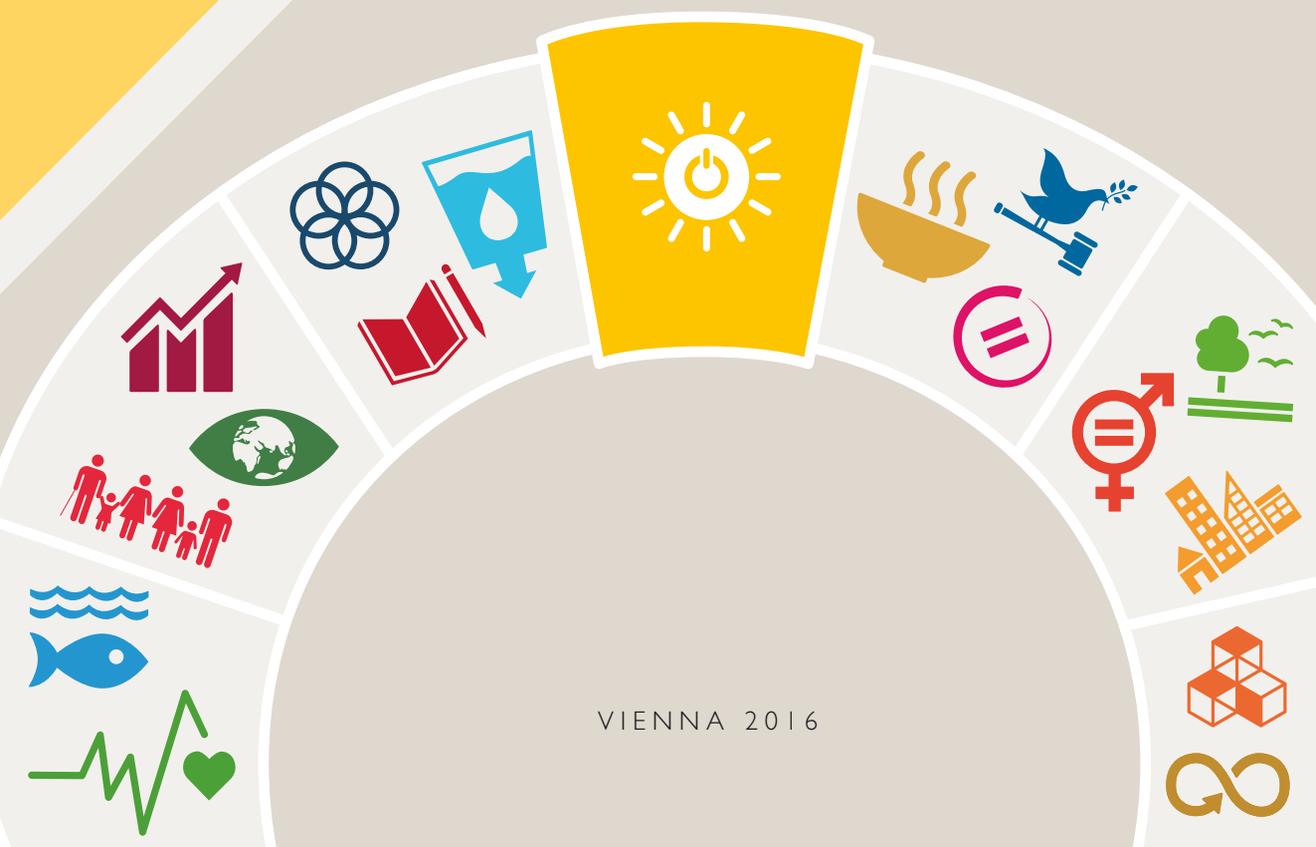


The 2030 development agenda: Energy access a keystone



The 2030 development agenda:
Energy access a keystone

The “OFID Pamphlet Series” was begun in 1977, a year after the establishment of OFID. The series is meant to promote a better understanding of the aspirations and problems of developing countries, including OPEC Member States.

OFID is the multilateral development finance institution established by the Member States of OPEC in 1976 to promote South-South solidarity and strengthen cooperation between countries of the developing world.

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Design: etage.cc, Vienna, Austria

Printing: Druckerei Odysseus, Himberg, Austria



This publication is printed in accordance with the guidelines set by the Austrian environmental label for ‘printed products.’

OFID PAMPHLET SERIES

The 2030 development agenda:
Energy access a keystone

OFID PAMPHLET SERIES 40
VIENNA, AUSTRIA
JANUARY 2016



Uniting against Poverty

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Foreword

My association with the global development debate goes back many years to 1968. I was starting my professional life, when I was attached to my country's delegation to the Second Session of the United Nations Conference on Trade and Development, (UNCTAD II), held in New Delhi, India. For almost two months, I watched and listened to ministers of economy of the time discuss development issues. With the benefit of hindsight, I can confidently state that none of the eloquent debaters mentioned energy.

It would be almost four decades before I would see the global community finally make the connection between energy poverty and development. During these forty years, I became closely involved with the energy industry. I witnessed the creation of the OPEC Fund for International Development (OFID) at the first OPEC Summit in Algiers in 1975; and saw OFID's mandate confirmed by the second OPEC Summit in Caracas in 2000. In 2003, I became head of OFID and, four years later, accepted the mandate handed down by the third OPEC Summit in Riyadh. The historic Riyadh Declaration recognized unequivocally that energy was essential for poverty eradication, sustainable development, and the achievement of the Millennium Development Goals (MDGs).

But this was already 2007; the MDGs had been guiding the global development agenda since 2000 and, crucially, were without a goal relating specifically to energy access. At OFID, we picked up on this gap and publically called for energy poverty alleviation to be seen as the "Missing Ninth MDG." We raised our voice and backed it up with concrete action on the ground; and we pushed with all our might to bring the plight of the energy-poor to the attention of the global community.

We are proud that our efforts—and those of other like-minded institutions and individuals with whom we worked in partnership—have finally paid off. At last, universal access to modern energy services has made it onto the global development agenda. More than that, it has a prominent place in the collective mind of development strategists and practitioners.

At the core of the recently adopted 2030 Development Agenda is the integration of the economic, social and environmental dimensions of sustainable development. Within this new framework, energy is firmly entrenched as Goal 7, in a set of 17 Sustainable Development Goals. The SDGs address poverty, hunger, and many other issues that impede the prosperity of the human race, including inequality and environmental threats.

At OFID, we have always believed that human development and energy use go hand in hand. The inclusion of universal access to affordable, reliable and modern energy services as the first target under SDG 7 implies recognition of this belief by the entire global community. But it also raises a host of questions, which must be answered before we can fight energy poverty from a position of strength.

To start with, we need to identify the battleground, the tactics and the weapons. And we need to be cognizant of how this one fight relates to the bigger war—against poverty itself. After all, how many wars have been lost because of strategic failings?

During my long career, I have come to realize that all development issues boil down to the bottom line of finance. All the development debates I have witnessed have been about how to finance development and how to raise the necessary resources. Attaining universal energy access, and indeed achieving all of the objectives of the 2030 Agenda, is no exception. So, the next question is: Now that there is a global agreement on the objectives of development, how and by whom are the SDGs going to be financed?

This publication attempts to unpick the challenges of Agenda 2030—in particular SDG7—and give guidance on the myriad issues that relate to its successful implementation. It draws practical examples, especially from the experience of OFID, which has a long history and a proven track record in the field of energy poverty eradication. Our achievements are the result of cooperation and partnership with countries on four continents and with like-minded institutions and individuals. For the next decade, at least, fighting energy poverty will continue to be a core issue of OFID's Corporate Plan 2016–2025, as approved by OFID's Ministerial Council in July 2015.

As a practitioner of development aid, I recommend this publication as useful reading for those who seek broader knowledge for successful engagement in the fight against energy poverty in particular, and in the wider field of sustainable development in general. I am certain that the publication will provide deeper insights to those who, like OFID, will keep enlarging their commitments to energy poverty alleviation and widening the range of financing solutions that they utilize.



Suleiman J Al-Herbish
Director-General

Introduction

On September 25, 2015, the General Assembly of the United Nations adopted the outcome document of the UN Summit for the Adoption of the Post-2015 Development Agenda “*Transforming our world: The 2030 Agenda for Sustainable Development.*” The Agenda is “a plan of action for people, planet and prosperity.” It recognizes that eradicating poverty in all its forms and dimensions is the greatest global challenge and an indispensable requirement for sustainable development. The adopted 17 Sustainable Development Goals (SDGs) and 169 targets demonstrate the scale and ambition of the new global agenda. Designed to complete the unfinished business of the Millennium Development Goals (MDGs), the SDGs reflect an improved understanding of the complexity of the relationships between the different aspects of development. They are presented as separate elements but are based on an integrated, systematic approach that seeks to balance the three dimensions of sustainable development: the economic, social and environmental.

For many years, the issue of energy has been a “deal-breaker” in international negotiations on sustainable development. Energy was completely omitted from the MDGs. However, energy poverty affects billions of people around the globe and hinders their development and contribution to the welfare of the planet. To quote the Global Action Agenda of the UN Sustainable Energy for All initiative: “*Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive.*” Access to modern energy services that provide energy in a clean, affordable and reliable way powers opportunity and fuels development. Energy access is crucial for human development in a multitude of different ways and needs to be prioritized by the global community.

Thanks to the persistent and prolonged advocacy of development stakeholders, energy now features in the new development agenda as SDG7. This reflects the global realization that development is not possible without energy and sustainable development is not possible without sustainable energy.

Energy may thus be seen as a vital “resource” that is required to meet the other SDGs. Energy directly links to the goals and targets identified in the 2030 Agenda. Without energy it is impossible to deliver primary healthcare, eradicate poverty, end hunger, supply clean water, or mitigate climate change. In short, energy is a major enabling factor.

Addressing the linkages and multiple challenges of increasing energy access will require a variety of solutions that depend on economic conditions, policy priorities and, most importantly, a sincere international effort. Substantial investment will be needed to increase the rate of access to modern energy services. However, inadequate energy provision impacts not only the poorest countries but also some with relatively high levels of GDP per capita, with significant industrial sectors and with substantial natural and human resources. This demonstrates that there is much more to energy poverty than simply a lack of financing.

Given the complexity of the challenge, efforts to achieve universal energy access will continue to fall short as long as there is no effective international framework that goes beyond simply providing aid. The Global Partnership for Effective Development Cooperation (GPEDC) provides the right platform to fill this gap. Respecting the principles of country leadership, transparency, equal participation, and capacity building, the GPEDC emphasizes the necessity of delivering results.

