non-governmental organizations and universities involved with household energy and health interventions develop an evaluation strategy appropriate to their goals and organizational capacities.

<http://www.who.int/indoorair/publications/methods/en/index.html>

## Energy finance



### Small-Scale Finance for Modern Energy Services and the Role of Government (2009)

Access to small-scale finance tailored to low-income individuals, households and businesses is extremely important for expanding access to modern energy services. This UNDP report looks at the current gap that exists between access to modern energy and small-scale finance and focuses on the role of governments in bridging that gap, and recommends priority actions to be taken by governments.

[http://content.undp.org/go/cms-service/stream/asset/?asset\\_id=2146825](http://content.undp.org/go/cms-service/stream/asset/?asset_id=2146825)

### Financing Global Climate Change Mitigation—Sources of Financing Energy Efficiency and Renewable Investments (ECE Energy Series No. 37/UN-Energy, 2010)

This publication is one of the first outputs of the Global Energy Efficiency 21 (GEE21) Project, launched by the UNECE in December 2008 at COP-14 in Poznan, Poland. It appraises the energy efficiency situation worldwide and is intended for practitioners of energy efficiency financing as well as for policymakers. The former will find a wide array of financing mechanisms; the latter will be given an overview of available instruments and economic and institutional conditions for their success. The Fonds Français pour l'Environnement Mondial (FFEM), the UNEP/the GEF, the United Nations Foundation (UNF/UNFIP), the European Business Congress (EBC), as well as the Government of the Russian Federation are part of the project.

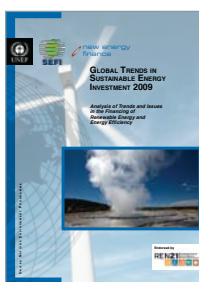
[http://www.unece.org/energy/se/pdfs/gee21/gee21\\_pub/GEE21\\_GlobalClimateChangeMitigation\\_ESE37.pdf](http://www.unece.org/energy/se/pdfs/gee21/gee21_pub/GEE21_GlobalClimateChangeMitigation_ESE37.pdf)



### Public Finance Mechanisms to Mobilise Investment in Climate Change Mitigation (2008)

With an ambition of helping scale up climate mitigation markets, this report provides an overview of the mechanisms being used today by the public sector, with a particular focus on the clean energy sector.

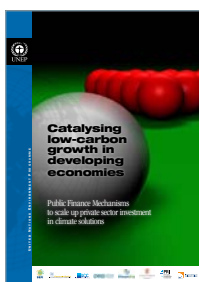
<http://www.sefalliance.org/english/publications.html>



### Global Trends in Sustainable Energy Investment 2009 Report

This annual report prepared by UNEP Sustainable Energy Finance Initiative (UNEP SEFI) and New Energy Finance provides an overview of capital flows and an analysis of the trends in sustainable energy investment activity. Also available online are the 2008 and 2007 editions.

<http://sefi.unep.org/english/home/publications.htm>



### Catalysing Low-Carbon Growth in Developing Economies (2009)

Prepared by Vivid Economics for UNEP, UNEP Finance Initiative (UNEP FI) and a number of institutional investor networks, this report examines innovative Public Finance Mechanisms to scale up private sector investment in climate solutions. A companion report presents the Case study analysis supporting key recommendations in the lead report.

<http://www.unepfi.org/publications/>



### The UNEP-SEFI Public Finance Alliance (2008)

Prepared in conjunction with the 2008 launch of the SEFI Public Finance Alliance (or “SEF Alliance”), this document supports the establishment of an international platform for managers of public and publicly backed funds dedicated to building sustainable energy markets.

<http://www.sefalliance.org/english/publications.html>



### Public Venture Capital Study (2008)

This report examines the clean energy venture financing landscape, focusing on the role of public sector-sponsored venture capital as a catalyst for private investment, filling funding gaps in the commercialization of clean technologies.

<http://www.sefalliance.org/english/publications.html>



### Investing in a Climate for Change: Engaging the Finance Sector (2008)

This report describes UNEP's engagement with the finance sector to mobilize clean energy and climate investment in developing countries.

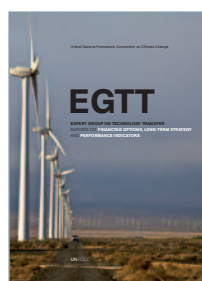
<http://www.unep.fr/energy/information/publications/>



### The materiality of climate change: How finance copes with the ticking clock—The perspective of capital markets (2009)

With an emphasis on corporate sector assets, this report brings together key findings from the investment world, describing best practices on climate change, identifying risks and opportunities, and assessing how companies deal with them.

[http://www.unepfi.org/fileadmin/documents/MatIII\\_executive\\_summary.pdf](http://www.unepfi.org/fileadmin/documents/MatIII_executive_summary.pdf)



### Reports on financing options, long-term strategy and performance indicators (2009)

The Expert Group on Technology Transfer (EGTT) prepared the following reports, which are accessible through the links below:

1. Recommendations on future financing options for enhancing the development, deployment, diffusion and transfer of technologies under the Convention;
2. Strategy paper for the long-term perspective beyond 2012, including sectoral approaches, to facilitate the development, deployment, diffusion and transfer of technologies under the Convention; and
3. Performance indicators to monitor and evaluate the effectiveness of the implementation of the technology transfer framework.

<http://unfccc.int/resource/docs/2009/sb/eng/02.pdf>

<http://unfccc.int/resource/docs/2009/sb/eng/03.pdf>

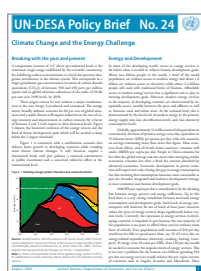
<http://unfccc.int/resource/docs/2009/sb/eng/04.pdf>

# Climate change and carbon markets

## Climate Change: Technology Development and Technology Transfer— Background Paper (2008)

The Beijing High-Level Conference on Climate Change: Technology Development and Technology Transfer was convened to support the work of the Parties to the UNFCCC, particularly with regard to the agenda item of the fourteenth session of the Conference of the Parties (COP) to the Convention in Poznan on facilitating and accelerating the development and transfer of environmentally sound technologies. UN DESA co-organized the conference with the Chinese Government, as well as the subsequent Delhi High Level International Conference on Climate Change: Technology Development and Transfer (22-23 October 2009), co-organized with the Indian Government. This background paper provided up-to-date information on the situation of technology development and technology transfer in the world, which fed into both conference debates.

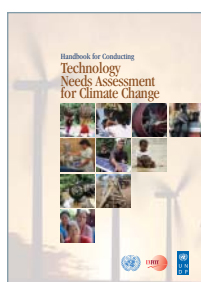
<http://www.ccchina.gov.cn/bjctc/WebSite/bjctc/UpFile/File125.pdf>



## UN DESA Policy Brief No. 24: Climate Change and the Energy Challenge (2009)

In light of current climate change and energy challenges, the brief outlines possible measures to scale up the financing of the energy transition.

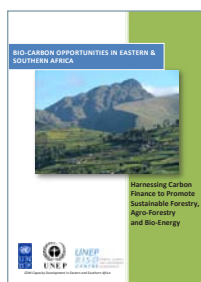
<http://www.un.org/esa/policy/policybriefs/policybrief24.pdf>



## Handbook for Conducting Technology Needs Assessment for Climate Change (2009)

This advance document of the updated Technology Needs Assessment Handbook (TNA) provides a detailed framework for the development and implementation of technology needs assessments and in particular in the development of technology programmes and strategies in developing countries.

[http://www.undp.org/climatechange/library\\_mitigation.shtml](http://www.undp.org/climatechange/library_mitigation.shtml)



## Bio-Carbon Opportunities in Eastern & Southern Africa (2009)

The review is a useful resource for policy-makers seeking an overview of forestry/bio-energy regulation and promotion, and project proponents seeking to develop CDM or voluntary market carbon projects. The chapters are organized in terms of the production cycle, beginning with forest bio-carbon and then moving into domestic bio-energy and charcoal production.

[http://www.undp.org/climatechange/library\\_mitigation.shtml](http://www.undp.org/climatechange/library_mitigation.shtml)





### Sealing an Equitable Deal in Copenhagen and Beyond by Integrating Poverty Reduction Efforts with Climate Change Goals (2009)

This brochure calls for an equitable post-2012 climate change deal that addresses climate change and poverty reduction concerns in an integrated manner. It underlines the opportunity for collaboration on practical solutions to support the poorest countries out of poverty through low-emission routes to growth, energy access and building greater resilience to climate-related natural disasters.

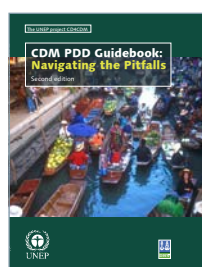
<http://www.undp.org/energy/>



### Increasing Access to the Carbon Market (2008)

This brochure provides an overview of the UNEP Risoe Centre's Energy and Carbon Finance Programme and its activities related to carbon finance and the CDM that help developing countries promote sustainable energy.

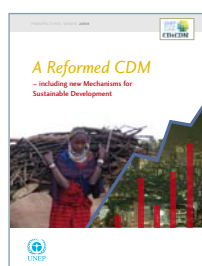
[http://www.cd4cdm.org/Other\\_publications.htm](http://www.cd4cdm.org/Other_publications.htm)



### CDM PDD Guidebook: Navigating the Pitfalls (2008)

This publication provides detailed guidance on how to avoid common pitfalls that CDM project proponents fall into when preparing CDM Project Design Documents, during the implementation of projects and when reporting emission reductions.

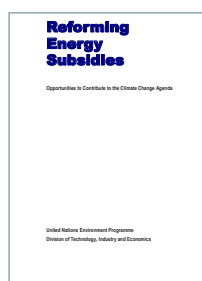
<http://www.cd4cdm.org/Guidebooks.htm>



### A Reformed CDM—Including new Mechanisms for Sustainable Development (2008)

The second of the CD4CDM perspectives series, this collection of thirteen papers considers CDM reform in a post-2012 climate regime, focusing on four issues: sustainable development and equity; institutional reform; expansion of project categories; and scaling up mitigation.

<http://www.cd4cdm.org/PerspectiveSeries.htm>



### Reforming Energy Subsidies—Opportunities to Contribute to the Climate Change Agenda (2008)

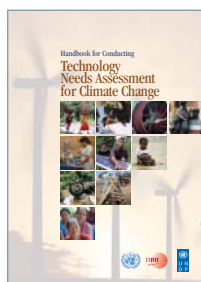
With this booklet, UNEP aims to raise awareness on the various types of energy subsidies, their size and impact and the direct relationship with climate change and sustainable development.

[http://www.unep.org/pdf/PressReleases/Reforming\\_Energy\\_Subsidies.pdf](http://www.unep.org/pdf/PressReleases/Reforming_Energy_Subsidies.pdf)

### Analysis of Technology Transfer in CDM Projects (2008)

Although the Clean Development Mechanism (CDM) does not have an explicit technology transfer mandate, it may contribute to technology transfer by financing emission reduction projects using technologies currently not available in the host countries. This report analyzes the claims of technology transfer made by project participants in the project design documents for 3,296 registered and proposed CDM projects.

<http://cdm.unfccc.int/Reference/Reports/TTreport/TTrep08.pdf>



### Handbook on conducting technology needs assessment for climate change (2009)

This updated Handbook provides a more detailed framework for the development and implementation of technology needs assessments and in particular in the development of technology programmes and strategies in developing countries. It also seeks to support capacity-building and to help with the establishment of the enabling environments for technology transfer.

