

PART II

Chapter 5

Delivering sustainable energy for all

by

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The developing world needs sustainable energy to support its growth and to move people out of poverty. Worldwide, 1.3 billion people still have no access to electricity, and up to a billion more have to cope with unreliable access at best. In particular, rural Sub-Saharan Africa has an electrification rate of only 12% and the total number of people without access to electricity continues to rise steadily. The UN, under its Sustainable Energy for All initiative, is seeking to ensure universal access to modern energy services by 2030. In this chapter, the author describes how the European Union, which provides more than half of all global official development assistance (ODA), is contributing to the UN initiative, placing the emphasis on access to modern energy services; regional integration, focusing on projects with a regional reach; and broad-based renewable power generation. Nonetheless, he notes that official development assistance will not be able to meet the challenge alone. The private sector will need to engage much more actively, both through investment and through financing. The rewards will be substantial: new markets, new productive partnerships, new innovative technologies for developing countries, and more income and jobs.

The developing world needs energy to support its growth and to move people out of poverty. It needs sustainable development, and this means sustainable energy. Without electricity, how can developing country governments hope to bring clean water to every citizen? How can they ensure good education? How can they provide basic health care? How can they generate new jobs? And yet, today, many of the world's poorest citizens still have no access to reliable supplies of electricity.

If the world is to achieve sustainable energy for all by 2030, we need action now.

In September 2011, the UN Secretary-General Ban Ki-moon launched the Sustainable Energy for All initiative. It aims, by 2030, to: 1) ensure universal access to modern energy services; 2) double the global rate of improvement in energy efficiency; and 3) double the share of renewable energy in the global energy mix. This is a formidable challenge, requiring huge investments and concerted efforts by all stakeholders. And action is required now.

President Kagame of Rwanda put it eloquently when addressing his ministers: “Why don’t our citizens have electricity? We need electricity, and not stories about electricity. We have had enough of that and I want us to do something about it. We can’t wait any longer.”

We in the EU are prepared to play our role in supporting the initiative by stepping up our activities. Where there is a strong government commitment we must be there as a partner, with our development aid and with support from our private sector.

Access to modern energy

When Ban Ki-moon decided on his vision to bring sustainable energy to all by 2030, the decision was not taken on a whim. It stemmed from a realisation that had been growing ever stronger since the World Summit on Sustainable Development in Johannesburg in 2002: namely, that energy poverty is a key constraint to economic development and to the eradication of poverty in developing countries.

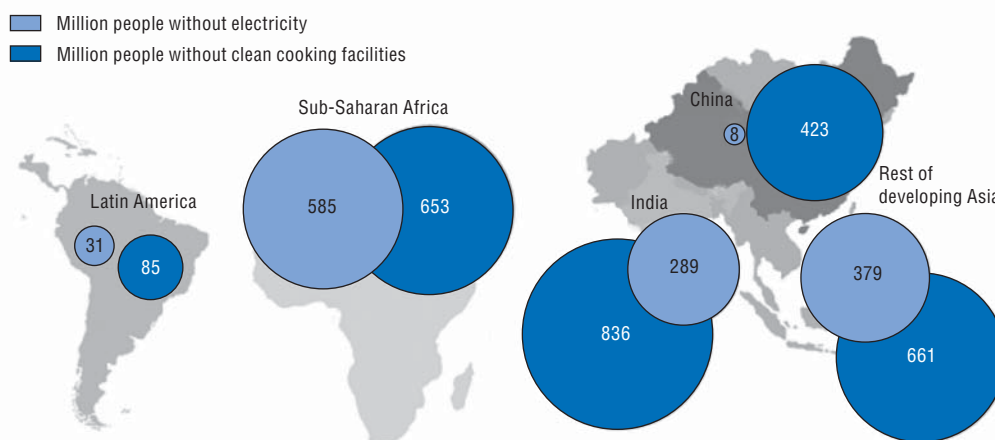
Access to modern energy sources improves people’s lives in many ways. Most importantly, it increases their ability to earn a living and escape from a subsistence lifestyle. Without adequate access to affordable energy, people can be trapped in poverty because they lack the means to work their way out of it. The important link between poverty eradication and the productive use of energy has been highlighted recently by numerous studies (Practical Action, 2010; EU Energy Initiative and GIZ, 2011). Agriculture – the main activity on which almost half of all people in the developing world rely for their livelihoods – provides clear examples: increased energy access has considerable impact on productivity and returns at each stage of the value chain, from production, post-harvest processing and storage, to marketing.