The analyses provided in this pamphlet seek to show that, as the global community embarks on a new road toward sustainable development, now is the time to give a higher priority to energy. The analyses establish that access to modern energy services is a key enabler to achieving the SDGs, and demonstrate the important role an effective global partnership can play in overcoming the many obstacles that deter investment in energy access projects. The publication concludes with a look at the efforts of OFID over many years as a practical example of operationalizing these elements.

Global energy poverty footprint

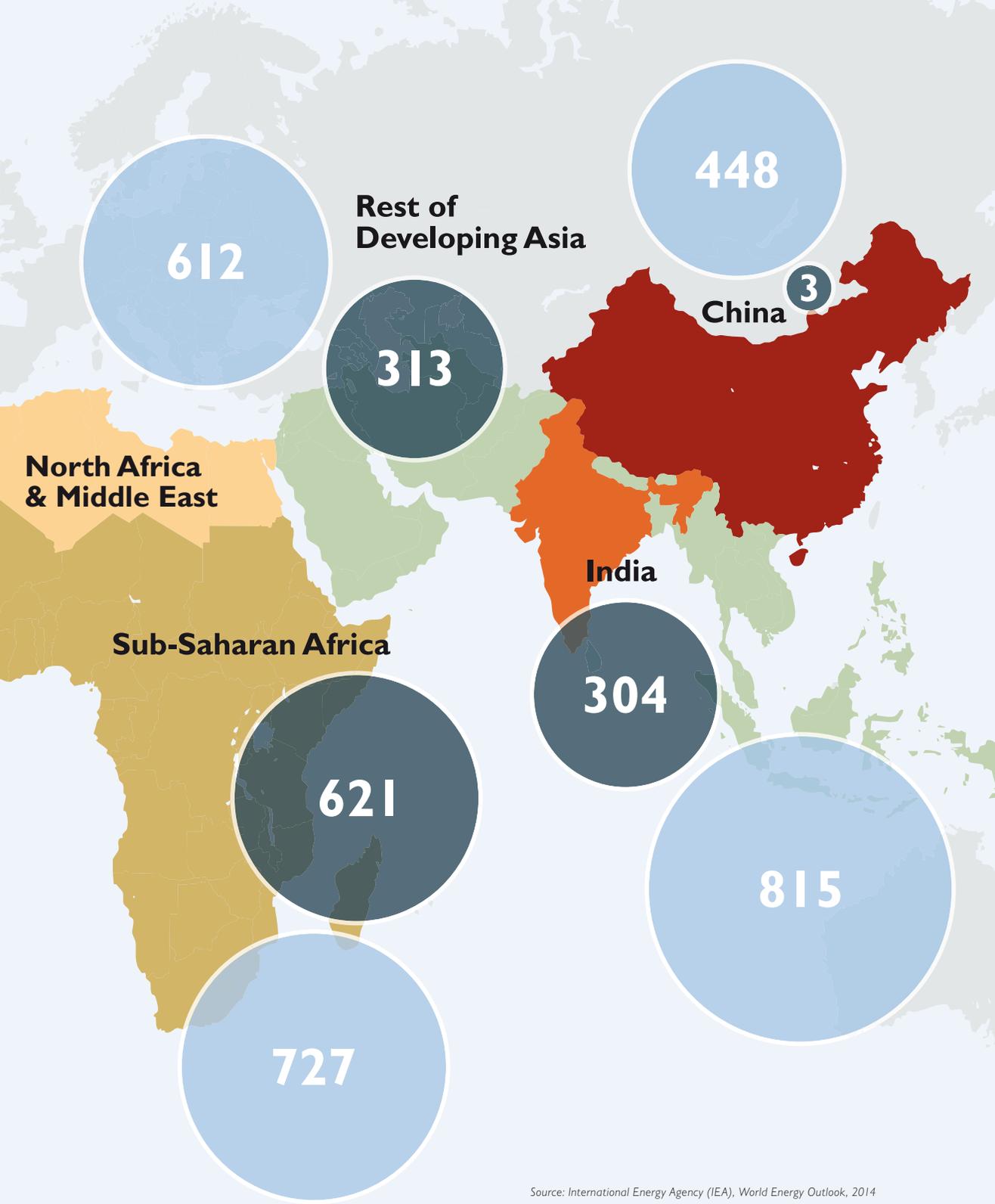


Millions of people without electricity



Millions of people using traditional biomass





Source: International Energy Agency (IEA), World Energy Outlook, 2014

Executive summary

No country has developed without access to reliable and affordable energy. The lack of such access means that basic needs, including food and water, are not being met. Energy impacts on people, communities and countries in terms of economic growth, health, security, food and education. It also affects ecosystems and is directly linked to climate change. Energy is thus a key enabler of sustainable development for all countries and all people.

Despite having a degree of success, the Millennium Development Goals (MDGs) fell short by not integrating the economic, social and environmental aspects of sustainable development as envisaged in the Millennium Declaration.

By recognizing and taking into consideration the limitations of the MDGs, the Sustainable Development Goals (SDGs) are meant to address the systemic issues that slow and hinder development. Comprising 17 goals and 169 targets, the SDG framework is based on a methodical approach to development problems, with a complex network of linkages that underlines the necessity of an overall perspective.

Global investment needs for SDG-related sectors are estimated at \$5–7tr per year. The large sums required to implement the SDGs are partly due to the synergies between the SDGs and climate change mitigation. Both will be bound by the finance that will be mobilized to address them.

The investment required in developing countries is set at \$3.3–4.5tr per year. At current levels of investment, developing countries face an annual gap of \$2.5tr. Private sector participation will be essential in bridging this gap, as will official development assistance, especially for the least developed countries.

The SDGs have as Goal 7: “Ensure access to affordable, reliable, sustainable and modern energy for all.” The inclusion of modern energy access as an explicit goal in the post-2015 development agenda is crucial, reflecting the

global realization that development is not possible without energy and sustainable development is not possible without sustainable energy.

Energy directly links to all 17 SDGs and to 56 of the targets. Addressing the linkages and multiple challenges of increasing energy access will require a variety of solutions that depend on economic conditions, policy priorities and a sincere international effort. Yet, given the myriad requirements of all countries, both developed and developing, and the large number of goals and targets, there is a risk that energy could be drowned out, despite its enabling powers.

Sustaining a growing population requires securing increasing supplies of three basic commodities: energy, water and food, all of which are closely intertwined. The interactions among the three are complex and dynamic, and sectoral issues cannot be looked at in isolation from one another. OFID has adopted the energy-water-food nexus as the central pillar of its Corporate Plan 2016–2025, thereby aligning the Plan with the new development agenda and its approach for the next 15 years.

In seeking to achieve universal energy access, all energy sources need to be tapped. Renewable energy sources will play a vital role in a global energy supply mix characterized by diversity. As desirable as renewables might be in the long term, however, they do not necessarily represent a feasible option for poorer countries at the current time. Efforts to eradicate energy poverty, therefore, must be technology-neutral. In addition, the technical solutions must be tailored to the conditions of each country.

The lack of access to electricity is primarily a rural problem. As such, in locations that are too remote for grid-connection to be a technically or economically feasible option, mini-grids constitute an intermediate solution, between conventional grid connection and stand-alone systems, for the provision of electricity.

The definition of energy poverty as a lack of access to electricity and reliance on traditional biomass fuels for cooking has become the consensus view of many international organizations working in the field. Almost 1.1 billion people have no access to electricity whatsoever, while 2.9 billion people have no access to clean cooking facilities and rely on intensified use of traditional biomass fuels to meet their cooking needs.

Measuring energy poverty is critical in the fight against it. The binary indicators above address merely a household focus and leave aside the community and productive applications of energy access. However, for sustained economic growth, access to electricity across all economic sectors is necessary.

In contrast, the multitier measurement framework, as developed by the World Bank/ESMAP (Energy Sector Management Assistance Program), assesses the quality and quantity of energy by minimum and maximum levels of access for households, productive engagements and community facilities. It also incorporates a technology-neutral approach.

The UN Sustainable Energy for All (SE4ALL) initiative is the main global-level platform to drive collective action and mobilize commitments for energy poverty eradication. Progress over the two-year tracking period 2010–2012 falls substantially short of what is required to attain the objectives of the initiative by 2030. With regard to electricity, the annual access increment of 111 million people remains lower than the needed annual pace of growth of 135 million from 2012 through 2030.

SE4ALL estimates an annual investment of \$50bn—to cover access to both electricity and clean cooking facilities—to achieve the goal of universal energy access by 2030. Although substantial, this is very small when compared to the annual investments needed to achieve the SE4ALL energy efficiency and renewable energy goals of \$560bn and \$650bn, respectively.

A partial explanation for the slow progress on universal energy access is the shortfall in investment. When compared to the amount of investment of just over \$9bn in 2012, there is a shortfall of over \$40bn in annual investment to achieve the goal of universal energy access by 2030. If all announced investment commitments and policies are realized, around \$19bn will be invested yearly in power plants and new transmission and distribution lines through 2030.

Official development finance and technological solutions alone will not guarantee success. The creation of an investment-enabling environment underpins financing for universal access to modern energy services in developing countries. This environment must be politically, institutionally and economically stable at the macro-level and have a regulatory framework at the micro-level. For countries with an energy access deficit, there are several tried and tested solutions they can tap into.

The Global Partnership for Effective Development Cooperation (GPEDC) is based on a holistic approach that emphasizes the role of country ownership of development planning, while enhancing the enabling environment that will facilitate domestic and international financing of projects. The establishment in 2011 of the GPEDC marked a shift from traditional development interactions to inclusive partnerships for effective development. The Partner-

ship is a platform for knowledge- and experience-sharing in order to build the capacity of the partner countries. At the heart of the Partnership is a focus on results. These elements make the GPEDC approach particularly relevant in addressing the multiple and complex obstacles that constrain investment in energy projects.

OFID is a practical example of how to effectively tackle energy poverty eradication. OFID sharpened its focus on the energy sector in response to the Riyadh Declaration of the Third OPEC Summit of November 2007. The institution labelled the eradication of energy poverty the “missing 9th MDG” and campaigned rigorously to secure energy’s place in the post-2015 development agenda.