[http://unfccc.int/ttclear/pdf/TNAHandbook\\_9-15-2009.pdf](http://unfccc.int/ttclear/pdf/TNAHandbook_9-15-2009.pdf)

### Climate Change and the World Bank Group: Phase I: An Evaluation of World Bank Win-Win Energy Policy Reforms (2009)

Climate change threatens to derail development, even as development pumps ever-greater quantities of carbon dioxide into an atmosphere already polluted with two centuries of Western emissions. The World Bank, with a newly-articulated Strategic Framework on Development and Climate Change, must confront these entangled threats in helping its clients to carve out a sustainable growth path. This evaluation assesses the Bank's experience with key win-win policies in the energy sector.

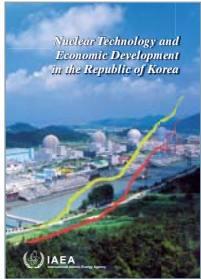
[http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item\\_id=9130704](http://publications.worldbank.org/ecommerce/catalog/product?context=drilldown&item_id=9130704)

### World Development Report 2010 : Development and Climate Change (2009)

Today's enormous development challenges are complicated by the reality of climate change—the two are inextricably linked and together demand immediate attention. Climate change threatens all countries, but particularly developing ones. Understanding what climate change means for development policy is the central aim of the World Development Report 2010. It explores how public policy can change to better help people cope with new or worsened risks, how land and water management must adapt to better protect a threatened natural environment while feeding an expanding and more prosperous population, and how energy systems will need to be transformed.

[http://publications.worldbank.org/ecommerce/catalog/product?item\\_id=9148591](http://publications.worldbank.org/ecommerce/catalog/product?item_id=9148591)

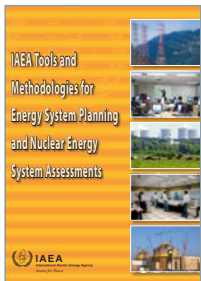
## Nuclear energy



### Nuclear Technology and Economic Development in the Republic of Korea (2009)

The study is one of a series of national studies being conducted by the IAEA in cooperation with the Ministry of Science and Technology (MOST), the Ministry of Commerce, Industry and Energy (MOCIE) and KHNP of the Republic of Korea and a national team of experts from five different institutions: the Korea Atomic Energy Research Institute (KAERI), Korea Institute of Nuclear Safety (KINS), Kyungbuk National University, Korean Energy Economics Institute (KEEI) and Daegu-Gyeongbuk Development Institute.

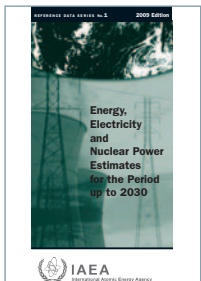
<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>



### IAEA Tools and Methodologies for Energy System Planning and Nuclear Energy System Assessments (2009)

The IAEA assists member States in capacity-building in the area of national and regional energy systems analysis and planning, so they can independently chart out their own national energy strategies. Depending on a country's indigenous resource endowment, its stage of infrastructure development and sustainable development objectives, the energy system analyses may or may not conclude that nuclear energy is part of a country's future energy mix.

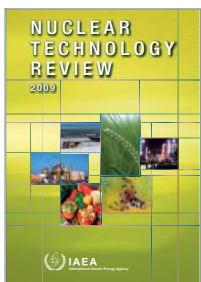
<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>



### Energy, Electricity and Nuclear Power Estimates for the Period up to 2030—RDS-1/29 (2009)

Reference Data Series No. 1 is an annual publication—currently in its twenty-ninth edition—containing estimates on energy, electricity and nuclear power trends up to the year 2030.

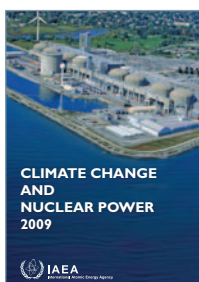
<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>



### Nuclear Technology Review 2009 (2009)

The year 2008 was paradoxical for nuclear power. Projections of future growth were revised upwards, but no new reactors were connected to the grid. It was the first year since 1955 without at least one new reactor coming on-line. There were, however, 10 construction starts, the most since 1985.

<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>



### Climate Change and Nuclear Power 2009

This booklet summarizes nuclear power's potential role in mitigating global climate change and its contribution to other development and environment challenges, as well as its current status, including the issues of cost, safety, waste management, and non-proliferation. The publication is a revised and updated version of the 2008 edition.

<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>

### Financing of New Nuclear Power Plants—IAEA Nuclear Energy Series NG-T-4.2 (2008)

In the last five years, expectations about the future expansion of nuclear power have risen significantly. However, in the decades since nuclear power's last period of rapid growth, both the utility and financial markets have evolved in important ways. For these reasons, the IAEA General Conference in 2007 requested "...the Director-General to provide in a timely manner a report on the financing of nuclear power as an option in meeting energy needs."

<http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml>

### Prospects for Nuclear Energy in the 21st Century

Special issue of the *International Journal of Global Energy Issues* Vol 30, Nos. 1/2/3/4 (2008)

This quadruple special issue presents a world tour into the future of nuclear power guided by experts who are intimately familiar with the current socioeconomic and political situation in their regions and the plausible paths forward. The special issue involves 13 regional and 6 thematic papers, all presenting balanced discussions about the benefits of and the concerns about nuclear energy.

<http://www.iaea.org/OurWork/ST/NE/Pess/publications.shtml>

<http://www.inderscience.com/browse/index.php?journalID=13&year=2008&vol=30&issue=1/2/3/4>



# ANNEX I.

## DESCRIPTION OF SELECTED PROGRAMMES

This annex provides a more in-depth overview of UN-Energy members' ongoing energy programmes during 2008-2009. The following programme descriptions are organized by cluster, namely:

Multicluster programmes	EA, RE and EE	EA and RE	RE and EE
Energy access (EA)			
Renewable energy (RE)			
Energy efficiency (EE)			

On the electronic version of this document, clicking on the cluster names above will direct the reader to the corresponding page. Within each section, programmes are grouped together by UN-Energy member.



## Multiclust er programmes

### ENERGY ACCESS, RENEWABLE ENERGY AND ENERGY EFFICIENCY

GEF STRATEGIC PROGRAMME ON ENERGY IN WEST AFRICA; Ongoing (2009-2015); US\$ 45 million of GEF funding and over US\$ 200 million of co-financing; Clusters: EA, RE and EE; UN-Energy Lead Member: UNIDO, GEF; Partners: WB, UNIDO, UNDP, UNEP, FAO, AfDB and IFAD

Overall objective	This GEF initiative aims at taking an integrated programmatic approach to promote renewable energy and energy efficiency projects at the national and regional levels in West Africa (including the ECOWAS region and additionally Burundi, Chad and Mauritania) and to deliver significant global environmental benefits in line with a GEF focal priority, i.e., climate change.
Description	The GEF Strategic Programme on Energy in West Africa (US\$ 45 million of GEF funding and over US\$ 200 million of co-financing) is one example of joint programming within UN-Energy. In a concerted effort coordinated by UNIDO, the World Bank, UNDP, UNEP, FAO, the African Development Bank and the International Fund for Agricultural Development (IFAD) are aiming to promote energy access in rural areas through renewable energy and energy efficiency projects in 18 countries. The programme builds on energy as a prerequisite for poverty reduction through income generation and productive activities, and aims to demonstrate technical and economic feasibility of renewable energy and energy efficiency technologies. Projects in the participating countries include a variety of approaches ranging from renewable energy powered minigrids, to sustainable forms of transport, or energy efficiency measures in the industry. The GEF Strategic Programme emphasizes the exchange of experiences gained in the implemented projects and the publication of lessons learned and best practices.

CAPACITY-BUILDING AND GLOBAL FORUM ACTIVITIES; Ongoing (2007-2010); Clusters: EA, RE and energy efficiency; UN-Energy Lead Member: UNIDO; Partners include: GEF, UNIDO, UNECE, UNECA, UNEP, UNDP

Overall objective	Creating awareness, exchanging knowledge and ensuring the sustainability of UNIDO's sustainable energy projects
Description	UNIDO has a strong emphasis on capacity-building, information dissemination and sharing, as well as policy support. UNIDO organizes a number of global forum activities in the areas of energy access, renewable energy and energy efficiency to bring together planners, experts, entrepreneurs, institutions and decisionmakers on a common platform in order to raise awareness, exchange current concepts and ideas, and to promote partnerships. Its capacity-building activities include institutional and regulatory, organizational, and human resource development. Some examples include: UNIDO's assistance for National Energy Development Strategies, its support for the development of CDM markets, and the Bioenergy Capacity-Building Programme or the Eco City - Eco Business Partnership Programme in India. Examples of global forum activities include: global, regional and national conferences, expert group meetings and related publications on renewable energy, on industrial energy efficiency, and in support of the development of a post-2012 framework. The following are examples of tools developed: plan of action aimed at increasing access to modern energy services and energy security for economic and social development in Africa; common strategic vision for the development of biofuels throughout the continent; a methodology to prepare national energy strategies; a bio-energy training package focusing on key industrial sectors; and a database on biomass conversion technologies. The geographic focus of UNIDO's related activities is on Africa, Asia, Latin America and Eastern Europe.

STRENGTHENING NATIONAL POLICY FRAMEWORKS FOR ENERGY; Ongoing; Total ongoing project portfolio of about US\$ 0.5 billion; Clusters: EA, RE and EE; UN-Energy Lead Member: UNDP; Partners: National Governments, United Nations Country teams, national development partners (bilateral and multilateral partners of National Governments)

Overall objective	To strengthen capacities of developing country governments to incorporate national energy services needs, and especially those of the poor, in national development strategies/sectoral policies.
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Description:	<p>This UNDP programme works to incorporate energy services needs, and particularly the needs of the poor, into policy frameworks including national development frameworks, processes and strategies. It aims to integrate energy poverty links into national development strategies by facilitating multistakeholder dialogue to promote informed decisions on national energy policies, national energy visions/targets, and institutional and financial options to respond to energy poverty. To support the mainstreaming of energy access considerations in MDG-based national development frameworks and budgetary projections, UNDP works closely with developing country governments, with the ultimate goal of improving access to reliable and affordable energy services which are paramount to the achievement of the MDGs. Since the adoption of the latter, over half of UNDP's energy-related projects and financing have dealt with expanding access to modern energy services, with a particular focus on LDCs.</p> <p>Weblink: <a href="http://www.undp.org/energy">www.undp.org/energy</a></p>
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CATALYSING FINANCING THROUGH MARKET CREATION/TRANSFORMATION FOR SUSTAINABLE ENERGY PROGRAMMES, PARTICULARLY RENEABLE ENERGY AND ENERGY EFFICIENCY INITIATIVES; Ongoing; Total ongoing project portfolio of about US\$ 1.5 billion; Clusters: EA, RE and EE; UN-Energy Lead Member: UNDP; Partners: National Governments, GEF, United Nations Country Teams, national development partners (bilateral and multilateral partners of National Governments)

Overall objective	To catalyse financing through market creation or transformation for sustainable energy programmes through renewable energy and energy efficiency initiatives.
Description	<p>This programme involves catalysing finance by creating the necessary market conditions and capacity for countries to transition to more sustainable energy systems, particularly through renewable energy and energy efficiency initiatives. This work is being done in response to the tremendous need for investments by developing countries in their energy sectors just to keep up with business-as-usual and the achievement of the MDGs. UNDP's GEF programme's grants, together with the leveraged co-funding, represent 80 per cent of UNDP's total energy-related portfolio in this area of priority, with a heavy geographical concentration in middle-income and emerging economies. While some of this work is related to expanding access to energy, the majority of projects deal with promoting more environmentally sustainable energy systems—through improved energy efficiency and adoption of renewable energy technologies—and addressing climate-related energy challenges. The MDG Carbon Facility, announced in December of 2005, is UNDP's contribution to making strides in countries' transition to a more sustainable energy future. Its objective is to bridge the gap between the world of carbon and the world of MDGs. As such, UNDP is working with developing countries and economies in transition to explore carbon financing opportunities that would help them accelerate the transition to low-carbon energy systems.</p> <p>Weblink: <a href="http://www.undp.org/gef">www.undp.org/gef</a></p>

ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAMME (ESMAP); Ongoing (from 1983); ESMAP's total budget for the Strategic Business Plan (2008–13) is US\$ 55 million. In fiscal 2009, US\$ 13.9 million from donors (up US\$ 0.6 million from fiscal 2008) and disbursing US\$ 14.9 million (up US\$ 2.5 million from fiscal 2008); Clusters: EA, RE and EE; UN-Energy Lead Member: WB; Partners: UNDP, Consultative Group comprised of official bilateral donors (11 representing Australia, Austria, Denmark, Finland, France, Germany, Iceland, the Netherlands, Norway, Sweden and the United Kingdom) and multilateral institutions (WBG).