Without further efforts, the number of people without electricity will remain above 1 billion in 2030.

In recent decades, some countries have made remarkable progress in increasing their citizens' access to modern energy services. Access to electricity in China is the standout example, but many other countries in Asia, together with some in Africa, have done well in this regard. And yet, the current analyses show that unless we step up efforts even further, the number of people without electricity will remain above 1 billion in 2030, and there will be no decrease in the number of people who lack clean cooking facilities.

Energy poverty is not evenly spread around the world. In its annual publication, *World Energy Outlook*, the International Energy Agency uses the limited data sources available to follow and analyse progress. The most up-to-date data are represented in Figure 5.1.

Figure 5.1. **How energy poverty is spread throughout the world, 2009**



Source: IEA (International Energy Agency) (2011), *World Energy Outlook 2011*, OECD Publishing, Paris.

One stark statistic emerges from this figure: more than 95% of the people who are deprived of modern energy services are living either in Sub-Saharan Africa or in the developing areas of Asia.

In Sub-Saharan Africa, at least 88% of the rural population has no access to electricity.

It is vital that our efforts to tackle the energy access problem include a special emphasis on Africa. Most of the poor in Africa live in rural areas, where access to electricity is only 23%. The figure for rural Sub-Saharan Africa is even lower: a meagre 12%. In Sub-Saharan Africa as a whole, less than 30% of the population has access to electricity. Furthermore, this is the only region in the world where the total number of people without access to electricity continues to rise steadily; unfortunately, this worrying trend is expected to continue. Finally, in parts of Sub-Saharan Africa today, the proportion of the population relying on biomass as their primary fuel for cooking is as high as 90%.

The EU's energy initiative

The EU was one of the first to address the energy access problem, launching – at the World Summit on Sustainable Development in Johannesburg (2002) – the EU Energy Initiative (EUEI). *Energy for the Poor* (DFID, 2002), published in connection with the summit, provided the context for the EUEI, highlighting the important relationship between energy access and poverty reduction and identifying energy as the missing Millennium Development Goal. The EUEI's aim was threefold: to raise political awareness among high-level decision makers; to bring coherence and synergy into energy-related activities; and to attract new resources (capital, technology and human resources) from the private sector, financial institutions, civil society and end users. The EU formed the EUEI Partnership Dialogue Facility¹ to support developing countries' efforts to integrate energy into their poverty reduction strategies, and launched the first ACP²-EU Energy Facility³ to pursue a bottom-up approach to tackling the energy access problem.

The focus on energy in Africa received a strong boost in Lisbon in December 2007, when the EU and Africa decided to create the Africa-EU Energy Partnership⁴ (AEEP) as part of a Joint Africa-EU Strategy. Built directly on the EU Energy Initiative, the AEEP was devised as a long-term framework for structured political dialogue and co-operation between Africa and the EU on energy issues of strategic importance, reflecting both African and European needs. I attended the high-level partnership meeting in Vienna (September 2010) where we agreed with our African partners on three joint targets: to provide modern energy services to an additional 100 million people by 2020; to double the capacity of energy interconnectors in Africa, and between Africa and Europe; and to construct an additional 10 000 MW of hydropower, 5 000 MW of wind power and 500 MW of solar energy. So even before the Sustainable Energy for All initiative had been launched, we were on the right track with the AEEP.

2010 saw the EU step up its funding to energy access projects in Africa.

In May 2009, the Council of the European Union, in its conclusions related to energy and development,⁵ put a special emphasis on supporting increased access to modern energy services in the rural and peri-urban areas of Africa, with support being based on decentralised solutions and focusing on renewable energy. In response to these Council conclusions, financing for the ACP Energy Facility was increased from EUR 200 million to EUR 400 million.