The advocacy and actions practiced by OFID to alleviate energy poverty were the reason it was invited to be a member of the UN Secretary-General’s SE4ALL Advisory Board. As the year 2012 was declared the “International Year of Sustainable Energy for All” and the decade 2014–2024 the “Decade of Sustainable Energy for All”, OFID’s Ministerial Council pledged in 2012 a sum of \$1bn to further catalyze action on the ground.

OFID is a member of the Coordination Group of National and Regional Arab Development Funds and the Islamic Development Bank. Together with other members, OFID has been a consistent supporter of the development effectiveness agenda, and believes that each SDG is relevant in terms of its contribution and its potential to enhance the welfare of the developing countries and to meet the aspirations of their people to prosperity.

Chapter I

GLOBAL DEVELOPMENT: FROM MDGs to SDGs

On September 27, 2015, at a specially convened summit of the UN General Assembly, the international community formally adopted a new global development framework: “*Transforming our world: The 2030 Agenda for Sustainable Development.*” At the heart of Agenda 2030 lies a set of 17 Sustainable Development Goals (SDGs), which seek to build upon the lessons and successes of their predecessor, the Millennium Development Goals (MDGs). The SDGs will define the development agenda of the next 15 years and help direct the path the world takes toward sustainable development.

This introductory chapter examines the successes and shortcomings of the MDGs, describes the process to formulate the SDGs, and looks at how the SDGs will be financed. It also highlights the key role of energy in the realization of the new agenda. It will show that development is not possible without energy, and sustainable development is not possible without sustainable energy. One of the biggest failings of the MDGs was the omission of energy access as an explicit goal. In contrast to the MDGs, the SDGs are based on a systematic approach to development problems. Comprising 17 goals and 169 targets, the framework is also much broader, with a complex network of linkages that underline the necessity of an overall perspective. Recognizing energy as a crucial component of the development process, the SDGs have as Goal 7: “Ensure access to affordable, reliable, sustainable and modern energy for all.”

The MDGs: the road so far

When they were adopted by the international community in September 2000, the eight MDGs represented the first ever global program of action defined by a set of time-bound goals and targets. Its overarching aim was to help the world reach a state of sustainable development by 2015. As this deadline approached, however, it became increasingly clear that significant challenges remained.

Even though the MDGs suffered from a number of shortcomings, including the absence of an energy goal, they nonetheless had a high degree of success. Extreme poverty rates were cut in half between 1990 and 2010, lifting half a billion more people above the international poverty line of \$1.25 a day. This represents the fastest poverty reduction in human history. Over 90% of children now complete primary school education, while the attendance rate of girls has substantially increased. Compared to 1990, the under-5 daily mortality rate has decreased by 17,000, while maternal mortality levels have fallen by 45%. According to the latest data, 9.7 million people are now receiving HIV medicine, and 3.3 million HIV-related deaths have been prevented in the span of 12 years. Since 1990, 2.3 billion people have received access to clean drinking water. The burden of debt has declined for developing countries and the economic and trade climate has improved for them as well. All of this progress was achieved through a combination of economic growth, improved policies and a global commitment to implement the MDGs.

Millennium Development Goals: Then and now

Table I.1

Proportion of people living in extreme poverty	1990 46.7%	2010 22%
Proportion of hungry people	1990 18.6%	2010–12 12.5%
Primary school completion rate	1990 81.9%	2011 91.2%
Ratio of girls to boys attending school	1990 0.88	2011 0.97
Under-5 mortality rate per 1,000 live births	1990 87	2012 50
Maternal mortality rate per 100,000 live births	1990 400	2010 210
Incidence of new HIV cases per 100 people	1990 0.08	2011 0.06
Proportion of people without access to safe drinking water	1990 24%	2011 11%
Proportion of people without access to basic sanitation	1990 51%	2011 36%

Data source: United Nations

The MDGs created a varied network of partners that has worked together to create the best solutions. Over the course of the implementation of the MDGs, engagement among all parties has evolved from basic project pipelines and financing needs to a more robust interaction covering a number of issues, including strategy and advocacy. Partly as a result of the work that was begun with the MDGs, partnerships were, and will continue to be, established with diverse companies, organizations, government entities and civil society, in order to come up with the best possible solution for a particular problem.

The process to formulate the SDGs

The MDGs in general were criticised for being too simplistic and for narrowing the sustainable development agenda. In its report, *“A New Global Partnership: Eradicate Poverty and Transform Economies Through Sustainable Development,”* the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, explained that the MDGs fell short by not integrating the economic, social and environmental aspects of sustainable development as envisaged in the Millennium Declaration. This failing meant that they did not address the need to promote sustainable patterns of consumption and production. As a result, development and the environment were never properly linked.

As already indicated, a major shortcoming of the MDGs was the omission of access to modern energy services as an explicit development goal. There is now a wide consensus that economic and social development is seriously impeded by the lack of sustainable energy services. Access to energy is a necessary precondition to achieving development goals far beyond the confines of the energy sector, including the eradication of poverty and hunger. Countless examples have shown that once modern energy is available, families and businesses benefit enormously from light, power and heat and the associated opportunities for job creation and income generation.

Work subsequent to the creation of the MDGs has emphasized this. In 2005, the UN Energy study *“The Energy Challenge for Achieving the MDGs”* highlighted that energy services such as lighting, heating, cooking and mechanical power were essential for alleviating poverty and achieving the goals. The links are clear:

Under MDG1 (eradicate extreme poverty and hunger), energy is needed to power irrigation systems and farm machinery, in order to increase agricultural yields and thus boost earnings and food security. With regard to universal education (MDG2), energy access can release pupils from the time-consuming tasks of water and fuel gathering and provide lighting to enable

To the casual observer, the omission of energy poverty eradication from the MDGs is something of a mystery. Given the incontrovertible links between energy access and human development, it is hard to understand why such a critical component would be overlooked in an agenda that specifically set out to address global poverty and hunger. In an interview for the January 2014 issue of the *OFID Quarterly* magazine, Kandeh Yumkella, then CEO of the UN Sustainable Energy for All initiative, shed light on the question: “As a topic, energy used to be a discussion breaker. The moment you put energy on the table, governments would take sides. What we’ve done in the past three years is change the narrative, by showing politicians that we are not talking about geopolitics, but about human development. Finally, we are comfortable talking about energy without fighting over it.”

them to study at night. Energy can empower women (MDG3) by powering street lighting to increase safety and enabling them to attend school or community activities after dark. Energy can also support the functioning of clinics and hospitals (MDGs 4, 5, and 6). Deficient access also undermines resilience to socioeconomic and climate vulnerabilities. For example, energy services for use by health centers and communities are essential for disaster management.

By recognizing and taking into consideration the limitations of the MDGs, UN Member States tried to produce a set of global goals and targets that would be a significant improvement. Thus the SDGs, unlike the MDGs, address the systemic issues that slow and hinder development. With the MDGs there was no attempt to produce an integrated system, which did not help facilitate policy integration across sectors. For example, environmental sustainability was simply added to the MDGs in the form of Goal No.7, while in the SDGs it has a core identity along with equity and poverty.

Due to the criticism of the MDGs for having a top-down approach to development, the SDGs went through an extensive three-year consultation process involving the governments of both developed and developing countries as well as all segments of society. The formulation of the new agenda was based on the recommendations of the Open Working Group (OWG) Proposal for the SDGs. With 30 seats shared by a group of 70 UN Member State representatives, the OWG conducted 13 thematic and 83 national consultations and launched an online “*My World Survey*” inviting the general public to prioritize the areas they would like to see addressed in the goals.

The Sustainable Development Goals

Table 1.2

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote wellbeing for all at all ages
Goal 4	Ensure inclusive and quality education for all and promote lifelong learning opportunities
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure access to water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8	Promote inclusive and sustainable economic growth, employment and decent work for all
Goal 9	Build resilient infrastructure, promote sustainable industrialization and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources
Goal 15	Sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss
Goal 16	Promote just, peaceful and inclusive societies
Goal 17	Revitalize the global partnership for sustainable development

This approach directly tackled the lack of analysis and justification behind the MDGs. By catering to the concerns of all stakeholders, the SDGs have been endowed with significantly greater legitimacy. As a wide-reaching agenda with multiple goals and targets, it is far larger than its predecessor. It may be seen as a network, where the links among the 17 goals—with several targets under each goal—exist through the targets which refer to multiple goals.

The SDGs have attracted criticism from various sources for being too global and losing coherence when compared to the MDGs. These critics argue that the SDGs should have concentrated more on the world's poorest and most underdeveloped countries. However, the SDGs are meant to address issues of sustainable development for all countries of the world. The goals are many in number because challenges vary significantly from country to country. It is the agenda's very broadness that strengthens its ownership.

Following the release of the OWG proposal in July 2014, there was a belief that there would be no major revisions to the goals and targets. UN Member States were reluctant to reopen negotiations after difficulties in reaching an agreement on sensitive issues that were viewed differently by developed and developing countries. The outcome document of the UN Summit to adopt the Post-2015 Development Agenda truly is a historic agreement, as it is the product of one of the largest diplomatic processes and discussions ever undertaken regarding so many different issues.

Binding the targets

In contrast to the MDGs, the wider scope of the SDGs reflects an improved understanding of the complexity of the relationships between the different aspects of development. This complex relationship is manifested in the fact that individual SDGs overlap and many targets might contribute to or adversely affect several goals.

The SDGs are presented as separate elements but they are not isolated from each other. However, the SDG framework does not explicitly refer to the interdependencies and interlinkages between goals and targets. Therefore, it cannot ensure that development takes place within sustainable levels of resource use. Going forward, observers have pointed out that work is needed to ensure that the interdependences among the relevant sectors is taken into account within strategy and policy formulation.

Concerned parties are already working on how to improve the SDGs as a network by examining what binds them. By looking at the SDGs as a system, it is possible to find the targets that establish links with two or more goals. Estab-

The recently adopted “Transforming our World: The 2030 Agenda for Sustainable Development” highlights poverty eradication as an overarching goal. Yet it marks the first-ever global consensus that focusing solely on GDP growth, while ignoring environmental protection or social justice, is not the right path for development. The Agenda has at its core the integration of the economic, social and environmental dimensions of sustainable development.