Overall objective	To help its client countries increase their know-how and institutional capacity in energy sector management to achieve environmentally sustainable energy solutions for poverty reduction and economic growth.
Description	<p>ESMAP is a global, multidonor technical assistance programme that is administered by the World Bank Group and governed by a Consultative Group of donors that meets annually. Under its new Strategic Business Plan (2008–2013) and alongside its overall mission/objective, ESMAP is extending its engagement with client countries to encompass the nexus of energy security, energy access and climate change, mirroring the changing landscape of global energy challenges. The programme focuses “upstream” through three core functions: think tank, knowledge clearinghouse and operational leveraging—all aimed at helping client countries make better informed choices, enhance</p>

capacity and adopt cutting-edge solutions. Under its new Strategic Business Plan, ESMAP activities are programmatically structured into four main sub-components, namely : Energy Assessments and Strategy Programmes (Country Energy Sector Vulnerability Assessments; Low Carbon Growth Country Studies); Pro-poor Energy Access Technical Assistance Programme (Energy & SME Development, Rural Electrification Strategies, Gender and Energy Development); Renewable Energy Market Transformation Initiative (Country Renewable Energy Market Transformation Strategies; Renewable Energy Technology Deployment Roadmaps); and Energy Efficient Cities Initiative. ESMAP is active globally and since its creation, it has been operational in some 100 different countries through approximately 750 activities covering a broad range of energy issues. One of its future challenges, as it moves forward, is to more proactively assist client countries to acquire fresh ideas and insights on how to reduce the vulnerability of their energy sectors to increasing climate variability, while transitioning to a low carbon development path that can support poverty reduction and economic growth.

Weblink: [www.esmap.org/](http://www.esmap.org/)

CLEAN TECHNOLOGY FUND (CTF); Ongoing (from 2008); Total amount pledged by 13 countries to the CIF Trust Funds (CTF and SCF) was US\$ eq. 6.3 billion as of January 31, 2010; Clusters: EA, RE and EE; UN-Energy Lead Member: WB; Partners: CTF Trust Fund Committee is composed of: current contributing countries (Australia, France, Germany, Japan, Spain, Sweden, United Kingdom, United States), current recipient countries (Brazil, China, Egypt, India, Mexico, Morocco, South Africa, Turkey), WB and MDBs; Other stakeholders include: United Nations and United Nations agencies, the Adaptation Fund, Bilateral Development Agencies, NGOs, and Scientific and Technical Experts. Observers: CSO representatives, Private sector representatives, the GEF, UNFCCC, UNDP, UNEP, contributor countries other than member countries and recipient countries for which the CTF Trust Fund Committee has approved any investment plan, programme or project.

Overall objective	The CTF, one of two Climate Investment Funds, aims to promote scaled-up financing for demonstration, deployment and transfer of low-carbon technologies with significant potential for long-term greenhouse gas emissions savings.
Description	To achieve its objective, the CTF work programme aims to finance transformational actions by: providing positive incentives, through public and private sector investments, for the demonstration of low carbon development and mitigation of GHG emissions; scaling-up development through funding low carbon programmes and projects that are embedded in national plans and strategies so that the diffusion and transfer of clean technologies is accelerated; realizing environmental and social co-benefits so as to illustrate the potential held by low-carbon technologies to contribute to the goals of sustainable development and the MDGs; participating in international cooperation on climate change and supporting agreement on the future of the climate change regime; utilizing the skills and capabilities of the Multilateral Development Banks (MDBs) to raise and deliver new and additional resources (these will include official and concessional funding, at significant scale); and finally, sharing experiences and lessons learned while responding to the challenges of climate change. In achieving its work programme CTF's work is centered in the following three sectors: the power sector: renewable energy and highly efficient technologies to reduce carbon intensity; the transport sector: efficiency and modal shifts; the energy efficiency sector: buildings, industry and agriculture. The CTF Trust Fund committee has approved 13 investment plans summing to US\$ 4.35 billion, which leverage US\$ 36 billion from recipient governments, private sector, bilateral development agencies and banks as well as multilateral development banks: Colombia, Egypt, Indonesia, Kazakhstan, Mexico, Morocco, Philippines, South Africa, Thailand, Turkey, Ukraine and Viet Nam. A regional programme for scaling up concentrated solar power in the Middle East and North Africa has also been approved.
	Weblink: <a href="http://www.climateinvestmentfunds.org/cif/node/2">www.climateinvestmentfunds.org/cif/node/2</a>

ASIA SUSTAINABLE AND ALTERNATIVE ENERGY PROGRAMME (ASTAE); Ongoing (from 1992); ASTAE's total budget for 2007-2010 is US\$ 9 million and its upcoming business plan targets a minimum of US\$ 12 million for 2010-2012; Clusters: EA, RE, and EE; UN-Energy Lead Member: WB; Partners: The Netherlands and Sweden are active donors. Other partners include: the Consultative Group comprised of official bilateral donors (Australia, Austria, Denmark, Finland, France, Germany, Iceland, Norway, and the United Kingdom).

Overall objective	To scale-up the use of sustainable energy options in Asia to protect the environment and reduce energy poverty.
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Description:	<p>ASTAE was created in 1992 with a mandate to scale-up the use of renewable energy, to improve energy efficiency and increase access to energy to reduce poverty. ASTAE is operation-driven and its support can be characterized by three functions. The first one is: innovative investment delivery mechanisms, by supporting design, build-up, and piloting of new investment mechanisms; or by helping to introduce existing mechanisms and tailoring them to the specific context of a new host country. Recent examples of such mechanisms include developing on-lending guidelines for energy efficiency project, structuring on-lending funds for renewable energy development, or transferring business models between neighbouring countries. Innovative financing delivery mechanisms can also be characterized by the introduction of risk guarantees to leverage private sector financing. The second is: institutional and regulatory frameworks that provide the enabling environment for the successful scaling-up of investment projects. Improved institutions, policies, and better financial and regulatory frameworks help attract capital from international financial institutions, export credit agencies, and from the private sector. Recent work funded by ASTAE includes high-level policy dialogue and advisory support, the development of pricing policy and regulation to support access, and the design and implementation of standards to support energy efficiency. Lastly, the third function is: capacity-building and knowledge sharing. As a result of its successful contributions to project and programme design and implementation, ASTAE is able to draw from a pool of expertise to provide just-in-time advice to leverage new project development in the region. Recent support included training seminars for officials and policymakers; south-south technical workshops; the development of knowledge products, technical guides, methodologies and atlases; dialogue facilitation with non-governmental organizations; and donor coordination.</p> <p>Weblink: <a href="http://www.worldbank.org/astae">www.worldbank.org/astae</a></p>
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TT:CLEAR TECHNOLOGY INFORMATION SYSTEM/TECHNOLOGY TRANSFER CLEARING HOUSE; Clusters: EA, RE and EE; UN-Energy Lead Member: UNFCCC; Partners: Not listed.

Overall objective	To improve the flow of, access to and quality of information relating to the development and transfer of environmentally sound technologies (ESTs).
Description	<p>In order to meet this objective, the Secretariat is developing a technology information system (TT:CLEAR) that includes an inventory of environmentally friendly technologies and technology development and transfer projects, as well as a technology web page. TT:CLEAR also provides access to national Technology Needs Assessment (TNA) reports, National Adaptation Programmes of Actions (NAPAs) and National Communications to the UNFCCC, all of which can provide valuable insights for the development of TNAs and NAPAs by countries that have yet to complete their reports, as well as for concepts that can be further developed into projects and activities. TT:CLEAR enables users to find information on: technology transfer projects and programmes; case studies of successful technology transfer; environmentally sound technologies and know-how; organizations and experts; methods, models and tools to assess mitigation and adaptation options and strategies; relevant Internet sites for technology transfer; and ongoing work of the Parties and the Expert Group on Technology Transfer (EGTT) such as issues under negotiation, documents and meetings, and implementation of the technology framework.</p> <p>Weblink: <a href="http://unfccc.int/ttclear/jsp/index.jsp">http://unfccc.int/ttclear/jsp/index.jsp</a></p>

ANALYSIS FOR SUSTAINABLE ENERGY DEVELOPMENT; Ongoing; About US\$ 6.0 million (including US\$ 3.5 million of the Technical Cooperation Fund (TCF)); Clusters: EA, RE and EE; UN-Energy Lead Member: IAEA; Partners: IAEA member States

Overall objective	To enhance the capacity of member States to perform their own analyses regarding electricity and energy system development, energy investment planning and energy-environment policy formulation, and to assist member States in planning for the introduction of nuclear energy or help keep the nuclear option open for member States who wish to retain it.
Description	<p>In order to carry out its overall objective, the Analysis for Sustainable Energy Development work programme is rooted in research, tool/model development, technical assistance and focused analysis. Specifically, through the programme, the IAEA develops and disseminates analytical tools (energy models) and information on energy, electricity and nuclear power. Training and technical assistance is provided to member States to build local capabilities in energy systems analysis and planning. Conducting 3-E (energy, economic and environmental) analysis of energy technologies with a focus on</p>

competitive markets, financing, environmental impacts and sustainable energy development is also at the core of the programme; analyses of opportunities and constraints for enhancing industrial energy efficiency are included as well. Lastly, research is conducted and input provided for international negotiations on climate change and sustainable development. Models are developed and capacity-building is provided to assess the linkages between climate, land use, energy and water in the context of national sustainable development strategies. Overall, member States should be better informed and have an enhanced expertise for conducting energy studies and evaluation energy options. Member States should also have a better understanding of the role of nuclear power in managing climate change (mitigation and adaptation), energy supply security, local air pollution and other energy-development-environment challenges. The regional geographic focus is on: Africa, Asia, Latin America and Eastern Europe.

Weblink: [www.iaea.org/OurWork/ST/NE/Pess/index.shtml](http://www.iaea.org/OurWork/ST/NE/Pess/index.shtml)

## ENERGY ACCESS AND RENEWABLE ENERGY

DEVELOPING AND STRENGTHENING NATIONAL AND LOCAL CAPACITY TO EXPAND ACCESS TO ENERGY SERVICES FOR THE POOR; Ongoing; Total on-going project portfolio of about US\$ 0.5 billion; Clusters: EA and RE; UN-Energy Lead Member: UNDP; Partners: National Governments, GEF, United Nations Country Teams, national development partners (bilateral and multilateral partners of National Governments)

Overall objective	To develop and strengthen institutional capacity of developing country Governments and institutions to deliver modern energy services and particularly at the local level.
Description	This UNDP programme seeks to integrate energy access in national development frameworks and develop strategies and policies to address energy access challenges, particularly for the poor. In so doing, it works to develop policy options that tackle challenges for the poor in energy access matters. The programme facilitates multisectoral and multistakeholder dialogue to produce informed decisions on national energy targets, policies and institutional options to respond to energy access challenges. Additionally, it aims to strengthen national and subnational level capacities to support the planning and implementation of expanding energy services at the local level, including the capacity to codify lessons and to inform policymaking processes to support energy services delivery. It strengthens the level of application of innovative energy service delivery mechanisms to up-scale, expand and sustain service delivery at the local level. The programme is being implemented globally.