Overall, the European Commission has spent an average of about EUR 315 million a year over the past seven years⁶ to improve the state of the energy sector in developing countries, including efforts to increase access to modern energy services (Box 5.1). A new blending instrument was created in 2010, pooling the EU's grant resources with lending from European development finance institutions (EDFIs) to scale up the projects promoted through the Energy Facility to improve energy access. In addition, the European Investment Bank (EIB) has prioritised energy, resulting in billions of euros being granted to developing countries over recent years in the form of preferential loans.

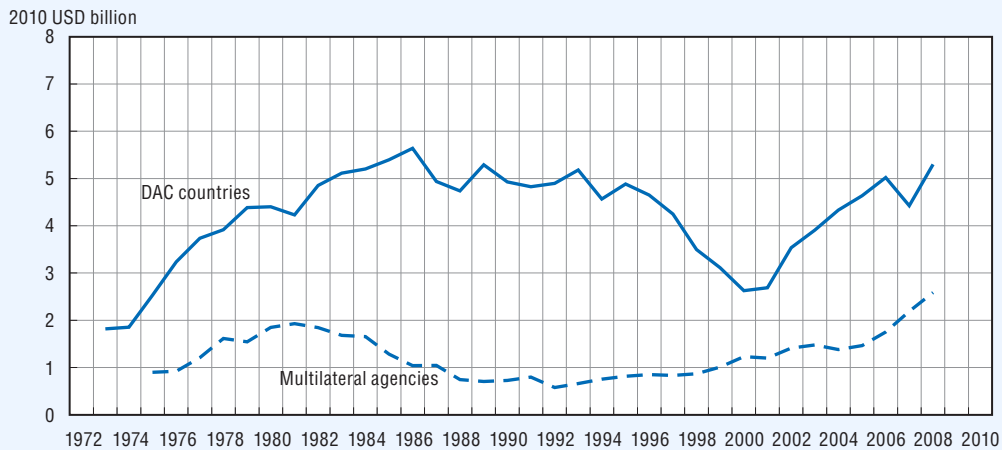
In its 2011 *Agenda for Change* (EC, 2011), the EU proposes a greater focus on investing in the drivers of inclusive and sustainable economic growth. Sustainable energy is central to such growth. Unleashing the huge potential of sustainable energy will create job opportunities while enabling the conservation of – and investment in – key natural resources,

Box 5.1. Trends in aid: Energy

Between the mid-1980s and early 2000s, aid to energy fell from more than 8% of sector allocable aid to around 4%. In the last decade, however, it has risen again and is now close to its mid-1980's peak in real terms. The fall started when the "Helsinki package" came into force in 1992. This precluded the use of tied aid for commercially viable projects, which led to a fall in aid for energy projects and a shift to capacity development (e.g. to help elaborate energy policies) that involved smaller amounts of aid. Aid to energy started rising again in the early 2000s, after the Kyoto Protocol stimulated donor interest in renewable energy projects.

Figure 5.2. Trends in aid to energy

Commitments 1973-2010, 5-year moving average, constant 2010 prices



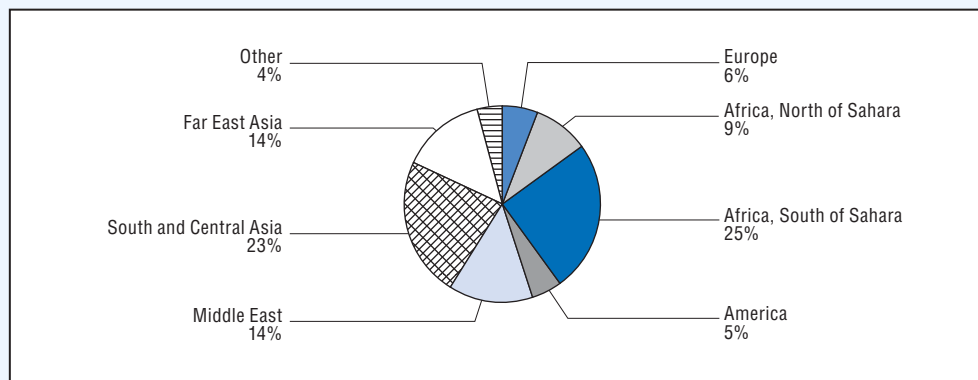
Note: Five-year moving averages, e.g. 2008 = average of 2006-10.