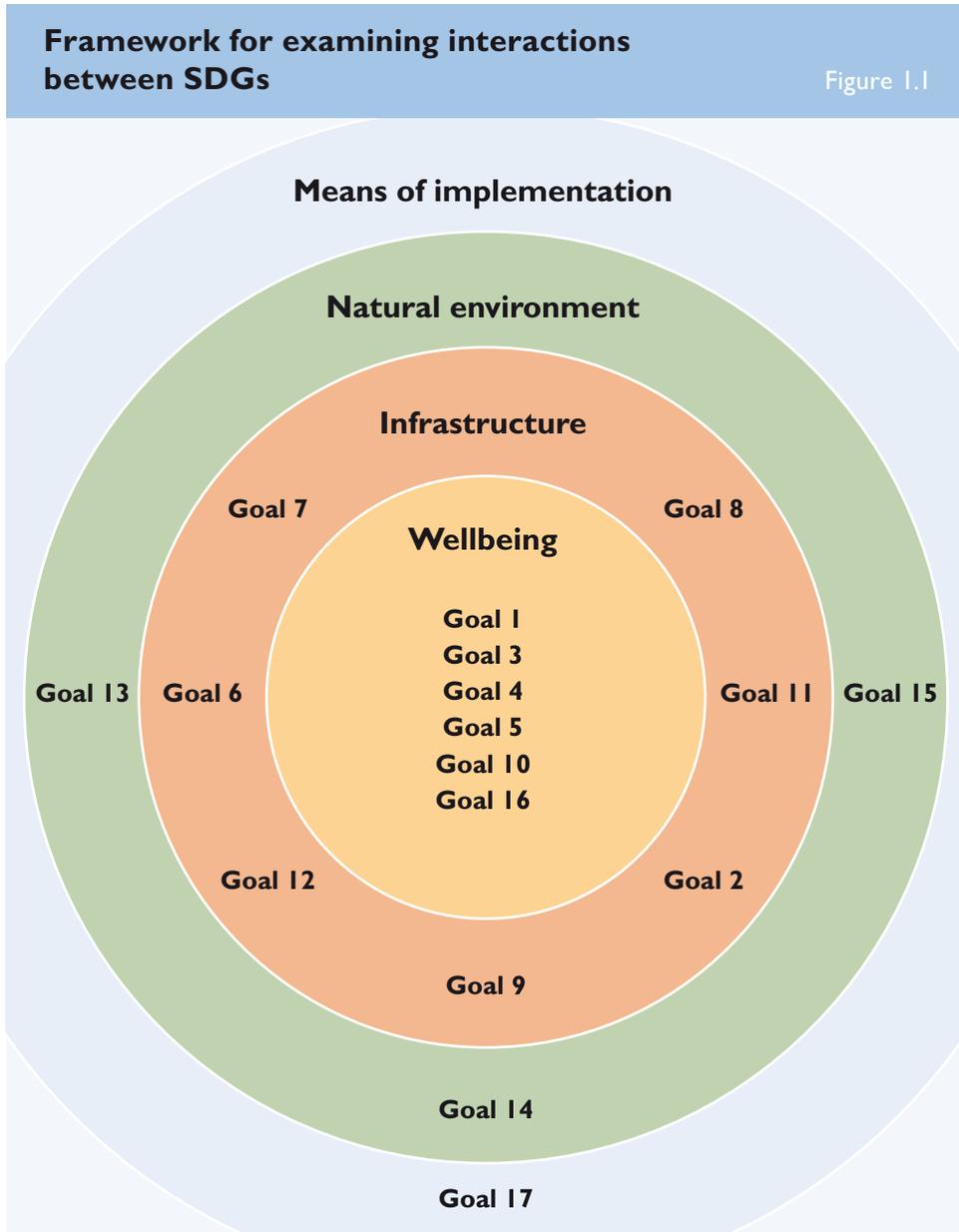
The Agenda aspires to develop a multistakeholder plan and calls for action by all countries, rich and poor, developed and developing. It outlines a set of Sustainable Development Goals and subordinated targets. While these are global in nature, they are defined as aspirational, with each government setting its own targets, taking into account national circumstances, and deciding how the global targets should be incorporated in national planning processes, policies and strategies.

In addition to the goals addressing poverty, hunger, economic growth, and inequality among countries, the Agenda brings other core issues into its framework. It includes, for example, targets that address inclusive education, gender equality and women’s empowerment. The environmental dimension of sustainable development is covered in the goals relating to climate change, oceans and marine resources, and ecosystems and biodiversity.

lishing these links transforms the collection of disparate goals and targets into a system and makes clear the inherent trade-offs and interdependences.

In Figure 1.1, the 17 SDGs are presented in three concentric layers, each reflecting its main intended outcome. The inner layer of people-centered goals aims to deliver individual and collective wellbeing through improved health and education and their equitable distribution within and between countries. The wellbeing goals are supported by the infrastructure goals, which relate to the production, distribution and delivery of goods and services, including food, energy, clean water, and waste and sanitation services in cities and other settlements. The three natural environment goals relate to the governance of natural resources and public goods in land, ocean and air, including biodiversity and climate change. Uniting all three layers is the means of implementation. By tackling goals in an integrated way rather than using a silo approach, it will be possible to achieve multiple targets simultaneously. Likewise, an

understanding of the inherent interlinkages within the SDGs will help facilitate integrated planning and decision-making. This, in turn, will optimize the allocation of resources between competing needs in order to better support development.



Energy key to implementing SDGs

Energy is one of the few issues on which there was general agreement both before and after the June 2012 Rio+20 summit on sustainable development. Due to its central and enabling role, energy was considered one of the main areas that the SDGs had to address.

According to the International Council for Sciences and the International Social Science Council, energy directly links to each of the adopted goals and 56 out of the 169 targets.

Without energy (SDG7) it is impossible to deliver on primary health (SDG3), poverty eradication (SDG1), climate change (SDG13), hunger and nutrition (SDG2), education (SDG4), gender equality (SDG5), clean water and sanitation (SDG6), productive opportunities (SDG8), cities (SDG11), infrastructure and industrialization (SD11) and sustainable consumption (SDG12). At the same time, SDG7 must be delivered within the parameters set by the other SDGs. For instance, the renewable energy projects required to deliver Target 7.2 must be carefully sited to avoid negative impacts on local terrestrial and/or ocean biodiversity (SDG14 and 15).

Addressing the linkages and the multiple challenges of increasing energy access will require a variety of solutions that depend on economic conditions, policy priorities and a sincere international effort. Substantial investment will be needed to increase and revitalize generating capacity and the associated transmission and distribution of electricity, especially in the least developed countries (LDCs). For these countries, external assistance will be essential for tackling the vast financial requirements of increasing energy access for productive means. It is not feasible for developing countries to allocate a substantial percentage of their annual GDP toward meeting the capital needs of a single sector, however deserving. If energy is considered only after it is required, it will naturally lead to bad investment decisions and a considerable waste in resources. Future energy requirements need to be at the forefront when planning the development of other sectors. Though there are ways to find alternative methods or means to work around other problems, this is not the case in regard to energy demand.

Given the myriad requirements of all countries, both developed and developing, and the large number of goals and targets, there is a risk that energy could be drowned out, despite its enabling powers. The interlinkages between energy and sustainable development thus need to be highlighted continually and acted on by concerned institutions.

Financing the SDGs

According to the United Nations Conference on Trade and Development (UNCTAD), the SDGs will have significant resource implications across the developed and developing world. Global investment needs for SDG-related sectors are between \$5tr and \$7tr per year. The investment required in developing countries is between \$3.3tr and \$4.5tr per year and is mainly for basic infrastructure, food security, climate change mitigation and adaptation, health, and education. At current levels of investment in SDG-related sectors, developing countries face an annual gap of \$2.5tr.

In developing countries, especially in LDCs and other vulnerable economies, public finances are central to investment in the SDG-related sectors. Domestic public finance has been steadily increasing as governments in less developed countries continue to improve revenue collection mechanisms and the effectiveness of tax authorities. Ending tax avoidance by international companies operating in developing countries could put an additional \$160bn per year into government coffers. In addition, there are simpler ideas such as reducing the cost of sending remittances.

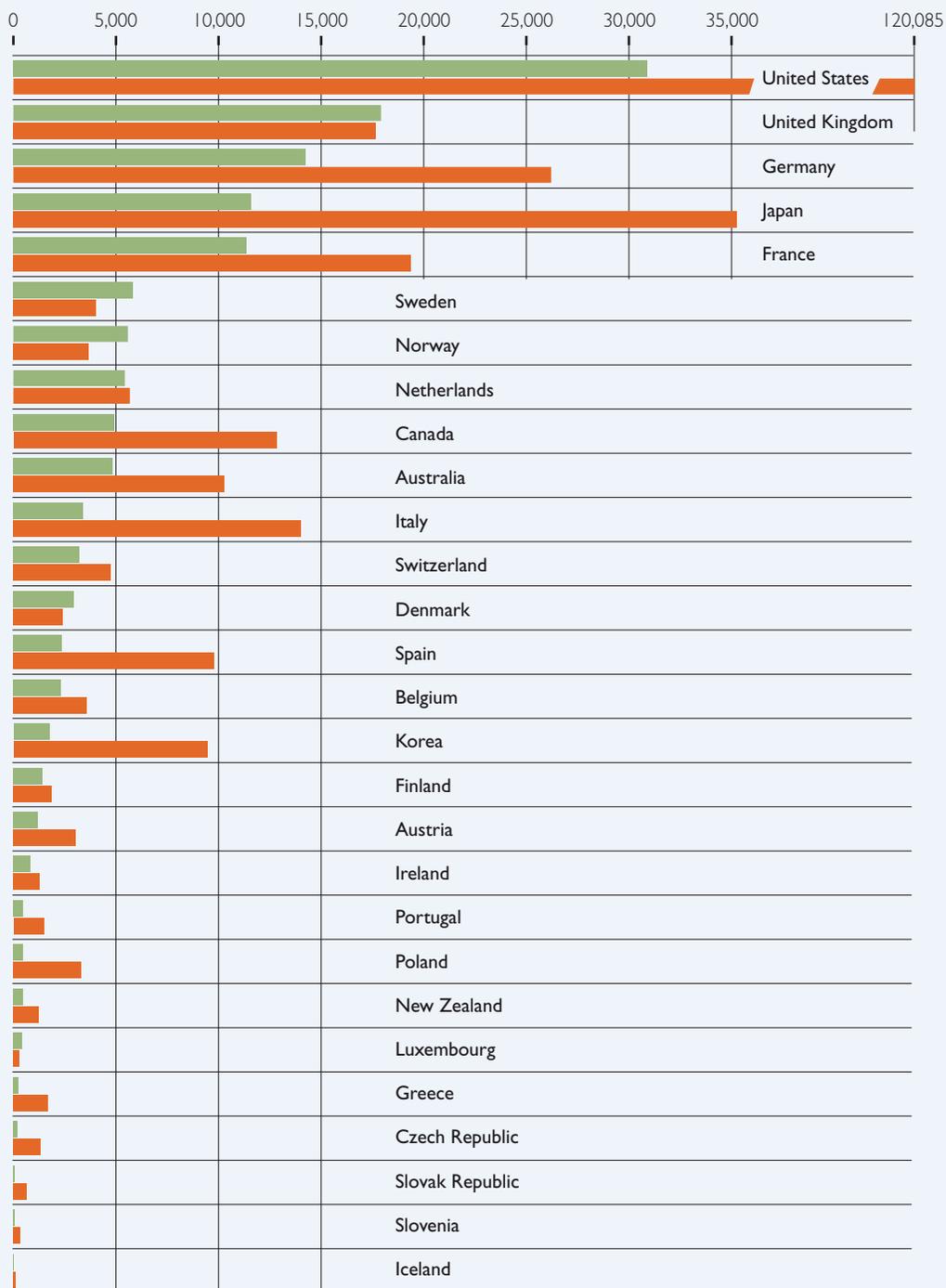
The role of official development assistance (ODA) is also critical, especially due to the needs of LDCs. According to the World Bank, LDCs continue to receive 40% of ODA because of significant and persistent poverty and inequality.