Weblink: [www.undp.org/](http://www.undp.org/)

LIQUID BIOFUELS FOR TRANSPORTATION IN LATIN AMERICA AND THE CARIBBEAN; Starting Dec. 2008; Clusters: EA and RE; UN-Energy Lead Member: ECLAC; Partners: ECLAC, Brazilian Government

Overall objective	To provide a mixture of up to 10 per cent for both ethanol and biodiesel (E10 and B10) for transportation in the region.
Description	The programme takes into account the different approaches regarding the estimation of potential production of liquid biofuels from energy crops, namely: the percentage of current mix of bioethanol and biodiesel from countries of Latin America; the land surface that could be cultivate in every country for a mixture of 5 per cent bioethanol (E5) and biodiesel (B5) by volume in the total consumption of petrol and diesel in the country; and the land surface that can be expanded taking into account the agro-ecological and climatic conditions of each country. Main working areas of the programme include: energy and carbon finance; cleaner energy development; formulation of regional policies and strategies; regional cooperation and integration; energy security; ethanol production capacity-building; and mixture of up to 10 per cent for both ethanol and biodiesel in transport fuel. The geographic focus is in Latin America and the Caribbean.

Weblink: [www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/36417/P36417.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xslt](http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/36417/P36417.xml&xsl=/drni/tpl/p9f.xsl&base=/drni/tpl/top-bottom.xslt)



BIOENERGY AND FOOD SECURITY; Continuous; About US\$ 10 million as of March 2010 Clusters: EA and RE ; UN-Energy Lead Member: FAO; Partners: FAO, IFPRI, Federal Ministry of Food, Agriculture and Consumer Protection, Government of Germany, relevant authorities and a team in Peru, Thailand and United Republic of Tanzania and many international partners interested in improving the international work on bioenergy-food security links.

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Overall objective	The programme aims to support the process of informed decision-making in the complex interactions of bioenergy development and food security.
Description	<p>As over 1 billion people in the world still suffer from hunger and the development of biofuels continues, there are many opportunities and risks affecting the capacity of men and women to have physical, social and economic access to sufficient amounts of safe and nutritious food that meets their dietary needs. There is growing international consensus that the increased demand of food crop feedstocks for the development of liquid biofuels for transport has contributed to recent commodity price hikes putting a further strain on food security. Rising food prices are good news for farmers selling the commodity, however, only a small minority of poor rural households, including farming households, have surplus to sell so therefore rising prices are an immediate threat to food security. If in the medium term a continued growth in biofuel demand will help reverse the trend of falling commodity prices experienced over the last few decades, this could help revitalize the agricultural sector. New demand can bring about new income opportunities for poor farmers and provide incentives for intensification, leading to increased food production and improved livelihoods, as long as production methods are sustainable. The work programme is focused in two areas. First, there is a focus on developing a solid analytical framework on bioenergy-food security links as a policy decision tool (BEFS) that is based on work at the international level and in three developing countries (i.e., Peru, Thailand and United Republic of Tanzania). Second, the focus lies in developing a set of internationally agreed upon good practices, policy measures to promote them, and criteria and indicators to monitor impacts as regards to bioenergy-food security linkages—Bioenergy and Food security Criteria and Indicators (BEFCI).</p> <p>Weblink: <a href="http://www.fao.org/bioenergy/52179/en/">www.fao.org/bioenergy/52179/en/</a></p>

RURAL DEVELOPMENT; Continuous; Currently about US\$ 200,000 but could reach about US\$ 1.5 million at the end of 2010; Clusters: EA and RE; UN-Energy Lead Member: FAO; Partners: FAO and international partners interested in improving the rural development through sustainable bioenergy.

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Overall objective	To promote small-scale bioenergy production.
Description	<p>Appropriate production, trade and use of modern bioenergy sources can contribute towards strengthening rural livelihoods by creating employment or alternative income sources for food insecure farmers, hence improving levels of food security. For example, the production of bio-electricity has the highest employment-creation potential among renewable energy options. The challenges for small-scale farmers to participate in growing commercial bioenergy markets mirror those of agricultural cash crop markets. Small-scale bioenergy should not focus on the geographical scale of the bioenergy system or the scale of production; rather, it should be defined by two other criteria, i.e., that small-scale farmers are adequately involved in decisions and benefits along the value chain, and that rural communities benefit from the bioenergy development initiative. This broader definition allows for the inclusion of cooperatives and out-grower schemes, whereby small-scale farmers supply the feedstock to a large processing plant, thereby reducing risks of land losses and guaranteeing an additional source of revenues to local farmers. Another advantage of this broader scope is that collective action by a large number of small farmers can deliver big results, i.e., “small scale” does not always mean “small impact.” Consequently, the work programme aims to promote production schemes based on normative work and country experience in Africa, Latin America and Asia. The second main component of the programme is to carry out technical work on integrated food energy systems (IFES) potential and experience for small-scale farmers and rural communities in developing countries.</p> <p>Weblink: <a href="http://www.fao.org/bioenergy/52180/en/">www.fao.org/bioenergy/52180/en/</a></p>

POLICY FRAMEWORK; Continuous; Global Bioenergy Partnership (GBEP) budget; Clusters: EA and RE; UN-Energy Lead Member: FAO; Partners: Not listed.

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Overall objective	The objective of the programme is to provide advisory services to countries at both national and local levels for the design and implementation of bioenergy policies, strategies, programmes and projects involving agro-industries and other relevant rural energy partners.
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Description	<p>The expansion of bioenergy development can help make the case for increased support towards the agricultural sector of many countries through the strengthening of its institutions and policies. This is the case because many opportunities and challenges associated with sustainable bioenergy production, and especially those related to the production of feedstock for liquid biofuels, are the same as those related to agricultural expansion and intensification. Therefore, measures to ensure that bioenergy production is conducive to reducing poverty and hunger should include, among other aspects, policy support for the participation of small-scale farmers and women.</p> <p>In addition, environmental regulations are required to guarantee that the impacts of bioenergy production on land, biodiversity, water and soil are minimized. In some cases, models already exist for mitigating the risks involved with large-scale biomass production, especially related to feedstock for liquid biofuel production. Internationally agreed upon standards and other certifications models for production, conversion, use and trade of bioenergy systems that protect both the environment and society are also essential as the use of biomass for energy increases. Efforts are currently being made to converge existing programmes and formulate internationally agreed upon criteria on biomass for bioenergy production that are flexible enough to take into consideration the diverse environmental and socio-economic conditions of the agricultural, energy and environmental sector of each country. Within this context the Policy Framework programme focuses on analytical work and tools to assist policy makers in making sound decisions (through BEFS, BEFCI and GBEP), it actively promotes international dialogue on sustainable bioenergy (through BEFCI and GBEP), and actively supports good policies and strategies on sustainable bioenergy in selected countries (Congo, Peru, Thailand and United Republic of Tanzania).</p> <p>Weblink: <a href="http://www.fao.org/bioenergy/52181/en/">www.fao.org/bioenergy/52181/en/</a></p>
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TECHNOLOGY; Continuous; Clusters: EA and RE; UN-Energy Lead Member: FAO; Partners: Not listed.

Overall objective	<p>The objective of the Technology programme is to provide advisory services and implementation support to countries at both national and local levels in the development of the appropriate biomass processing technologies and to inform and educate participating developing countries about the role, opportunities and challenges of agricultural biotechnologies for the production of bioenergy.</p>
Description	<p>Many processes are available for producing bioenergy. These range from conventional uses of biomass such as burning of sticks and branches to generate energy for cooking and heating, to modern production processes like converting sugar and starch crops to ethanol, to even more advanced technologies such as gasification of wood chips for transport fuel production. How a fuel is produced from biomass materials can depend on a variety of factors, including the feedstock that is been used, the associated biomass conversion technology that is applied and the energy carrier that is desired. FAO's Technology work programme is centered around the following components: Feedstock Production and Processing; First Generation versus Second Generation Technologies; Research and Development in Bioenergy Crops and Conversion Technology; and, Biotechnology applied to bioenergy production.</p> <p>Weblink: <a href="http://www.fao.org/bioenergy/52182/en/">www.fao.org/bioenergy/52182/en/</a></p>

UNCTAD BIOFUELS INITIATIVE; Ongoing (since June 2005); US\$ 350,000; Clusters: EA and RE; UN-Energy Lead Member: UNCTAD; Partners: United Nations Foundation, UNFIP, Government of Norway, Government of Italy (donors), GBEP and several United Nations agencies and departments.

Overall objective	<p>To provide member countries with economic, legal and trade policy analysis, capacity-building programmes and consensus building tools and to help assess the potential of specific developing countries to engage in production, use and trade of biofuels.</p>
Description	<p>This initiative/programme examines the possible trade opportunities and impacts of establishing or expanding the biofuels sector on domestic energy policies, food security, environmental preservation, job creation and rural development. It deals with trade flows, tariff regimes, market access and market entry issues affecting international trade in biofuels. The initiative supports the development of national biofuels strategies according to specific national circumstances and needs while sharing successful lessons and also illustrating the problems encountered by developed and developing countries alike in dealing with the technical, political and economic aspects of the biofuels sector. Specifically, the work programme is focused in the following areas: (a) analytical work (production of a large number of studies that address different facets of the biofuels sector); (b) consensus building (organization of several intergovernmental meetings and technical briefings in Geneva and in developing countries to discuss specific issues related</p>

to biofuels, for example market trends, technological developments, sustainability certification, links with climate change strategies and policies); and, (c) Technical cooperation (conducting of several technical cooperation and capacity-building activities, including a country-study in Guatemala). The BioFuels Initiative has been successful in enhancing developing country understanding of the emerging biofuels sector, of its risks and opportunities; of the tariff and non-tariff measures applying to it, and of the provisions included in the WTO agreements and in regional and preferential trade agreements that are of relevance. The current geographic focus of the programme is in Guatemala and Mexico.

Weblink: [www.unctad.org/Templates/Page.asp?intItemID=4344&lang=1](http://www.unctad.org/Templates/Page.asp?intItemID=4344&lang=1)

## RENEWABLE ENERGY AND ENERGY EFFICIENCY

SUSTAINABLE ENERGY IN SMALL ISLAND DEVELOPING STATES (SIDS); Ongoing (2003-2010); US\$ 8 million Clusters: RE and EE; UN-Energy Lead Member: UNIDO; Partners: GEF, UNEP, UNF/UNFIP

Overall objective	The objective of the UNIDO's SIDS energy programme is to promote and support SIDS efforts in their transition from energy consumption and supply patterns based on conventional fossil fuels towards more sustainable energy development based on environmentally sound renewable energy technologies and more efficient use of energy.
Description	The UNIDO Energy and Climate Change programme for SIDS has mainly developed along two convergent lines: (a) support the development of sustainable energy policies; and (b) assistance for the development and implementation of renewable energy and energy efficiency projects. UNIDO's primary strategy for promoting sustainable energy projects in SIDS is composed of the following work areas: demonstration of the economic and technological viability of renewable energy and energy efficiency technologies/measures through pilot projects; capacity-building of key institutions and assistance for the creation of an enabling environment including appropriate policies, Research and Development (R&D) linkages, and capacity-building through training for large-scale adoption and replication, and information dissemination; and, promotion of south-south cooperation via exchange of information between entrepreneurs, managers, researchers and planners from SIDS and other developing countries focusing on technology transfer and training. Activities in the Caribbean have included the elaboration of national energy plans for a number of Caribbean island states but also different support measures for renewable energy technology applications. Activities in the Pacific are still in the earlier stages with plans for regional cooperation in the area of creating a "solar energy-powered small business model", the assistance with quality control of coconut oil and the assistance in the implementation of a small wind power project. UNIDO is also working on a GEF project in Cuba focusing on the implementation of minigrids powered by bioenergy and wind power.