StatLink  <http://dx.doi.org/10.1787/888932699972>

In 2009-10, total annual average aid commitments to energy amounted to almost USD 10 billion. Among DAC members, the largest donors in 2009-10 were Japan (USD 2 billion) and Germany (USD 1.6 billion). On the multilateral side, the International Development Association (IDA), the soft loan window of the World Bank, is the predominant agency (USD 1.6 billion).

Figure 5.3. Regional breakdown of aid to energy by all donors

2005-10 commitments



StatLink  <http://dx.doi.org/10.1787/888932699991>

Box 5.1. Trends in aid: Energy (cont.)

Over the period 2005-10, aid flows to energy primarily targeted Asia, including the Middle East (51%), followed by Africa (34%).


Table 5.1. Aid to energy by donor, 2005-10

Annual average commitments and disbursements, shares in total sector allocable aid, constant 2010 prices

	Commitments, USD million			% of donor sector allocable			Disbursements, USD million		
	2005-06	2007-08	2009-10	2005-06	2007-08	2009-10	2005-06	2007-08	2009-10
Australia	10	25	14	1	1	0	7	15	14
Austria	8	9	15	3	2	4	5	9	12
Belgium	5	30	59	1	3	5	3	5	36
Canada	16	11	3	1	0	0	14	9	11
Denmark	53	47	17	4	5	1	45	51	28
Finland	38	6	58	8	1	7	4	10	14
France	106	108	304	3	2	5	94	126	105
Germany	558	849	1 582	10	12	18	239	470	1 040
Greece	0	1	1	0	0	1	0	1	1
Ireland	0	0	0	0	0	0	0	0	0
Italy	197	27	3	24	3	0	102	78	41
Japan	1 415	1 848	2 065	13	14	16	980	1 435	1 469
Korea	2	127	161	1	11	10	17	15	46
Luxembourg	1	2	1	0	1	0	1	2	1
Netherlands	66	139	168	2	4	4	43	80	105
New Zealand	3	1	1	1	0	0	1	1	0
Norway	84	186	203	4	8	7	127	256	134
Portugal	1	0	25	0	0	10	1	0	25
Spain	41	261	271	3	9	8	52	73	306
Sweden	45	59	69	2	4	4	46	51	57
Switzerland	23	22	27	3	2	3	25	17	14
United Kingdom	114	37	97	3	1	2	63	42	108
United States	1 269	1 476	940	7	7	4	1 629	1 108	605
Total DAC countries	4 052	5 272	6 084	7	7	7	3 496	3 854	4 172
Kuwait (KFAED)	..	..	243	..	..	47	..	..	111
United Arab Emirates	..	..	112	..	..	9	..	..	9
Other bilateral donors	..	..	356	..	..	20	..	..	120
AfDF	57	204	345	4	14	14	43	41	101
Arab Fund (AFESD)	..	316	538	..	46	46	..	198	431
AsDF	39	77	352	3	5	18	0	0	46
EU Institutions	508	445	272	5	5	3	153	252	319
GEF	..	..	67	0	0	11	..	7	2
IDA	717	1 361	1 627	8	11	12	469	782	992
IDB Sp. Fund	20	23	59	4	8	9	..	..	27
Isl. Dev. Bank	..	..	6	..	..	3	..	..	0
Nordic Dev. Fund	..	..	15	..	..	30	..	..	1
OFID	..	..	104	..	..	17	..	..	25
Other UN	1	6	25	..	11	0	1	3	13
Total multilateral	1 342	2 433	3 410	6	9	10	665	1 285	1 957
<i>Memo: European Inst.</i>									
+ EU member states ¹	1 739	2 021	2 942	5	5	6	849	1 250	2 197
Total	5 393	7 705	9 850	6	8	8	4 160	5 138	6 249

Note: Data on DAC members' aid targeting environmental concerns are compiled with the help of the policy marker on aid to environment. DAC members screen and mark each aid activity they report to the Creditor Reporting System (CRS) as either: i) targeting environment as a "principal objective" or a "significant objective"; or ii) not targeting the objective. "Principal" means that environment is an explicit objective of the activity and fundamental in its design. "Significant" means that environment is an important, but secondary, objective of the activity.