The members of the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) have long accepted, in general, 0.7% of their gross national income (GNI) in ODA as a long-term objective of both official and private resources going to developing countries. However, analysis reveals that there is still a long way to go to achieve this objective. Figure 1.2 is based on the latest statistics available in 2013 and shows that the combined annual ODA of OECD/DAC members was around \$134bn. This would need to increase to more than \$315bn per year to meet the commitment of 0.7% of GNI.

The current economic climate and outlook will make it difficult for all developed country governments to reach the ODA target. For many of the countries concerned it would be an unrealistic financial commitment to make, as it would involve budget room they do not have. Nonetheless, over the next 15 years—and for the SDGs to have any chance of success—experts agree that developed country governments must find ways to substantially increase ODA from their current levels. They must also help improve tax systems in developing countries, reduce illicit financial flows and encourage more private sector involvement, especially in LDCs.

Actual vs. committed ODA, 2013 (\$m)

Figure I.2



Source: OECD

Actual ODA 0.7% of GNI

The UN's Third International Conference on Financing for Development (FfD) was held in Addis Ababa in July 2015. Agreement was reached on an Action Agenda that will help mobilize the funding necessary to implement the SDGs, and tackle poverty and climate change. Domestic resource mobilization and increased private sector involvement are at the center of the Addis Ababa Action Agenda. The strategy is heavily reliant on the private sector. This may negatively impact developing countries, especially LDCs, where private investment remains limited.

The large sums required to implement the SDGs are partly due to the synergies between the SDGs and climate change. The SDGs are critical in the combat against climate change and vice versa. Both will be bound by the finance that will be mobilized to address them. This raises the specter that the needs of LDCs might be forgotten in this mix and too much emphasis placed on climate change.

The principle of common but differentiated responsibilities (CBDR) was clearly stated in the SDG outcome document. The developed countries, in particular, face an obligation to ensure that this principle is upheld. By opting to have global goals for the SDGs, it is sometimes difficult, when reviewing the targets, to understand how CBDR has been integrated. This raises questions about other agreements being negotiated, as the success of the SDGs will partly depend on aligning the targets and goals with future international agreements and processes.

The Addis Ababa Action Agenda

Box 1.3

The Addis Ababa Action Agenda provides a comprehensive global framework for implementing the 2030 Agenda for Sustainable Development. Its purpose is to help make substantially more funds available and identify how to maximize their impact. It also serves as a platform to bring together all relevant stakeholders, including governments, financial and trade institutions, civil society, the private sector, philanthropy and academia.

The Action Agenda is meant to align financial flows—domestic and international, public and private—with economic, social and environmental priorities that are essential for the successful implementation of the SDGs. However, the Agenda not only draws on all sources of finance; it also includes policies for mobilizing all the means necessary for a global transformation towards sustain-

able development, including technology, innovation, trade and data. As such, it addresses systemic issues, including sovereign debt, private financial flows, trade, foreign investment and global governance.

Domestic resource mobilization is crucial to the new Agenda, primarily through measures that would widen government revenue bases, improve tax collection and combat both tax evasion and illicit financial flows. If these issues are properly addressed, both developing and developed countries stand to gain. Since the 2008 financial crisis, there has been tremendous pressure to raise public funds, with governments around the world tightening up their tax systems to stop both individuals and companies taking advantage of them.

The second main component of the new Agenda is increased private sector involvement. Risk in developing countries in general has been overstated, and there are serious opportunities that are not being taken advantage of. Here it is hoped that development finance institutions (DFIs) can play a significant role by helping to protect foreign direct investments against political and non-commercial risk.

In view of the anticipated greater role for the private sector, the Agenda also sees countries reaffirm their commitment to ODA, particularly for the least developed countries, which are likely to struggle to attract private investment. Whether this commitment can be honored is debatable, though, especially when developed countries hit economic problems and are forced to reduce their development budgets.

There are also commitments to create institutions to help spur financing and economic growth. In the area of technology, for example, countries agreed to establish a Technology Facilitation Mechanism to promote coordination, coherence and cooperation within the UN System on science, technology and innovation, in particular to enhance capacity building initiatives. A new Global Infrastructure Forum will identify and address infrastructure gaps and highlight opportunities for investment.

Even though the Addis Ababa Action Agenda emphasizes domestic resource mobilization and private financial flows, it will take a significant amount of time to implement some of the required policies. Moreover, there are still outstanding questions regarding financing the SDGs. For this reason, it is understood that another financing round will be required to address unresolved issues and ensure that the SDGs and FfD are fully harmonized.

Chapter II

ENERGY POVERTY: DEFINING THE CHALLENGE

It is a fact that no country has developed without access to reliable and affordable energy services. The absence of such services means that basic needs, including food and water, are not met. Energy impacts on people, communities and countries in terms of economic growth, health, security, food and education. It also affects ecosystems and is directly linked to climate change.

This chapter examines the links between energy and human prosperity, elaborates what constitutes energy poverty, and traces the response by the international community to alleviate it. It also investigates the methodologies to measure energy poverty, an important requisite in the fight against it, and explores the need for a holistic approach to tackling energy poverty in the context of the rising demand for energy, as well as for water and food, the other two entwining sectors. The chapter concludes by arguing for solutions that are not biased toward a specific source of the energy and that are tailored to the specific circumstances of each country.

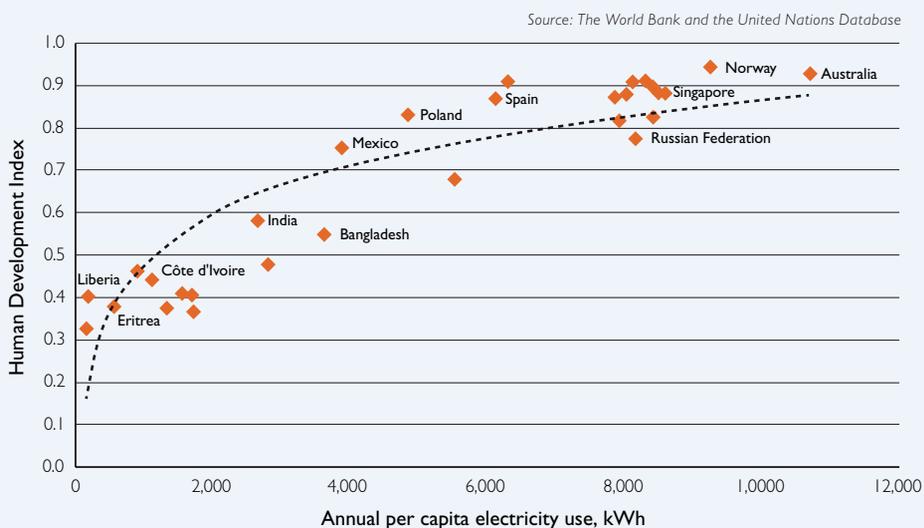
Energy and human development

Human development and energy use are intrinsically connected. As shown in Figure 2.1, there exists a strong correlation between electricity consumption and the UNDP Human Development Index (HDI), which measures human wellbeing. An annual consumption level of 4,000kWh per capita seems to be the dividing line between countries with low and high HDI scores.

Despite attempts to decouple economic growth and energy consumption, the two seem to be linked in a feedback loop: increased energy access fosters income growth, while energy use tends to increase with income. In developing countries with low levels of access to modern energy services, energy is regarded as a resource to fuel economic growth. The influence of energy access on GDP and income growth in such countries is supported by evidence: For example, the World Health Organization estimates that, over a ten year period, if half of the global households that still use traditional fuels

HDI and electricity use

Figure 2.1



and stoves switched to cleaner cooking sources, there would be an aggregate saving for families of \$34bn per year and an economic return of \$105bn per year.

At the household level, energy provides electrification and cooking and heating solutions. When it is used for productive engagements, such as simple food-processing tasks or artisanal work, energy increases productivity, income, and employment. As low-income populations become more active economically, poverty starts to drop, and with this starts the transition toward environmental sustainability (see Box 2.1).

Poverty and environmental degradation

Box 2.1

In 1987, the Brundtland Report of the UN World Commission on Environment and Development concluded that environmental challenges arise both from the lack of development and from the unintended consequences of some forms of economic growth. This concept was echoed in the year 2000 in the Caracas Declaration of the Second OPEC Summit, which urged the industrialized countries “to recognize that the biggest environmental tragedy facing the globe is human poverty.”

Poor and hungry people will often destroy their immediate environment in order to survive. They will cut down forests, allow their livestock to overgraze grasslands, and overuse marginal land. In growing numbers, they will crowd into congested cities. By burning twigs and dung to cook and keep warm, they inhale deadly smoke and die. In 2012, indoor air pollution killed 4.3 million people—a direct contradiction to the 5th IPCC Assessment Report, which states: “At present the worldwide burden of human ill-health from climate change is relatively small compared with effects of other stressors.”