ENERGY AND CARBON FINANCE; Continuous; Clusters: RE and EE; UN-Energy Lead Member: UNEP; Partners: Not listed.

Overall objective	To develop new approaches to financing sustainable energy in developing countries while reducing barriers to building sustainable energy investment portfolios.
Description	The Energy and Carbon Finance programme have made possible UNEP's implementation of different financial catalysts (seed financing and enterprise development, credit enhancements and financier advisory support services) aimed at helping financiers build sustainable energy investment portfolios. UNEP's Finance Initiatives (FI) have brought together 170 banks and 85 insurers committed to integrating environmental considerations into their internal and external business activities and asset management. In collaboration with the Basel Agency for Sustainable Energy (BASE), a UNEP Collaborating Centre, UNEP works to facilitate and promote investment in the renewable energy and efficiency sector. The Sustainable Energy Finance Initiative (SEFI)—developed by UNEP Energy, the UNEP Finance Initiative and BASE—supports the growth of a new sustainable energy finance community by bringing together financiers and engaging them in sustainable energy finance field. The main areas of work of the Energy and Carbon Finance programme are focused in: Industry Engagement; Seed Capital; Loan Programmes; Carbon Finance; Transaction Support; and Risk Management. Weblink: <a href="http://www.unep.fr/energy/finance/activities">www.unep.fr/energy/finance/activities</a>

TRANSPORT; Continuous; Clusters: RE and EE; UN-Energy Lead Member: UNEP; Partners: Not listed.

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Overall objective	To promote the integration of environmental considerations into transport-related decisions at all levels of decision-making, ranging from global to personal, and to bring about a shift to both transport systems and approaches to mobility that are less disruptive to the environment.
Description	The main areas of work for UNEP include: the improvement of urban planning to promote inter-modality; the diffusion of cleaner technologies and the deployment of relevant policies that drive them to reduce environmental impacts; and the introduction of price signals that capture the full costs of different modes of transport. Weblink: <a href="http://www.unep.fr/energy/transport/">www.unep.fr/energy/transport/</a>

CLEAN DEVELOPMENT MECHANISM (CDM); Ongoing (starting in 2006); Clusters: RE and EE; UN-Energy Lead Member: UNFCCC; Partners: Not listed.

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Overall objective	To stimulate, through the CDM-approved projects, sustainable development and emission reductions (or emission removal), while giving industrialized countries some flexibility in how they meet their emission reduction targets.
Description	The CDM allows emission-reduction (or emission removal) projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one ton of CO <sub>2</sub> . The mechanism is seen by many as a trailblazer as it is the first global, environmental investment and credit scheme of its kind, providing a standardized emissions offset instrument, CERs. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol. The projects must qualify through a rigorous and public registration and issuance process designed to ensure real, measurable and verifiable emission reductions that are additional to what would have occurred without the project. The mechanism is overseen by the CDM Executive Board and answerable ultimately to the countries that have ratified the Kyoto Protocol. In order to be considered for registration, a project must first be approved by the Designated National Authorities (DNA). As of March 2010, there has been over 2,100 registered projects in about 60 countries with continued growth in 2009. Ultimately, CDM is anticipated to produce CERs amounting to more than 2.9 billion tons of CO <sub>2</sub> equivalent in the first commitment period of the Kyoto Protocol, 2008–2012. Weblink: <a href="http://cdm.unfccc.int/index.html">http://cdm.unfccc.int/index.html</a>

JOINT IMPLEMENTATION MECHANISM (JI); Ongoing (starting in 2006); Clusters: RE and EE; UN-Energy Lead Member: UNFCCC; Partners: Not listed.

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Overall objective	To offer Parties, through the transfer and/or acquisition of emission reduction units (ERUs), a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host Party benefits from foreign investment and technology transfer.
Description	Specifically, the mechanism known as “joint implementation” as defined in the Kyoto Protocol, allows a country with an emission reduction or limitation commitment under the Kyoto Protocol (Annex B Party) to earn ERUs from an emission-reduction or emission removal project in another Annex B Party, each equivalent to one ton of CO <sub>2</sub> , which can then be counted towards meeting its Kyoto target. For the transfer and/or acquisition of ERUs, there are two possible procedures, Track 1 and Track 2. For example, if a host Party meets all of the eligibility requirements to transfer and/or acquire ERUs, it may verify emission reductions or enhancements of removals from a JI project as being additional to any that would otherwise occur. Upon such verification, the host Party may issue the appropriate quantity of ERUs. This procedure is commonly referred to as the “Track 1 procedure.” If a host Party does not meet all, but only a limited set of eligibility requirements, verification of emission reductions or enhancements of removals as being additional has to be done through the verification procedure under the Joint Implementation Supervisory Committee (JISC). Under this so-called “Track 2” procedure, an independent entity accredited by the JISC has to determine whether the relevant requirements have been met before the host Party can issue and transfer ERUs. As of the beginning of 2010, around 150 JI projects have been designated among Annex B Parties. Weblink: <a href="http://ji.unfccc.int/index.html">http://ji.unfccc.int/index.html</a>

CITIES IN CLIMATE CHANGE INITIATIVE; Ongoing; Clusters: RE and EE; UN-Energy Lead Member: UN-HABITAT; Partners: United Nations System partners, governments at all levels, NGOs, communities, institutions of research and higher learning, capacity-building and training agencies, land and property organizations, the private sector, etc

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Overall objective	The Initiative seeks to enhance climate change mitigation and climate change preparedness of cities in developing and least developed countries. It also seeks to provide support towards the development and implementation of pro-poor and innovative climate change policies and strategies; and to develop tools for enhancing capacities of local governments.
Description	Cities worldwide continue to commit themselves to meet or even exceed GHG emission targets, set by national and sub-national governments. As cities can address climate change and pressing local environmental problems (e.g., air pollution, waste and transport) at the same time the challenge remains to link climate change to local environmental and developmental priorities. The provision of alternative sources of energy may be more financially viable than relying on fossil fuels, and energy savings in construction, private and industrial energy use are good for the local/global environment and often pay for themselves. Therefore, a better planned city with reduced urban sprawl and better public transport can reduce a city's carbon footprint and can also be more efficient and livable for its citizens as well as more attractive for business investments. The goals of the programme are: to promote active climate change collaboration of local governments and their associations in global, regional and national networks; to enhance policy dialogue so that climate change is firmly established on the agenda of local governments; to support local governments in implementing the necessary changes; and to foster the implementation of awareness, education and capacity-building strategies in close collaboration with a wide range of partners. Weblink: <a href="http://www.unhabitat.org/content.asp?typeid=19&amp;catid=570&amp;cid=6003">www.unhabitat.org/content.asp?typeid=19&amp;catid=570&amp;cid=6003</a>

PROMOTING ENERGY EFFICIENCY IN BUILDINGS IN EAST AFRICA; Jan. 2009 – Jan. 2014; US\$ 9.25 million; Clusters: RE and EE; UN-Energy Lead Member: UN-HABITAT; Partners: UNEP, GEF, WB and the national governments of Kenya, Uganda, United Republic of Tanzania, Rwanda and Burundi

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Overall objective	Overall objectives of this programme are: to mainstream energy efficiency measures into housing policies, building codes and building practices in East Africa and; to achieve considerable avoidance of CO <sub>2</sub> emissions as a result of improved building practices.
Description	Buildings make up a large proportion of energy consumption and eventual energy shortages can be addressed by reducing electricity consumption through demand management and energy efficiency measures. This can be facilitated by promoting energy saving measures through awareness campaigns and sustainable urban energy policies; by encouraging the development of green buildings through fiscal and financial incentives; by giving regional awards to energy efficient buildings; and, by developing regulations that incorporate energy efficiency into design standards and codes in order to facilitate adoption of energy friendly technologies and wise energy use. This initiative involves: initiating energy consumption benchmarks in buildings; awareness-raising and capacity-building in energy-efficiency practices in existing and new buildings; mainstreaming energy efficiency into national housing policies and developing energy conservation building codes for each climatic zone; developing energy-efficiency strategies and guidelines for each climatic zone of the region; developing appropriate financial and market-based mechanisms to promote energy efficiency in buildings; incorporating energy efficiency measures in all ongoing government housing projects and donor-funded housing projects, and encouraging such practices in the private sector; and creating The African Energy Efficient Buildings Award. Weblink: TBA

STRATEGIES TO ADOPT A LOW CARBON DEVELOPMENT PATH; Ongoing; Clusters: EA, RE and EE; UN-Energy Lead Member: UNESCAP; Partners: China, United Kingdom, Energy Research Institute of the National Development and Reform Commission, WWF, United Kingdom Department for International Development (DFID) and CITYNET

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Overall objective	To contribute to the strengthening of an integrated policy framework on low carbon development through the development of strategies that enable countries to make a paradigm shift that meets developmental needs in a sustainable manner.
Description	Within the scope of this objective and in support of the outcome of the theme study on energy security and sustainable development, and Green Growth, ESCAP had organized and serviced the Asia-Pacific

Forum on Low Carbon Economy (June 2009), jointly with the Energy Research Institute of the National Development and Reform Commission, China, World Wide Fund for Nature (WWF), Department for International Development (DFID), United Kingdom and CITYNET. The main objective of the Forum was to assist developing countries in Asia and the Pacific in developing a clearer vision and strategy for moving towards a low carbon path to enhance energy security, climate change actions and poverty reduction. The Forum focused on discussing the benefits, opportunities as well as challenges presented in adopting a low carbon development path, considered the implications of possible outcomes of the post-2012 climate change regime, and recommended a series of policy options and priority areas, including effective regulatory arrangement, innovative financing mechanisms, and supporting instruments for R&D and widespread applications of clean energy technologies at both national and municipality levels.

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SCALING UP THE UTILIZATION OF RENEWABLE ENERGY WITH A FOCUS ON WIDENING ACCESS TO ENERGY SERVICES IN THE CONTEXT OF THE MDGs; *Ongoing*; Clusters: **EA and RE**; UN-Energy Lead Member: **UNESCAP**

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Overall objective	To contribute to developing policies and strengthening the capacity of policymakers, civil society and the private sector for widening access to energy services.
Description	Within the above named objective, UNESCAP's work programme includes a broad range of projects, initiatives and approaches. It is centered around: public-private partnership building and mobilization of private sector support; capacity-building, training and knowledge dissemination; integration of energy and rural development policies in national strategies/programmes; and fostering enabling environments and ownership at the community levels. Specifically, the Pro-poor public private partnership (5P) project "Access to Sustainable and Affordable Energy/Indonesia" intended to mobilize private sector involvement through public private partnerships in providing sustainable electricity supply to the poor and financial resources for improving social infrastructure in the community. Similarly, "Increased Access of Rural Populations to Clean and Affordable Energy Services," activities were implemented to ensure that access to energy services is fostered, and especially to benefit the rural poor and women. The Pacific Renewable Energy Training Initiative (PRETI, 2005) envisages a collaborative approach for future renewable energy training through networking and strengthening of existing institutions in the Pacific.