1. The memo line "EU Institutions + EU member states" shows the sum of EU members' contributions to developing countries and the outflows of "EU Institutions" to developing countries.

StatLink  <http://dx.doi.org/10.1787/888932700067>

Box 5.1. Trends in aid: Energy (cont.)

Over the last decade, donors have shifted their aid from non-renewable to renewable sources of energy. By 2009-10, more than half of DAC members' aid programmes in the energy sector addressed environmental concerns either as a significant or principal objective.

Figure 5.4. Sub-sectoral breakdown of aid to energy, all donors
Annual average commitments, constant 2010 prices

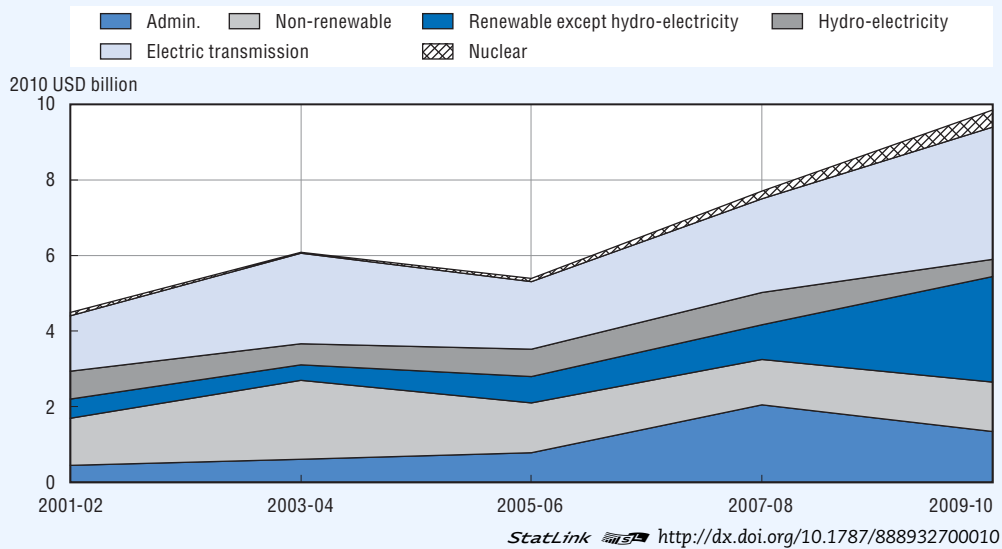
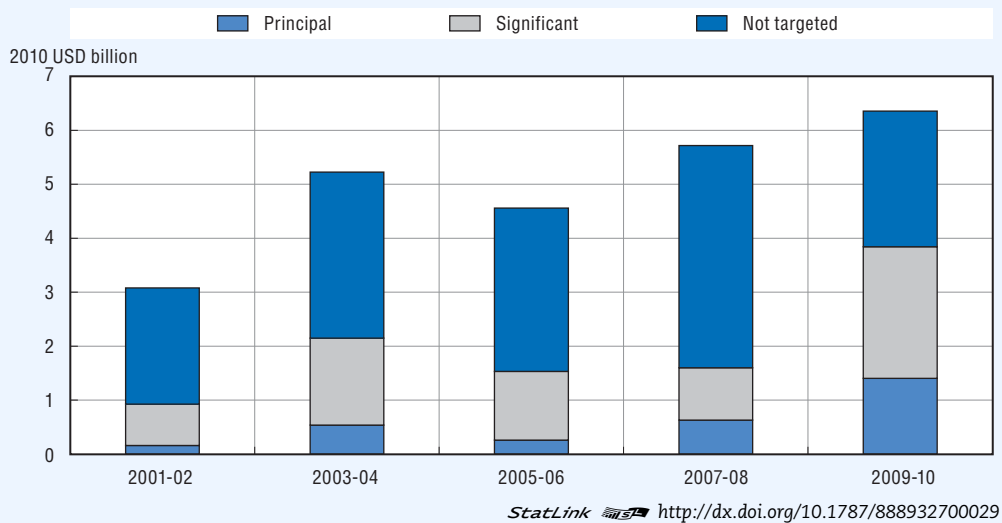