In the poorest countries, endangering the environment, especially the destruction of forests and the degradation of soil, has its root cause in the lack of industrialization and the attendant social transformation. Agriculture is the dominant sector in many poor countries, but for sustained growth in output and employment, resources must shift to more productive sectors. No economy has made the transition to advanced country levels of income without an expanding industrial sector.

Historically, much of the economic growth that led to improved living standards followed pathways that unintentionally resulted in environmental damage. However, as environmental awareness rose, developed countries dramatically reduced their local air pollution, managed their water pollution, and regulated their use of toxic substances like fertilizers and pesticides. They have also been attempting to reduce their “carbon footprint” by cutting greenhouse gas emissions. In general, developed countries have been successful in introducing environment-friendly policies and in allocating vast budgets to implement them.

In developed countries, rivers no longer catch fire because of pollution and spills, as the Cuyahoga River in Ohio, USA, did three times between 1868 and 1969. In contrast, India’s Bellandur Lake, does so every summer, its water black with chemicals and sewage and topped with several feet of toxic foam. This does not indicate that Indians have little regard for the environment, but rather that environmental sustainability is considered a lower priority than public welfare. For the governments of poor countries, the issue is one of balance: how to tackle poverty and economic survival while protecting the environment.

It is much more difficult for a poor country to guard against environmental degradation. Governments lack the financial resources required to police and protect the environment. There are too many people practicing primitive agriculture, who destroy the environment using wrong techniques and implements; and too many people destroying forests because they have no electricity. In the words of former Jamaican Prime Minister Bruce Golding in 2007: “Telling [the poor people] not to cut down trees to use as firewood cannot be followed by a full stop, you have to tell them how to cook their food.”

Governments may need to address poverty and environment together. But the largest share of efforts and resources needs to go toward poverty alleviation, as poverty is the greatest threat to environmental sustainability.

Energy poverty: what does it mean?

Although an exact definition has not yet found agreement, energy poverty may be defined as the lack of adequate, accessible and affordable energy to promote economic growth and satisfy basic human needs. This definition encompasses household demand for energy services such as cooking, space heating/cooling and lighting, as well as other energy needs for a society to develop and thrive.

The UNDP Multidimensional Poverty Index goes beyond inadequate income as an obvious measure of poverty and includes dimensions such as poor health and nutrition, low education, bad housing conditions and energy deficiencies. Within this list of non-money-based poverty dimensions, two energy indicators are found: 1) electricity, where having no electricity constitutes poverty; and 2) cooking fuels, where the use of non-modern fuels, such as wood, charcoal and dung, constitutes poverty. This concept of energy poverty (lack of access to electricity and relying on traditional biomass fuels for cooking) has since become the consensus view of many international organizations working in the field.

Perhaps the greatest scientific achievement of the nineteenth century is the harnessing of electricity. Since the first grid was built in San Francisco in 1879, electricity—and its many applications—has transformed society so much that it is difficult to imagine life without it.

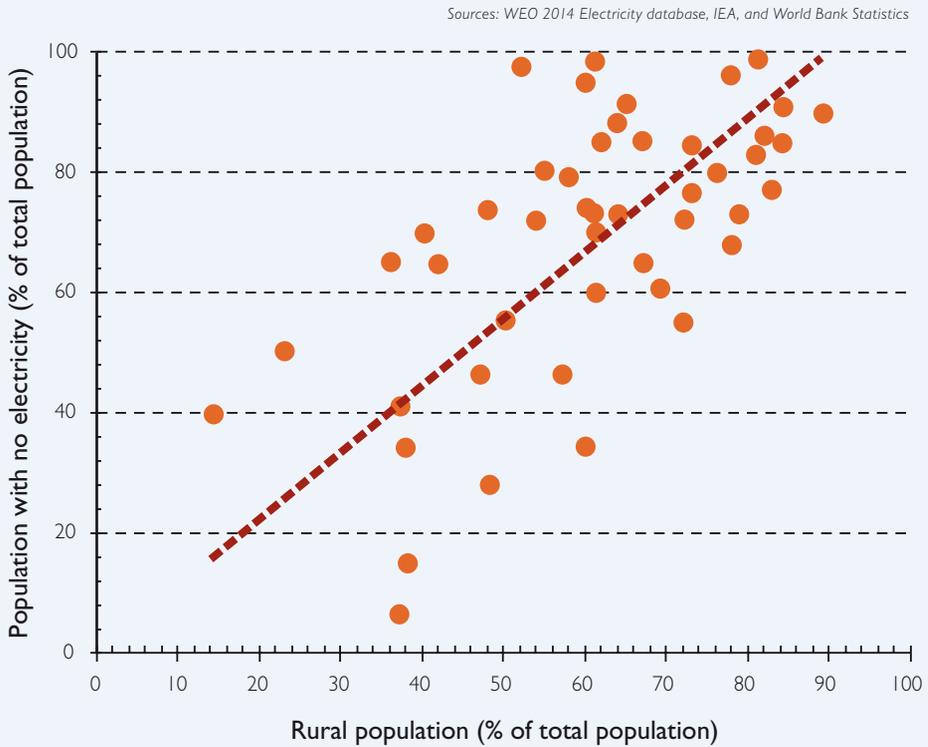
There remain huge inequalities between countries in terms of electricity consumption per capita. A person living in Norway, for example, consumes 130 times more electricity than a fellow human being in Yemen. Almost 1.1 billion people, mainly in sub-Saharan Africa (SSA), developing Asia; and Latin America, have no access to electricity whatsoever. This equates to almost one in every five persons on the planet for whom electricity is unknown.

In developing countries, populations are predominantly rural, and the lack of access to electricity is primarily a rural problem. For example, in SSA, 63% of the population is classified as rural and 78% of those who lack access to electricity are rural people. At the individual country level, one can clearly discern a strong, almost linear, relationship between the number of people with no electricity and the number of people living in rural areas (see Figure 2.2). This fact has important implications when it comes to choosing appropriate intervention measures, as we shall see later.

An estimated 2.9 billion people have no access to clean cooking facilities and rely instead on the intensified use of traditional biomass fuels. This practice

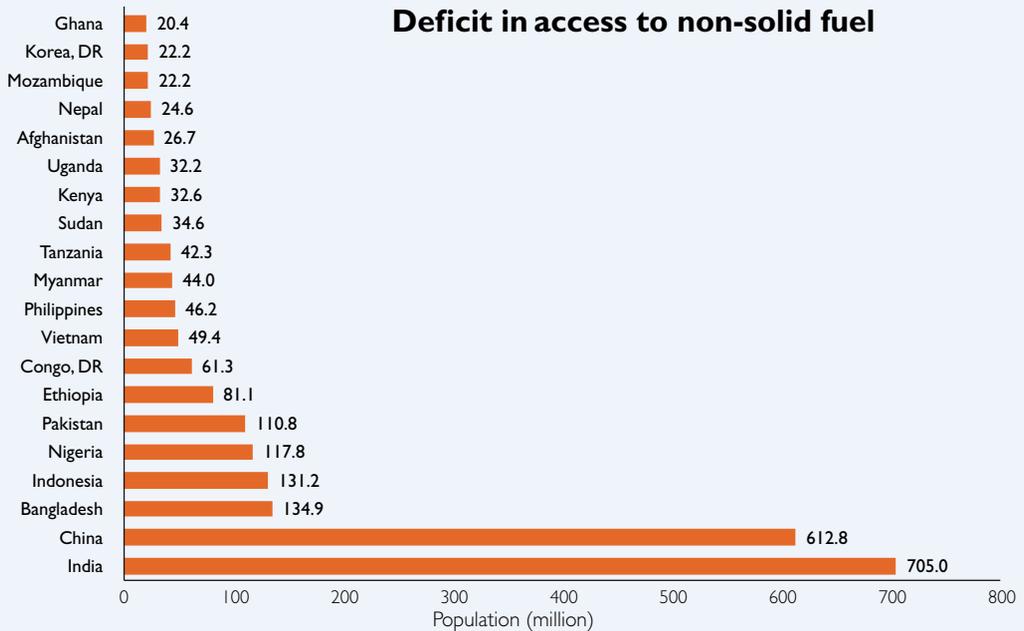
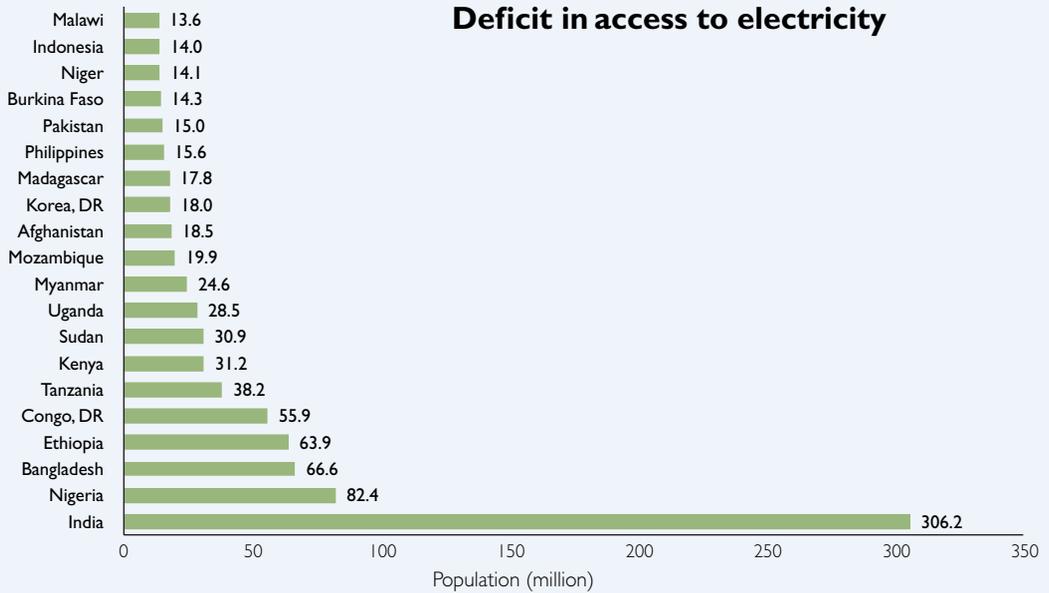
Lack of electricity vs. percentage of rural population

Figure 2.2



produces indoor air pollution, exposure to which causes chronic illness and premature death. According to the World Health Organization (WHO), over 4 million people die prematurely due to household air pollution each year. Women and children are particularly vulnerable as they are more likely to spend time near the cookstove. The use of polluting fuels also has a highly detrimental impact on the environment, altering the balance of ecosystems and extending the CO₂ carbon footprint.