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FINANCING ENERGY EFFICIENCY AND RENEWABLE ENERGY INVESTMENTS FOR CLIMATE CHANGE MITIGATION (FEEI); *Ongoing (2008-2011)*; Current budget around US\$ 10 million; UN-Energy Lead Member: **UNECE**; Supporting Institutions: **FFEM, UNEP/ GEF, European Business Congress (EBC), United Nations Foundation (UNF)/ United Nations Fund for International Partnerships (UNFIP)**; Partners: **Municipal authorities, Ministries of Energy, Ministries of Environment, Energy conservation agencies, National Participating Institutions**; Participating countries: **Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the former Yugoslav Republic of Macedonia, Serbia, Kazakhstan, Republic of Moldova, Romania, Russian Federation and Ukraine**

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Overall objective	To promote an investment climate in which self-sustaining energy efficiency and renewable energy projects can be identified, developed, financed and implemented by local teams in municipalities, factories and energy utilities.
Description	The programme is intended to assist countries of South-Eastern Europe, Eastern Europe and Central Asia to enhance their energy efficiency, diminish fuel poverty arising from economic transition and meet international environmental treaty obligations under the United Nations Framework Convention on Climate Change (UNFCCC) and UNECE Conventions. It supports the creation of a dedicated public-private partnership investment fund that can provide up to US\$ 250 million of mezzanine and/or equity financing and the development of a pipeline of new and existing energy efficiency and renewable energy projects within such a fund. It establishes an expanded network of energy efficiency managers for value-added information transfers on policy reforms, financing and energy management. The programme will: (a) develop the skills of the private and public sectors at the local level to identify, develop and implement energy efficiency and renewable energy investment projects; (b) provide assistance to municipal authorities and national governments to introduce economic, institutional and regulatory reforms needed to support these investments; and (c) promote opportunities for banks and commercial companies to invest in energy efficiency and renewable energy projects through the development of a new public- private partnership investment fund. <a href="http://www.feei.info/">Weblink: www.feei.info/</a>



## Energy access

AFRICA ENERGY VISION 2035; Ongoing; UN-Energy Lead Member: UNEA; Partners: Not listed.

Overall objective	The programme aims at establishing a vision, policy and strategic framework for the development of regional and continental energy infrastructure.
Description	In the UNEA collection tool, the “All Africa Energy Week” (planning started in 2009 for the activity and will culminate with the event itself in 2010) was also cited as an active programme. No other information was provided by UNEA in the data collection tool.

AFRICAN CLIMATE POLICY CENTRE (ACPC) AND THE ClimDev-Africa Program; Continuous (Starting in 2009); ACPC (about US\$ 35 mil); ClimDev-Africa (US\$ 140 million for 4 years); UN-Energy Lead Member: UNECA; Partners: African Union Commission (AUC), ECA and AfDB

Overall objective	ECA-based ACPC is to serve as ClimDev-Africa knowledge-management and Policy/project-facilitation arm that is working in the area of climate change mitigation, adaptation and international negotiations including the mainstreaming of climate change into development frameworks.
Description	ClimDev-Africa, a regional initiative that is jointly undertaken by the AUC, ECA and AfDB, is to work towards: enabling effective adaptation activities in climate-sensitive sectors: agriculture and food security; water resources; energy; and health; strengthening Africa’s climate and development institutions at regional, sub-regional and national levels; filling gaps in climate information, analysis and options needed by policy/decision-makers at all levels; and, enhancing the use of climate information in decision-making by improving analytical capacity, knowledge management, dissemination activities and capacity-building. ACPC on the other hand is to: deliver on the policy component of ClimDev-Africa; assist, through AUC and AMCEN, Africa’s preparation for, and participation in global climate negotiations – towards Copenhagen; support efforts of African States in mainstreaming climate change concerns into development policies and frameworks; and guide and facilitate the implementation of ClimDev-Africa field-level operations. The programme and the ACPC have an Africa-wide focus. Weblink: <a href="http://www.uneca.org/csd/csd6/presentations/ClimDev-AfricaACPC.ppt">www.uneca.org/csd/csd6/presentations/ClimDev-AfricaACPC.ppt</a>

REDUCING THE BURDEN OF DISEASE ASSOCIATED WITH HOUSEHOLD FUEL USE (WITHIN IHE); Jan. 2010 – Dec. 2011 with expectation to plan for and continue this work over 5 year period; UN-Energy Lead Member: WHO; Partners: Not listed.

Overall objective	To raise awareness of the burden of disease associated with household fuel use and to reduce this through evidence-based policy recommendations and technical support.
Description	In raising the awareness of this burden and in working to reduce indoor air pollution and poor air quality associated with household fuel use, WHO develops partnerships and engages in advocacy, based on review and synthesis of existing evidence on risks, impacts of intervention and effective approaches to implementation. Through the programme, WHO assesses and monitors Hypotonic Hyporesponsive Episode use (database creation) and burden of disease (BoD) and continues to develop tools, including “Guidelines on Household Fuel Combustion”, that will encourage and support policy and strategy in countries. WHO leads and facilitates research prioritization, evaluation methods development and harmonization, and works to ensure that interventions are evaluated in a timely and transparent way as these are adopted and scaled up, including providing direct support to countries. This work also involves synthesizing and communicating new evidence on health risks and intervention impacts, as they accrue. The programme will focus in the regions with the highest burden, with initial focused work being done with selected countries (case studies) with (a) high burdens and (b) experience and interest. Weblink: <a href="http://www.who.int/indoorair/en/index.html">www.who.int/indoorair/en/index.html</a>

LIGHTING AFRICA; Ongoing (starting in September 2008); Current budget of roughly US\$ 12 million provided by various partners, including the GEF; UN-Energy Lead Member: WB; Partners: Members include UN-HABITAT, the GEF and UNDP

Overall objective	This joint IFC and WB programme seeks to support the global lighting industry in developing affordable, clean and efficient modern lighting and energy solutions for millions of Sub-Saharan
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**Description**

Africans who currently live without access to the electricity grid. Congruently, its aim is to leverage global expenditures on fuel-based lighting to develop, accelerate and sustain the market for modern off-grid lighting alternatives that offer African consumers considerably more value for their money. Efficient lighting technologies such as those products containing the latest LED, florescent, human-cranking and solar technologies make it possible for the first time in history to offer energy services to consumers that are clean, efficient and reliable, at price points that are comparable to typical expenditures for kerosene. Lighting Africa works to facilitate an industry alliance to support market development, supporting the international lighting industry as well as local entrepreneurs, businesses, CSOs, governments and other stakeholders to drive the innovation, development and delivery of these superior lighting products and services to the African marketplace, in turn creating options and opportunities to transform lives and livelihoods. The main components of this work programme include: Market information (sharing critical business intelligence with companies and organizations interested in entering the Africa off-grid lighting market); Quality Assurance (development of a multipronged quality assurance program); Business linkages (strengthening ties between the global lighting industry and local service providers to design, develop and deliver lighting products to off-grid communities in Africa); and Consumer awareness (conducting consumer awareness and information campaigns). The programme is currently being piloted in Ethiopia, Ghana, Kenya, United Republic of Tanzania and Zambia. Six additional countries will be added to programme activities over the next 2-3 years.

Weblink: [www.unep.fr/energy/efficiency/](http://www.unep.fr/energy/efficiency/)

#### PROMOTING REGIONAL COOPERATION ON ENERGY SECURITY: TRANSBOUNDARY ENERGY COOPERATION;

Ongoing; UN-Energy Lead Member: **UNESCAP**; Partners: **Various as per listed in the Programme Description below.**

**Overall objective**

With a view to contributing towards the development of a regional cooperation mechanism on energy, ESCAP aims to facilitate dialogue among Member States to develop, agree on and implement joint activities to enhance energy security.

**Description**

Within the objective of enhancing energy security through regional cooperation, the Inter-governmental Collaborative Mechanism on Energy Cooperation in North-East Asia was agreed upon in 2005 for implementation. Initially, the Working Group on Energy Planning and Policy held its seventh meeting in Bangkok on 3-4 June, 2009 where it met to review the preliminary findings for a joint study on energy production potential and development plans in North-East Asia. The working group also discussed the development of the five-year strategy to implement the collaborative mechanism. At the fifth session of the Senior Officials Committee and the second session of the North-East Asia Government-Business Dialogue on energy cooperation (15-18 September, 2009 in Ulaanbaatar), the Committee reviewed the strategy and approved in principal a proposal to establish a working group on coal. Congruently, the Dialogue participants proposed policy recommendations to strengthen sub-regional cooperation in the sustainable production, transportation and utilization of coal and electric power. Next, an Expert Group Meeting on Enhancing Regional Cooperation for Energy Security in Asia and the Pacific was held from 9-11 December 2009. Participating countries and sub-regional energy organizations recognized the critical role regional cooperation plays in strengthening national efforts through information dissemination on good practices and policy options, and capacity-building on joint development projects on multilateral basis, and fostering regional and sub-regional cooperation. Naturally then, in 2010, ESCAP is continuing to facilitate the identification of possible joint projects in promoting regional cooperation for improving energy security. With the view to fostering transboundary energy security and strategic partnerships, an inception meeting on a trans-Asian energy system (TAES) was held in Seoul, Republic of Korea in August 2007 to provide further guidance in developing the concept and its implementation modality as well as to establish strategic partnerships with sub-regional organizations promoting subregional energy cooperation including ASEAN ACE, Asian Development Bank (ADB), Economic Cooperation Organization (ECO), the South Asian Association for Regional Cooperation (SAARC) Energy Centre and the WB. Additionally, within the scope of the promotion of water/energy security and sustainable infrastructure, the UN Special Programme for the Economies of Central Asia (SPECA) continued the Project Working Group on Water and Energy Resources and held a workshop on energy efficiency. To support the recommendations of this workshop, ESCAP has included Tajikistan as a partner in the project entitled "Eco-efficient and sustainable urban infrastructure development in Asia and Latin America," which focuses on energy efficiency in public buildings.

## Renewable energy

RENEWABLE ENERGY FOR PRODUCTIVE USES; Ongoing (2004-2011); USD 15 million ; UN-Energy Lead Member: UNIDO; Partners include: GEF, WB, UNHCR and National governments

Overall objective	To enhance productive activities and increase competitiveness of small and medium enterprises (SMEs) in rural on/off-grid areas through the promotion of mainly bio-energy, small hydropower, solar energy and wind energy.
Description	UNIDO's projects summarized under this heading demonstrate the technical, economical and social feasibility of using different renewable energy technologies for augmenting rural and urban electrification. Projects dealing with Small Island Developing States as well as UNIDO's projects under the GEF Strategic Programme for West Africa are excluded in this overview; further details on these programmes are provided under the respective headings in Annex I. UNIDO's renewable energy projects promote renewable energy technologies for productive uses and industrial applications in developing countries. The Organization's demonstration projects help raise awareness and disseminate information on renewable energy potentials. Stakeholders from governments, the financial and the private sector are addressed and the economic, financial, technical and environmental sustainability of renewable energy technologies is brought to their attention. In UNIDO's renewable energy projects, local and institutional capacity-building is always incorporated as an integral part. Many people receive vocational training as part of the construction of renewable energy projects and their experience is now available to the local market, which is a prerequisite for the implementation of future projects. UNIDO's renewable energy projects focus on West and East Africa, South and Southeast Asia, Latin America, and LDCs. Rwanda can be named as a concrete example of the success of UNIDO's approach, where UNIDO established four small hydropower projects. These were replicated by the Rwandan government, which constructed eight additional power plants. In parallel, additional plants were funded through the European Union.