Figure 5.5. DAC members' environment-focused aid in the energy sector
Annual average commitments, constant prices

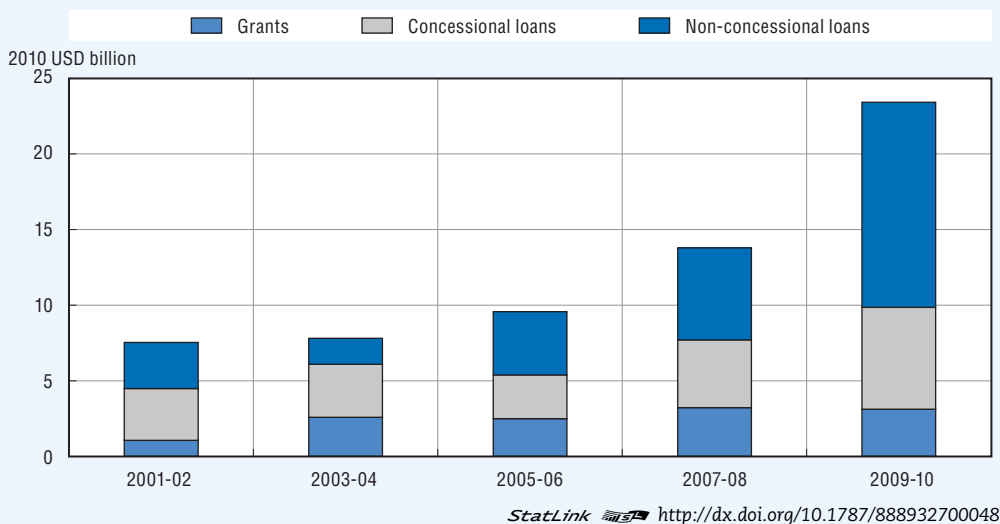



Box 5.1. Trends in aid: Energy (cont.)

While aid for energy rose, non-concessional energy finance rose even faster: non-concessional flows rose from 22% of total flows to the energy sector in 2003-04 to 58% in 2009-10. Multilateral agencies are the main source of these non-concessional flows.

Figure 5.6. Total flows to energy: Grants, concessional and non-concessional loans

Annual average commitments, constant prices



StatLink  <http://dx.doi.org/10.1787/888932700048>

Source: www.oecd.org/dac/stats/energy.

moving towards low-carbon and resource-efficient solutions and helping to eradicate poverty. Recognising that without access to energy there can be no real development, the *Agenda for Change* seeks to make energy work for development.

Access and integration

Sustainable energy is central to inclusive and sustainable economic growth.

Making sustainable energy for all a reality by 2030 will mean working on all aspects of electricity supply – from energy generation and transmission to final distribution and effective reach to customers. It will also mean stepping up efforts to modernise cooking fuels and develop productive uses of energy. The European Commission has brought experience and financial instruments to bear on all three targets set under the Africa-EU Energy Partnership, namely access to modern energy services, regional integration and broad-based renewable power generation.

Energy access. Through the ACP-EU Energy Facility the EU has been involved in more than 130 projects in ACP countries. With resources of about EUR 340 million committed, the facility has leveraged about the same amount from other public and private sources. Overall, the countries involved have been able to bring modern energy services to

between 12 and 13 million people. The projects have also enabled us to amass valuable experience, generating many good examples of how to improve electricity supply and use biomass resources in a more efficient way. The Providing Access to Modern Energy in Northern Uganda (PAMENU) project in Uganda, co-financed by GIZ,⁷ is a case in point. Working with very limited funds, the project has extended modern energy services to more than 1 million people, including 220 social institutions and small and medium enterprises. The technologies applied include efficient cooking stoves, micro-hydro power, and solar photovoltaic (PV) systems.