Figure 2.3 lists the 20 countries most impacted by energy poverty (defined as lack of access to electricity and/or relying on traditional biomass fuels for cooking). The electrification rate in China is very high, but there is a significant number of people there who rely on traditional biomass. India, however, is “energy poor” on both counts, as are most of the other countries listed.



Source: IEA, WEO 2013

The international community rallying

After being omitted from the MDGs, the first reference to energy as a catalyst for sustainable development came at the World Summit on Sustainable Development in Johannesburg in 2002. Among other things, the Johannesburg Plan of Implementation called for action to: 1) improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services; and 2) recognize that energy services have a positive impact on poverty eradication and living standards.

In November 2007, the absence of an energy MDG was highlighted in the Riyadh Declaration, which was issued by OPEC heads of state at the conclusion of the Third OPEC Summit. The Declaration recognized that energy was essential for poverty eradication, sustainable development and the achievement of the MDGs and issued the first call for action to the international development institutions to engage in the fight for energy poverty eradication.

The role of energy in sustainable development was subsequently emphasized in numerous international forums, including the G8 Energy Ministers Meeting in Rome and the G20 Summit in Pittsburg—both in 2009—and the March 2010 Ministerial Meeting of the International Energy Forum in Cancun.

In September 2011, the UN Secretary-General launched a “*Sustainable Energy for All*” (SE4ALL) initiative to drive action and mobilize commitments to achieve three objectives: 1) 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. The year 2012 was subsequently declared the “*International Year of Sustainable Energy for All*” and the period 2014–2024 the “*Decade of Sustainable Energy for All*.” That same year (2012), at the Rio+20 Summit in Brazil, the objective of sustainable energy for all achieved official recognition as a priority in the post-2015 development agenda. After further consultations and refinements, it was formally announced as SDG7, along with the other 16 SDGs, in September 2015.

SDG7 centers on ensuring “universal access to affordable, reliable, sustainable and modern energy.” It further sets out to “increase substantially the share of renewable energy in the global energy mix,” to “double the global rate of improvement in energy efficiency” and to “expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, particularly LDCs and small island developing states. It also pledges to “enhance international cooperation to facilitate access to clean energy research and technologies, including renewable energy, energy

efficiency, and advanced and cleaner fossil fuel technologies, and promote investment in energy infrastructure and clean energy technologies.” The year 2030 marks the deadline.

Energy and the multiple challenges of sustainable development

The twenty-first century has been marked by large-scale challenges and unresolved issues. World population has reached 7.2 billion people, growing at an annual rate of 1.2%, or approximately 80 million people. It is anticipated that population will continue to grow and reach 9.6 billion by 2050. Nearly all of this growth is expected to occur in the developing countries, particularly in Africa and Asia.

The interdependencies and interlinkages between the SDG goals and targets were highlighted in Chapter 1. There it was stated that, in order to ensure that development takes place within sustainable levels of resource use, it is necessary to consider the interdependencies among the relevant sectors when formulating strategy and policy. How best to allocate resources between competing needs in order to support development is facilitated through integrated planning and decision-making.

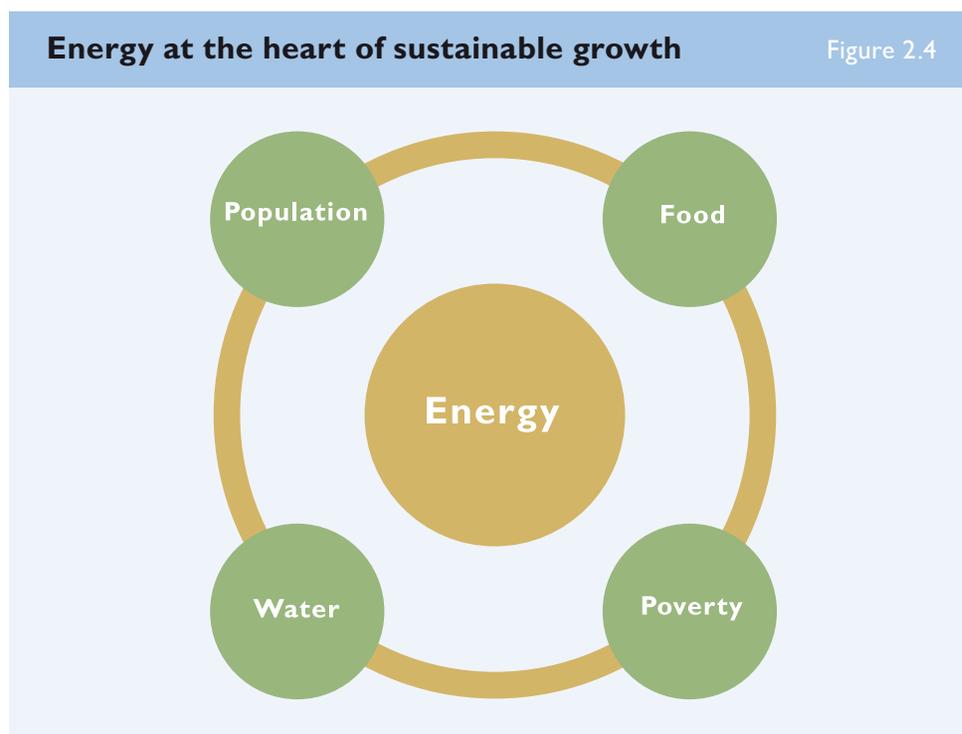
Sustaining a growing population requires securing increasing supplies of three basic commodities: energy, water and food, all of which are closely intertwined. Water is needed for almost all forms of energy production; energy is needed to treat and transport water; and both water and energy are needed to produce food and to transport and distribute it. Agriculture accounts for 70% of total global freshwater withdrawals, making it the largest user of water. At the same time, the food production and supply chain consumes about 30% of total energy consumed globally.

Global projections indicate that demand for freshwater, energy and food will increase significantly over the next decades under the pressure of population growth, economic development, technology changes, and climate change. Projections by the Food and Agriculture Organization (FAO) suggest that if trends continue, world food production has to rise by more than 60% in order to feed the world population in 2050. Total global water withdrawals for irrigation are estimated to increase by 55% by the same year. According to the International Energy Agency (IEA), global energy consumption will grow by up to 37% by 2035.

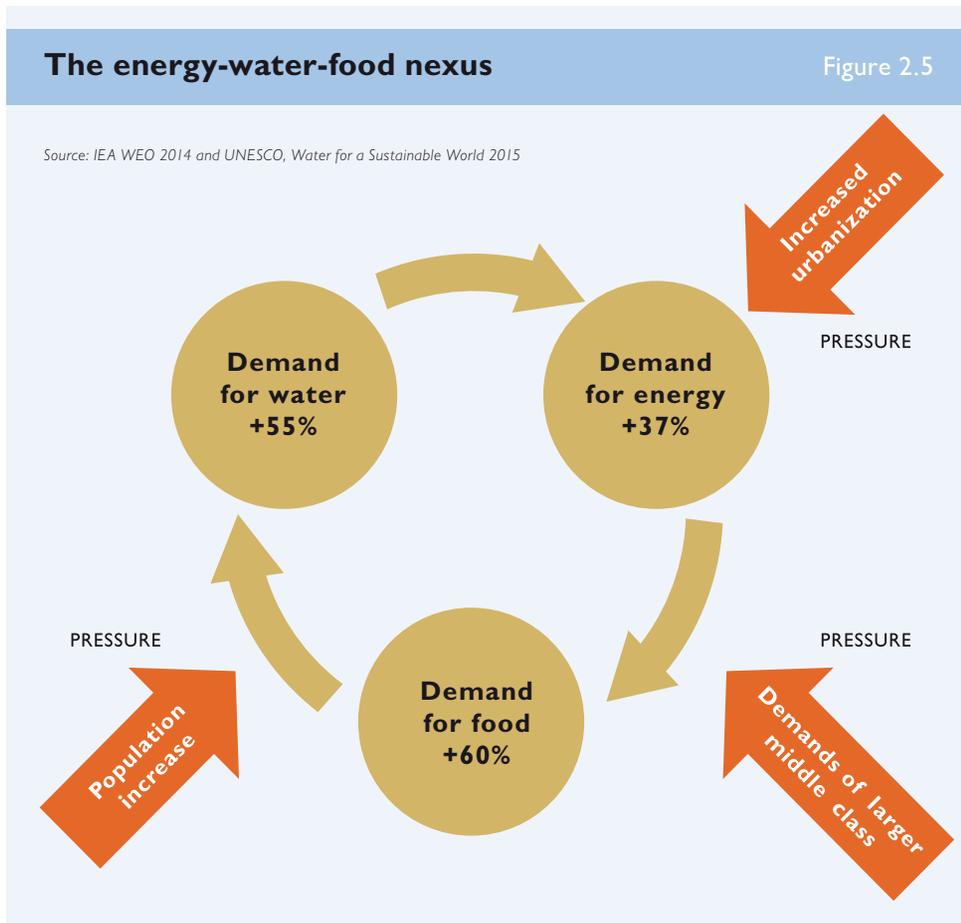
As demand grows, there is increasing competition for resources between water, energy and food production, as well as other sectors, with unpredictable impacts on livelihoods. For instance, hydropower generation meets 16%

of the world's electricity needs and has been a driving force behind the construction of 45,000 large dams worldwide. The generation of electricity impacts little on the quantity of water, as it is limited to loss by evaporation, but it may alter the timing of stream flows, both seasonally and hourly, as the timing of water releases is generally governed by the demand curve for electricity, within environmental and engineering constraints. Conflicts can also arise between hydropower and 1) downstream uses, including irrigation; 2) in-stream uses, such as fish propagation; and 3) ecosystems. Similarly, while growing bioenergy crops in an irrigated agriculture scheme may help improve energy supply and generate employment opportunities, it may also result in increased competition for land and water resources, with impacts on local food security.

The interlinkages create a joint dependency where energy is at the core of sustainable development and the overarching goal of poverty eradication (Figure 2.4). Population is at the top as an issue of concern, followed by food production, poverty and water supply. In order to face twenty-first century challenges, priority should be given to energy, although energy access itself is a challenge.