INTERNATIONAL TECHNOLOGY CENTRES; Ongoing (2004-2010); US\$ 45 million; UN-Energy Lead Member: UNIDO; Partners: Local technology centres and governments

Overall objective	The Centres aim to develop and strengthen the scientific and technological capabilities in closing the gap between research and development organizations, innovative enterprises and the market-place with the objective of stimulating applications of sustainable energy technologies.
Description	UNIDO is coordinating a number of International Energy Technology Centres (investment of around US\$ 45 million) aiming to stimulate applications of sustainable energy technologies. The Centres include the International Centre for Hydrogen Energy Technology (Turkey), the International Centre for the Promotion and Transfer of Solar Energy (China), and three International Centres for Small Hydropower (China, India and Nigeria). The Centres focus on developing and strengthening the scientific and technological capabilities in the developing world and economies in transition and will help close the gap between research and development organizations, innovative enterprises and the marketplace. UNIDO's Technology Centres implement demonstration projects which help to raise awareness on local renewable energy potentials in a number of developing countries. Stakeholders from governments and the financial and private sectors are addressed, with the economic, financial, technical and environmental sustainability of renewable energy technologies brought to their attention.

STRATEGIC PROGRAMME ON PROMOTING MARKET APPROACHES FOR RENEWABLE ENERGY; Ongoing (2006-2010) – (GEF-4); UN-Energy Lead Member: GEF; Partners: UNDP, UNEP, WB, AfDB, ADB, EBRD, IDB, IFAD, FAO, UNIDO

Overall objective	To promote market approaches for the supply of and demand for renewable electricity in grid-based systems.
Description	In promoting market approaches for renewable energy, the emphasis of this strategic programme lies in developing policies and regulatory frameworks that provide limited incremental support to strategically important investments. The expected outcome is the growth in markets for renewable heat power in participating programme countries and indicators of success include: the tons of CO <sub>2</sub> eq avoided, the adoption of on-grid renewable policies and the quantity of electricity generated from

renewable sources. In order to maximize GHG impacts, priority is given to projects with a large replication potential. The renewable energy investments supported are economically viable in their own right while a host country's willingness to adopt favorable policies and to follow through on the initiatives is essential to success. During GEF-2 and GEF-3, support has been provided to a number of countries to open up electricity regulations to renewable energy generation. For the period of GEF-4, one target has been ensuring that all countries have adopted regulations leveling the playing field for on-grid renewable energy. Projects include a combination of technical assistance for policy reform and regulation, and initial investments to jump-start the market for a specific renewable technology. The program's regional focus is in Latin America, Africa, Eastern Europe and Central Asia, Asia and the Pacific. Countries with significant renewable energy generation potential have made this strategic programme a high priority and it is currently being implemented in 165 developing countries and economies in transition.

Weblink: [www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf)

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STRATEGIC PROGRAMME ON PROMOTING SUSTAINABLE ENERGY PRODUCTION FROM BIOMASS; Ongoing (2006-2010) – (GEF-4); UN-Energy Lead Member: GEF; Partners: UNDP, UNEP, WB, AfDB, ADB, EBRD, IDB, IFAD, FAO, UNIDO

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Overall objective Description	<p>To promote sustainable energy production from biomass.</p> <p>In promoting sustainable energy production from biomass, sustainability criteria are always observed to ensure that GEF support to modernization of biomass does not undermine food security, exacerbate existing availability problems, or violate GEF's sustainability principles relating to biodiversity conservation or sustainable land and water management. The programme's successful outcome is the adoption of modern and sustainable practices in biomass production, conversion and use as energy. Indicators of success include: tons of CO<sub>2</sub>eq avoided, the adoption of modern biomass conversion technologies, improved efficiency of biomass energy use, kWh of electricity and heat generated from biomass sources and energy services produced on the basis of biomass. Typical projects provide a mixture of technical assistance, capacity-building and investment. GEF support only goes to biomass projects that ensure that biomass energy use is sustainable and does not, therefore, contribute to deforestation, reduced soil fertility, or increased GHG emissions beyond project boundaries. Projects support the use of biomass for the production of energy services (e.g., electricity, heat) in modern efficient technologies and support may be given to investigate the suitability and sustainability of producing biofuels to substitute for petroleum fuels used. Whereas in the past, GEF support to biomass energy has focused largely on the utilization of biomass wastes and residues, during GEF-4, additional support has been given to modern biomass projects using biomass planted for dedicated energy purposes, provided that such support is consistent with sustainability criteria. Countries undertake different projects, depending on their technological advancements in the area of bioenergy conversion, their pre-existing infrastructure and the structure of energy demand. The program's regional focus is in Latin America, Africa, Eastern Europe and Central Asia, Asia and the Pacific. Globally, the work programme is implemented in 165 developing countries and economies in transition.</p>
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Weblink: [www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf)

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STRATEGIC PROGRAMME ON PROMOTING SUSTAINABLE INNOVATIVE SYSTEMS FOR URBAN TRANSPORT; Ongoing (2006-2010) – (GEF-4); UN-Energy Lead Member: GEF; Partners: UNDP, UNEP, WB, AfDB, ADB, EBRD, IDB, IFAD, FAO, UNIDO

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Overall objective Description	<p>To promote sustainable innovative systems for urban transport.</p> <p>The sustainable mobility market encompasses measures that promote transportation systems of lower carbon intensity including modal shifts to lower GHG-emitting modes of public transport, public rapid transit (including bus rapid transit) and non-motorized transport. Its work programme is concentrated in the following areas: the establishment of a legal and regulatory framework; capacity-building/awareness-raising among all stakeholders; investment (technology pilot demonstration, replication and scaling-up); leveraging of additional resources and set-up of financial mechanisms; and monitoring and evaluation. The programme's successful outcome is greater use of less GHG-intensive transport modes in targeted urban areas. Indicators of success include: CO<sub>2</sub>eq avoided, the adoption/creation of sustainable transport policies and the number of person-trips taken annually on sustainable options. Initially, GEF support to the transport sector was focused on technological solutions but for the period of GEF-4, emphasis</p>
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continues to be placed on “nontechnology” options, such as planning, modal shift to low-GHG intensive transport modes and promotion of better managed public transit systems. This strategic programme has been a priority for countries with rapidly growing small- and medium-sized cities. Although greater emissions reductions are liable to result from countries with larger total GHG emissions, smaller countries may also find this to be a priority for the potential co-benefits of development and environment. Projects include a mixture of technical assistance and limited investment support. The programme’s regional focus is in Latin America, Africa, Eastern Europe and Central Asia, Asia and the Pacific. Globally, the work programme is implemented 165 developing countries and economies in transition.

Weblink: [www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf)

STRATEGIC CLIMATE FUND (SCF); Ongoing (starting in 2008); Total amount pledged by 13 countries to the CIF Trust Funds (CTF and SCF) was US\$ eq. 6.3 billion as of January 31, 2010; UN-Energy Lead Member: WB; Partners: SCF Committee is made up of: current contributing country members (Australia, Canada, Germany, Japan, Netherlands, Norway, Switzerland, United Kingdom), current recipient country members (Algeria, Bangladesh, Costa Rica, Indonesia, Kenya, Kyrgyzstan, Thailand, Yemen), WB, and MDBs; Other stakeholders include: United Nations and United Nation agencies, Bilateral Development Agencies, the Adaptation Fund, NGOs, and Scientific and Technical Experts; Observers: CSO representatives, Indigenous Peoples representatives, Private sector representatives, the GEF, UNDP, UNEP, and UNFCCC

Overall objective	The Strategic Climate Fund (SCF), one of the two Climate Investment Funds, serves as an overarching framework to support three targeted programs with dedicated funding to pilot new approaches with potential for scaled-up, transformational action aimed at a specific climate change challenge or sectoral response.
Description	To achieve its objective, the SCF works through the following three targeted programmes: the Forest Investment Programme (FIP); the Pilot Programme for Climate Resilience (PPCR); and the Programme for Scaling-Up Renewable Energy in Low Income Countries (SREP). Through these programmes, SCF is designed to: provide experience and lessons through learning-by-doing; channel new and additional financing for climate change mitigation and adaptation; provide incentives for scaled-up and transformational action in the context of poverty reduction; provide incentives to maintain, restore and enhance carbon-rich natural ecosystems; and maximize the co-benefits of sustainable development. Out of these three programmes, SREP focuses specifically on renewable energy. It was approved by the SCF Trust Fund Committee in May 2009 to demonstrate the economic, social and environmental viability of low carbon development pathways in the energy sector in low-income countries. Its aim is to help low-income countries use new economic opportunities to increase energy access through renewable energy use. SREP stimulates economic growth through the scaled-up development of renewable energy solutions and acts as a catalyst for the transformation of the renewables market by obtaining government support for market creation, private sector implementation, and productive energy use. Congruently, the programme promotes both public and private sector actions to remove barriers that might otherwise inhibit scaled-up private sector investments. SREP is a country-led initiative and builds on national policies and the activities of other existing energy initiatives; it will operate in a small number of low-income countries to maximize its impact and demonstrative effect. Weblink: <a href="http://www.climateinvestmentfunds.org/cif/node/3">www.climateinvestmentfunds.org/cif/node/3</a>

RENEWABLE ENERGY; Continuous; UN-Energy Lead Member: UNEP; Partners: Not listed.

Overall objective	To help developing country governments break down barriers to the deployment of renewable energy technologies.
Description	The Renewable Energy work programme is centered in mutually-supportive, inter-related work areas. One of the programme’s components involves undertaking assessments of a country’s solar and wind energy resources and commissioning research studies with a view to informing the public and private-sector decision-making processes. It facilitates the set-up of end-user financing mechanisms for renewable technologies and it works with different members of the international finance industry to lower risks for larger projects. The programme facilitates the provision of advice to developing country governments on broad policy approaches to bolstering renewable sources of energy and it supports the creation of an enabling environment for small- and micro-businesses in the area of renewable energy, with a view to breaking down both policy and institutional barriers. It is being implemented globally. Weblink: <a href="http://www.unep.fr/energy/renewable">www.unep.fr/energy/renewable</a>



BIOENERGY; **Continuous**; UN-Energy Lead Member: **UNEP**; Partners: **Not listed**.

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**Overall objective** To ensure that sustainably produced bioenergy is an essential energy option for a range of applications as part of a mix that includes energy efficiency, renewable energy, and changed patterns of production and consumption.

**Description** Due to the many environmental, social and economic benefits linked to bioenergy at times when carbon constraints and high crude oil prices limit further growth in the use of fossil fuels, there is increasing interest in developing and developed countries in modern bioenergy and biofuels. Within this context, the Bioenergy programme works to establish an internationally agreed-upon system that guarantees that bioenergy commodities are of a known pedigree and are produced sustainably, without destroying the sector's prospects. The programme explores the prospects for bioenergy in the "energy mix" and how the right policy mix might balance the different interests involved, i.e., energy, agriculture, transport, environment and trade. The programme's main areas of work are focused on: sustainable development impacts and synergies; resource assessment; market creation and policy interventions; and business development and finance.

**Weblink:** [www.unep.fr/energy/bioenergy/](http://www.unep.fr/energy/bioenergy/)

ENVIRONMENT; **Continuous**; UN-Energy Lead Member: **FAO**; Partners: **Not listed**.

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**Overall objective** FAO's cross-sectoral environmental programme is aiming to support the process of informed decision making in the complex interactions of bioenergy development, climate change, and food, energy and environmental security.

**Description** Bioenergy production affects the environment at local and global levels, impacting land and water resources, biodiversity and the global climate. Although there are environmental impacts throughout the production chain—feedstock production, conversion and use—most impacts occur in the feedstock production stage and mirror those related to agricultural production in general. The work programme is centered around four, interlinked areas: climate change mitigation; biodiversity; water and soil; and good agricultural practices. The overall objective of the programme is achieved through the following activity areas: Simplification and Analytical Tools; Generation of Data and Knowledge Tools; Awareness Raising and Capacity Building; and, Partnerships and Collaboration. It is being implemented globally and in multiple countries (e.g., United Republic of Tanzania).