Unreliable power can cost an economy between 1% and 2% of its GDP.

Regional integration. With Africa's poorly interconnected national power systems, the reliability of energy supply is low; and power infrastructure only delivers a fraction of the services found elsewhere in the world. The economic costs of unreliable power supplies can easily rise to as much as 1% or 2% of GDP.

Projects with a regional reach can play a central role in improving interconnectedness. This is the case for the EU-Africa Infrastructure Trust Fund (ITF),⁸ a financing tool that supports infrastructure investments with a regional impact. The fund, which has been operating since June 2007, combines grant resources from the European Commission and EU member states with the lending capacity of the EIB, EDFIs and the African Development Bank (AfDB). Since its creation, the ITF has raised almost EUR 400 million in funds. Of the EUR 300 million committed so far, 50% or so has been in the energy sector, supporting about 30 major energy projects and leveraging investments exceeding EUR 1 billion. One of the first projects supported was the Félou hydropower plant on the Senegal River. With a generation capacity of 60 MW and a cost of about EUR 200 million, the plant was co-financed by the Africa-EU Infrastructure Trust Fund. Operating as a run-of-the-river plant (i.e. without a big dam), it is harnessing the natural power of the Félou waterfalls, on the Senegal River about 15 kilometres upstream of the town of Kayes in Mali. In this area, plagued by chronic electricity shortages, it provides low-cost hydroelectricity to Mali, Mauritania and Senegal.

The Félou project has been followed by many others. For example, the Caprivi interconnector is a 970 kilometre-long HVDC⁹ transmission line with a capacity of 300 MW; it connects Zambia with Namibia and also provides support for rural electrification in northern Namibia. The ITF has also supported a risk mitigation facility for developing geothermal power plants in three East African countries. Regional projects such as these will contribute to better energy security, improved resilience in the face of climate change and more reliable electricity supply.

Renewable energy projects that leverage private capital are excellent examples of high-impact aid.

Finally, to mobilise private investments for renewable energy and energy efficiency the EU has provided financing to the EUR 108 million Global Energy Efficiency and Renewable Energy Fund (GEEREF),¹⁰ created to address market failure in the financing of small and medium-size projects in developing countries. As an anchor investor, GEEREF operates by creating and supporting regional funds, which in their turn provide risk capital to projects in the form of equity. GEEREF invests globally, but gives priority to less

developed countries. One of its most important roles is to facilitate the emergence of a new class of fund managers dedicated to increasing access to sustainable energy and to fighting climate change on a financially-sound basis. Through its technical assistance facility, GEEREF is also able to provide critical support in the creation phase of the regional funds. Its current portfolio includes hydropower, wind power and biomass projects in Asia and Africa. These projects leverage a significant amount of private capital, providing an excellent example of high-impact aid.

Challenges and barriers

“In low-income countries, expanding access has to be our priority. We need private financing on a scale not yet seen. We need a change that increases energy production, transmission and distribution, and the deployment of off-grid technologies, not on the order of ten or twenty Giga Watts, but hundreds of Giga Watts. And we need to focus on countries and regions such as Sub-Saharan Africa, where the access gap is the biggest.” (Statement by Vijay Iyer, Director of the Sustainable Energy Department at the World Bank during the *World Energy Future Summit*, Abu Dhabi, February 2012.)

This statement reminds us of the huge challenges ahead. With about 1.3 billion people still lacking any access to electricity, and up to a billion more having to cope with unreliable access at best, it is clear that we need to up our game. Making sustainable energy for all a reality by 2030 requires a substantial increase in investment, in power generation, in energy transmission and in its distribution.

Aid will not be enough to meet the sustainable energy challenge.