**Weblink:** [www.fao.org/bioenergy/52178/en/](http://www.fao.org/bioenergy/52178/en/)

GLOBAL RENEWABLE ENERGY EDUCATION AND TRAINING (GREET) PROGRAMME; **Ongoing**; UN-Energy Lead Member: **UNESCO**; Partners: **UNESCO**

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**Overall objective** To strengthen national capacities and competencies (institutional and human resource) by favoring exchange of knowledge and best practices required for the adaptation and application of new energy technologies and to enhance the use and application of renewable energy sources.

**Description** The GREET work programme which aims to promote institutional and human capacity-building reflects the need, particularly pronounced in developing countries, for education in fundamental disciplines, specialized training for professionals at different levels of responsibility, and network-building. The programme meets this need through: the organization of training programmes at different levels; the setting of standards and definition of energy training curricula; design and field implementation of training tools and learning/teaching material; and promotion of national/regional training centres. UNESCO's concrete achievements in this area include the following: regional expert meetings/seminars for knowledge-sharing and capacity-building (Benin, Guinea, United Republic of Tanzania, Togo, Qatar, Uruguay); regional expert meetings for the promotion of energy policies, management and conservation for sustainable development (e.g., Morocco, Niger, Nigeria and Saudi Arabia); initiation of summer schools in renewable energy (e.g. Malaysia, Mali, Uzbekistan and the Caribbean); support to the Cariscience Network for the implementation of two regional workshops on renewable energy; and the promotion of the concept of energy self-sufficient villages (ECO-Villages) through lectures broadcast to twenty five universities throughout South and South-East Asia.

**Weblink:** [http://portal.unesco.org/science/en/ev.php-URL\\_ID=7866&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/science/en/ev.php-URL_ID=7866&URL_DO=DO_TOPIC&URL_SECTION=201.html)

WMO WORLD CLIMATE PROGRAMME; 1979 to present; No specific budget assigned for energy applications; UN-Energy Lead Member: WMO; Partners: No partners listed.

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Overall objective	In the context of applications of climate information to the energy sector, the program's objective is to work in partnership to develop interdisciplinary information, methods and tools and to promote climate-energy knowledge/awareness and the effective use of climate variability and change information in operational and long-term activities for risk reduction, optimization of opportunities and for adaptation.
Description	The main components of this work programme include: the World Climate Applications and Services Programme; the WMO Commission for Climatology Open Panel of Climate Experts on "Climate Information for Adaptation and Climate Risk Management"; and the new Expert Team on Climate Risk and Sector-specific Climate Indices. As a result of this programme, there is expected to be an improvement in capacity of WMO Members for prediction and assessment. This will be facilitated through capacity-building in National Meteorological and/or Climate Services and Regional Climate Centers to develop and provide a range of climate information and prediction services for use by the sector and by facilitating interaction between providers and users of the information to underpin the relevance and improvement of products. Weblink: <a href="http://www.wmo.int">www.wmo.int</a>

## Energy efficiency

INDUSTRIAL ENERGY EFFICIENCY (IEE); Ongoing (2002-2014); US\$ 60 million; UN-Energy Lead Member: UNIDO; Partners: UNIDO, GEF

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Overall objective	To enable industry to develop and implement energy efficiency projects and comply with energy management standards.
Description	Energy efficiency in industry is aimed at decoupling economic growth and environmental impact by reducing industrial energy intensity and related GHGs emissions. At the core of UNIDO's Industrial Energy Efficiency work programme are two elements; first, technical assistance supporting the adoption of Energy Management Standards and related complementary policy measures (incentive mechanisms, voluntary agreements and performance recognition schemes), and second, the delivery of tailor-made training and tools focusing on industrial energy system optimization. UNIDO's industrial energy efficiency projects target all players in the industrial energy efficiency market (government, regulators, factory personnel, industry managers, service providers and equipment vendors) while building the environment and capacity needed to promote, support, affect and sustain such industrial system optimization approaches and energy management system standards. The geographic focus of the programme is centered in Africa, Asia, Eastern Europe and South America.

STRATEGIC PROGRAMME ON PROMOTING ENERGY EFFICIENCY IN RESIDENTIAL AND COMMERCIAL BUILDINGS; Ongoing (2006-2010) – (GEF-4); UN-Energy Lead Member: GEF; Partners: UNDP, UNEP, WB, AfDB, ADB, EBRD, IDB, IFAD, FAO, UNIDO

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Overall objective	To promote energy efficiency in residential and commercial buildings.
Description	This energy efficiency strategic programme covers the entire spectrum of the building sector, including the building envelope, the energy-consuming systems and appliances used in buildings for heating, cooling, lighting, including appliances and office equipment, as well as building operation and energy consumption during building operation. Its work programme is concentrated in the following areas: the adoption of energy efficiency standards; the establishment of a legal and regulatory framework; capacity-building/awareness-raising among all stakeholders; investment (technology pilot demonstration, replication and scaling-up); leveraging of additional resources and set-up of financial mechanisms; and monitoring and evaluation. Successful outcomes of the programme include: increased market penetration of energy-efficient technologies, practices, products and materials in the residential and commercial building markets. Indicators of success include: the tons of CO <sub>2</sub> eq



avoided, the adoption of energy efficiency standards and the estimated quantity of energy saved. Some activities may use solar energy for heating and cooling, some may extend to the replacement of older chillers and air-conditioning systems with newer ones, provided that the replacements are both more efficient, lower in global warming potential and minimize the use of chemicals damaging to the ozone layer. Where it makes sense to do so in order to reduce GHG emissions and when it is consistent with “chemical-proofing” of the portfolio, GEF projects in this strategic programme support the phase-out of hydrochlorofluorocarbons (HCFCs) used in chillers, air-conditioners, refrigerators and other equipment, even before the required phase-out dates under the Montreal Protocol. Government commitments to adopting and enforcing standards and regulations are essential for these initiatives to have an impact through replication. The programme’s regional focus is in Latin America, Africa, Eastern Europe and Central Asia, Asia and the Pacific. Globally, the work programme is implemented in 165 developing countries and economies in transition.

Weblink: [www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf)

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STRATEGIC PROGRAMME ON PROMOTING ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR; Ongoing (2006-2010) – (GEF-4); UN-Energy Lead Member: GEF; Partners: UNDP, UNEP, WB, AfDB, ADB, EBRD, IDB, IFAD, FAO, UNIDO

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Overall objective	To promote energy efficiency in the industrial sector, including the deployment and diffusion of energy-efficient technologies and practices in industrial production and manufacturing processes.
Description	This strategic programme covers the energy systems in industrial manufacturing and processing, including combustion, steam, process heat, combined heat and power, electricity generation and other public utilities. Its work programme is concentrated in the following areas: the establishment of a legal and regulatory framework; capacity-building/awareness-raising among all stakeholders; investment (technology pilot demonstration, replication and scaling-up); leveraging of additional resources and set-up of financial mechanisms; and monitoring and evaluation. A successful outcome is the deployment of energy-efficient technologies and adoption of energy-saving practices while indicators of success include: tons of CO <sub>2</sub> eq avoided, volume of investment in new, more efficient plants and equipment, and the quantity of energy saved. The programme has evolved into focused, sector-specific technology transfer programs focusing on GHG-intensive industries. It may be also used to test potential modalities for sector-specific or technology specific GHG mitigation programmes for use in GEF-4 and beyond. Where it makes sense to do so in order to reduce GHG emissions and it is consistent with “chemical-proofing” the GEF portfolio, GEF projects in this strategic programme will support the phase-out of HCFCs used in the food processing industry before the phase-out dates required under the Montreal Protocol. On the ground, SMEs in developing countries demonstrate significant potential for improved efficiency and reduced GHG emissions as they frequently have limited access to the technology and capital necessary for improving their facility. The programme’s regional focus is in Latin America, Africa, Eastern Europe and Central Asia, Asia and the Pacific. Globally, the work programme is implemented in 165 developing countries and economies in transition. Weblink: <a href="http://www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf">www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf</a>

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ENERGY EFFICIENCY; Continuous; UN-Energy Lead Member: UNEP; Partners: Industry Associations, NGOs, financial institutions and the private sector, among others

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Overall objective	To promote innovative industrial energy efficiency methodologies and techniques in developing countries and countries with economies in transition.
Description	The Energy Efficiency Programme targets the energy needs of developing countries and economies in transition through its various energy efficiency activities. Some of these include: technology research, development, transfer and commercialization, in addition to promoting industrial innovative energy efficiency methodologies and techniques. Its work programme is implemented globally. Weblink: <a href="http://www.unep.fr/energy/efficiency/">www.unep.fr/energy/efficiency/</a>

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SCALING UP THE PROMOTION OF ENERGY EFFICIENCY; Ongoing; UN-Energy Lead Member: UNESCAP

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Overall objective	With a view to playing an integral role in the promotion of low carbon development, UNESCAP’s objective is to support national institutional and policy reforms related to energy efficiency through capacity-building, information exchange and regional cooperation.
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**Description** In achieving its objective, ESCAP facilitates the development of longer term strategies and implements integrated capacity-building on energy efficiency for various national circumstances including energy efficiency in cities, the financing environment, and institutional and policy reforms. ESCAP has made inroads into providing Member States with technical cooperation assistance on energy efficiency. One ongoing project (“Strengthening Institutional Capacity to Support Energy Efficiency”) being implemented takes stock of institutional capacity and policies, and seeks ways to improve legislative and standard-setting measures in Central, South and South-East Asia. In 2009, ESCAP conducted a gap analysis, research and case studies of existing institutional mechanisms, including barriers and challenges for promoting energy efficiency in the three subregions.

GLOBAL ENERGY EFFICIENCY 21 (GEE21); [Launched in December 2008](#); [Regular budget resources from the strengthening of the United Nations Development Pillar and initial extra-budgetary funding from the Russian Federation](#); UN-Energy Lead Member: UNECE; Members: [UN Economic and Social Commission for Asia and the Pacific \(ESCAP\)](#), [UN Economic and Social Commission for Western Asia \(ESCWA\)](#), [UN Economic Commission for Africa \(ECA\)](#), [the UN Economic Commission for Latin America and the Caribbean \(ECLAC\)](#), and [UN-Energy](#)

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**Overall objective** The initiative is designed to explore how the experience of national and international energy efficiency programmes can be applied with UN Economic Commission for Europe (UNECE) assistance to the other United Nations Regional Commissions (RCs). The main objective is to develop a more systematic exchange of experience on capacity-building, policy reforms and investment project finance among countries of other regions of the world through their RCs, in order to promote self-financing energy efficiency improvements that raise economic productivity, diminish fuel poverty and reduce environment air pollution such as greenhouse gas emissions.

**Description** The new initiative, Global Energy Efficiency 21 (GEE21), is based on the UNECE experience in promoting the formation of an energy efficiency market. The project will: (a) Disseminate and, whenever possible, extend the experience of the project on “Financing energy efficiency investments for climate change mitigation—FEEL” to other ECE member countries and to countries of the other regions; (b) Increase the capacity of the RCs to provide member States with effective energy efficiency services that promote the reduction of greenhouse gas emissions; (c) Improve the capacity to develop, adjust and implement a global strategy to promote self-financing energy efficiency improvements for climate change mitigation. In 2010, the UNECE Group of Experts on Global Energy Efficiency 21 has been created to develop and implement the work programme of GEE21 and also to act within the scope of a Global Strategy for Long-Term Cooperation in Energy Efficiency Market Formation for Climate Change Mitigation.



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