Given the gigantic financial commitment needed to reach the targets of the Sustainable Energy for All initiative, the interaction among policies and financial resources is of paramount importance. Official development assistance (ODA), as essential as it is, will not suffice to meet the challenge. Success will depend on the ability to engage the private sector to a far greater extent, both in investment and in financing. If we are to unlock the development potential of energy as much as possible, it will be crucial for our developing country partners to have in place institutional and legal frameworks that demonstrate the transparency and accountability needed to attract substantial private investment. They will also need the ability to define and prepare bankable projects.

The EU *Agenda for Change* emphasises the need to get the most from development aid, using grants to leverage private financing. While the above examples demonstrate that we are putting this approach into action, we now need to scale up our efforts substantially. It is also worth remembering that investments in energy do not always need huge grant-related assistance. In fact, with appropriate management and cost-recovery mechanisms in place, these investments can produce regular income. While this may not always be sufficient to cover all initial capital costs, it demonstrates that relatively limited funds can generate high-impact aid.

With its ambitious 20-20-20 energy programme,¹¹ the EU is well-placed to provide technical expertise and support. A leader in renewable energy technology and efficiency, the EU has valuable experience in the legal and administrative measures necessary to catalyse investment in modern energy technology – be it through renewable energy, advanced networks or energy efficiency.

Yet, technology alone will not make investments happen. While the Sustainable Energy for All initiative presents our partner countries in the developing world with opportunities, it also presents challenges – such as setting priorities, getting policies right and providing an enabling business environment. This will be crucial if developing countries are to establish a climate of confidence in which the private sector and investors feel comfortable – and the appropriate climate must be backed by solid political commitment.

The EU is prepared to work in partnership to accomplish this. The Sustainable Energy for All initiative provides perhaps some of the greatest opportunities of the 21st century – both for the EU and for our partner countries – in these difficult financial times. Yet, as we move forward, new markets will be created and new productive partnerships forged; our partner countries will avail themselves of new innovative technologies; and income and jobs will be increased, directly and indirectly. In fact, what we are engaged in is nothing short of an energy revolution.

The way forward

The UN's Sustainable Energy for All initiative calls for concerted efforts by all stakeholders. The EU, which provides more than half of all global ODA, stands fully behind the three targets of the initiative and is fully committed to achieving them. Indeed, they very much tally with the aims and policies the EU has already adopted at home.

Investors need a climate of confidence backed by solid political commitment.

With the necessary political will, the UN Secretary-General's goals are perfectly achievable and there are real benefits to be had. At the EU we are determined to make these benefits work for our partner countries in the developing world by creating synergies between internal and external policies. We remain steadfast in our commitment to play a major role in meeting the goals, drawing on our wealth of experience and expertise, and to match promises with results and funding.

Now the hard work must begin in earnest. As partners, we must focus on the practical aspects of quickly finalising a concrete but ambitious action plan that will deliver results. We must work together to get National Energy Access Strategies up and running as soon as possible in developing countries. And ownership by beneficiary countries must be the cornerstone of our initiative.

With clear, monitored and transparent commitments, even the most ambitious plans can be achieved – the EU knows this from its own experience. What seemed highly ambitious just a few years ago in the EU member countries is now accepted as self-evident, becoming “business as usual”. So let's not be afraid to be ambitious. When it comes to sustainable energy for all, we must believe that the sky is the limit.

Notes

1. www.euei-pdf.org.
2. ACP: Africa, Caribbean and Pacific.
3. <http://ec.europa.eu/europeaid/where/acp/regional-cooperation/energy>.
4. www.africa-eu-partnership.org.

5. Council conclusions on access to sustainable energy sources at the local level in developing countries, Brussels, 19 May 2009.
6. Energy ODA committed, 2005-11, Commission's internal database.
7. *Gesellschaft für Internationale Zusammenarbeit*, or German Agency for International Co-operation.
8. www.eu-africa-infrastructure-tf.net.
9. HVDC: high voltage direct current.
10. <http://geeref.com>.
11. By 2020: 20% reduced greenhouse gas emissions; 20% of EU's energy consumption to come from renewable resources; and a 20% reduction in primary energy use to be achieved by improving energy efficiency.

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