These and similar interactions are complex and dynamic, so sectoral issues cannot be looked at in isolation from one another. In addition, the current speed of demand growth for all three components (energy, water and food) cannot be maintained in the foreseeable future without considering these interactions. In this context, the energy-water-food nexus has emerged as a useful concept to describe and address the complex and interrelated nature of the global resource system. In practical terms, it presents a conceptual approach to better understand the interactions between the natural environment and human activities, and to work toward a more coordinated management and use of natural resources across sectors and scales. This can help in identifying and managing trade-offs and building synergies through the responses, allowing for more integrated and cost-effective planning, decision-making, implementation, monitoring and evaluation.



Global new investment in renewable energy, 2004–2014

Figure 2.6



Source: Renewables 2015 Global Status Report, REN 21

A diverse energy supply system

In the context of ensuring universal energy access, an integrated and accurate management structure of the energy supply system is necessary to lessen the pressure on natural systems. Experts agree that such structure should include a commitment to sustainability, including economic sustainability, and that policymakers need to seek cost-effective mechanisms to design and deploy energy access policies. They further concur that there is no one-size-fits-all solution. Advantage must be taken of the complete range of organizational and technical possibilities so as to be able to adapt to a given situation.

Renewable energy sources have witnessed impressive growth rates over the last decade, with global investment reaching \$270bn in 2014 (Figure 2.6). The annual investment flows show that this phenomenal growth is taking place principally in developed and emerging economies. China accounted for almost two-thirds of the investment in 2014. Various forms of policy and government support in these countries have sustained this growth.

In order to satisfy the expanding energy needs of a growing global population, all energy sources need to be tapped. Renewable energy sources, with

their environmental attributes, will play a vitally important role in a global energy supply mix characterized by diversity. As desirable as renewables might be in the long term, however, they do not necessarily represent a feasible option for poorer countries at the current time. Efforts to eradicate energy poverty must, therefore, be technology-neutral, meaning not biased toward a specific energy source at the expense of other more efficient sources. In addition, the technical solutions must be tailored to the conditions of each country. Such solutions include: boosting cross-border power trade; tapping the potential of increased energy efficiency; opting for centralized as well as decentralized options; scaling up successful pilot projects for remote rural populations; and considering all available sources of primary energy, i.e. renewables as well as petroleum energy sources, including natural gas or liquid petroleum gas (LPG). Implementing an efficient use of energy within a technology-neutral approach can facilitate wider access to energy.

Energy access: how to measure it

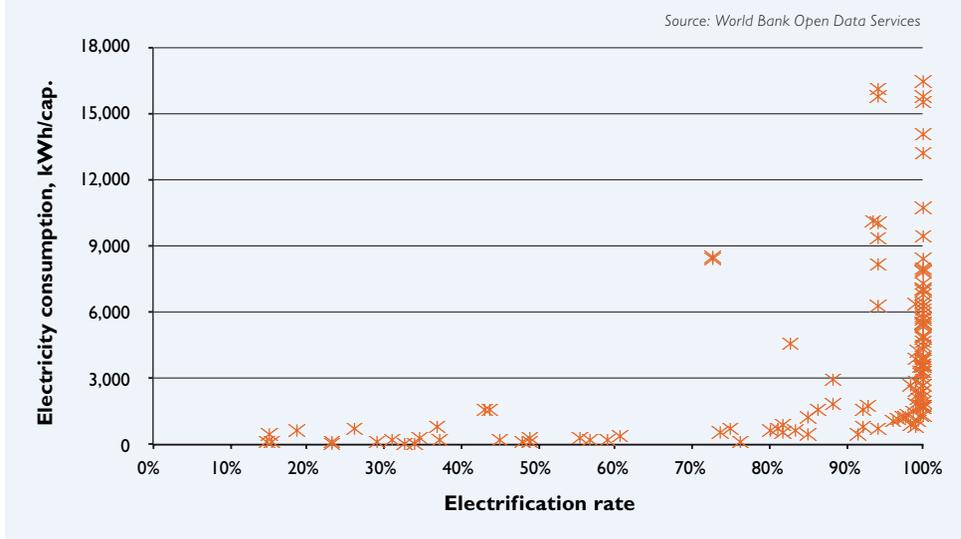
The question of how to precisely measure energy access is critical in the fight against energy poverty. If we do not know what to measure and how to measure it, we cannot track progress.

Several approaches have been used. The *“World Bank Global Tracking Framework Report”* has defined energy access as the “availability of an electricity connection at home or the use of electricity as the primary source of lighting.” Meanwhile, access to modern cooking solutions has been understood as “relying primarily on non-solid fuels for cooking.” The weakness in this binary approach is that such indicators have a purely household focus and leave aside the community and productive applications of energy access.

In order to sustain economic growth, electricity must be available not just at domestic level but across all economic sectors. In developing countries, industrial growth is constrained by a lack of access, and by a lack of access to high quality, reliable electricity. This is not properly reflected in a simple statement of whether electricity is available or not. Figure 2.7 shows, at the individual country level, a plot of electricity consumption per capita vs. the electrification rate. While consumption is more consistent (low) at low electrification rates, the plot shows a vast variation in consumption per capita in countries where the electrification rate is 100% (from 16,500 to 1,300kWh/cap.), with the plot more densely packed toward the lower end. Considering the 4,000kWh per capita dividing line suggested by the HDI in Figure 2.1, one can conclude that a 100% electrification rate does not guarantee that a given developing country has emerged toward being a developed one.

Electricity consumption per capita vs. electrification rate

Figure 2.7



In consultation with a number of international development institutions, the World Bank/ESMAP (Energy Sector Management Assistance Program) has developed a multitier framework, which reflects a five-tier measurement of electricity access from an operational point of view. Access does not equate to the availability of access but depends on a continuum of increasing levels, so-called “tiers”, of energy attributes (Figure 2.8). The multitier framework proposes to capture the multidimensional nature of energy, which is delivered in multiple modes and generated from a large range of sources. These aspects characterize its complexity.

Tier 0 is equivalent to the lack of electricity. Access to electricity is provided from Tier 1 to Tier 5 in the form of service and quality upgrading. Basic access is attained at Tiers 1 and 2, while Tier 3 designates medium access and both Tier 4 and Tier 5 imply an advanced level of energy access.

Under the multitier framework, energy access is referred to as “the ability to obtain energy that is adequate, available when needed, reliable, of good quality, affordable, legal, convenient, healthy, and safe for all required energy applications across households, productive enterprises, and community institutions.” The different access levels are determined by eight attributes that examine the performance of the energy supply (Table 2.1).

Electricity access: Tiers based on attributes

Figure 2.8

	Attributes	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
1	Capacity	No electricity	Very low power	Low power	Medium power	High power	
2	Duration and availability	<4 hours	4-8 hours		8-16 hours	16-22 hours	<22 hours
3	Reliability	Unreliable energy supply					
4	Quality	Poor quality of energy supply		Good quality of energy supply			
5	Affordability	Unaffordable energy supply		Affordable energy supply			
6	Legality	Illegal energy supply		Legal energy supply			
7	Convenience	Time and effort spent sourcing energy cause inconvenience		Time and effort spent sourcing energy do not cause inconvenience			
8	Health and safety	Unhealthy and unsafe energy system		Healthy and safe energy system			
	Service	-	Task lighting Phone charging	General lighting Television	Tier 2 + Medium- power appliances	Tier 3 + High- power appliances	Tier 4 + Very high- power appliances
	Energy access	None		Basic		Advanced	

Source: World Bank/Energy Sector Management Assistance Program

Energy access: Multitier measurement framework Table 2.1

Performance attribute	Measurement
Capacity	Daily power output, rated in watts
Duration and availability	Hours of electricity supply per day
Reliability	Continuity of supply
Quality	Technical standard for voltage of electrical equipment
Affordability	Quantity, cost, income, and consumer preferences
Legality	Whether connection to the grid is legal or illegal
Convenience	Time and effort spent sourcing energy
Health and safety	Relevant standards in the electric system

The multitier framework is designed to assess the quality and quantity of energy by minimum and maximum levels of access for households, productive engagements and community facilities. Energy access distinctively encompasses access to energy supply, access to energy services, and the actual use of energy. It also incorporates a technology-neutral approach, in the sense that it does not support any particular technology as a source of energy. Measurement is mainly driven by energy imperatives for quality and quantity access. Similarly, socioeconomic development—as opposed to resource preferences—is taken into account along the process. More than that, it is one of the primary objectives of expanding energy access.

Setting up an internationally-accepted and -adopted definition of energy access and its corresponding measurement requires decision-making. For this, agreement is to be grounded on international consensus.

SE4ALL: where do we stand?

The SE4ALL initiative is now the main global-level platform to drive collective action and mobilize commitments. To maintain momentum, tracking progress on the goals of SE4ALL is essential. Doing so will clarify where the initiative stands, how various actions are contributing to the three objectives, how much remains to be accomplished, and where more action is needed to achieve SE4ALL.

Since its launch, the World Bank Global Tracking Framework has reported relative progress toward achieving the three SE4ALL objectives over the two-year tracking period 2010–2012. In total, 222 million people gained access to electricity, particularly in South Asia, SSA and in urban areas. The annual access increment of 111 million people marks a sharp acceleration from around 84 million people a year in the period 1990–2000 and 88 million yearly in the subsequent decade. However, 1.1 billion people remain without electricity, meaning that annual growth must increase to 135 million from 2012 through 2030. Achieving universal electrification will depend critically on the top 20 access-deficit countries (the “high-impact” countries). India, with an un-electrified population of 263 million, is followed by Nigeria (75 million) and Ethiopia (67 million).

Between 2010 and 2012, around 125 million additional people gained access to clean, modern cooking fuel. However, this number falls short of the 138 million population increase that took place over the same period. The urban and rural access rates remained similar, at 87% and 27% respectively, during the tracking period. Overall, the global access deficit barely moved from 2.9 billion. These populations are concentrated mostly in rural areas of SSA, South Asia and Eastern Asia. The population to be served during the period to 2030 corresponds to the current access deficit plus the new population likely to be added (around 1.5 billion). While the access deficit in 2012 is a mix of rural and urban, the new population increment between 2012 and 2030 is almost entirely urban. Here, too, the SE4ALL objective of universal access to clean, modern cooking fuel will depend on the top 20 access-deficit countries. Of these, only eight had an access increase higher than the population increase in 2010–12 and stayed above the global annual growth rate. The rest lagged behind the population increment.

The other two SE4ALL objectives also were not met over the 2010–2012 tracking period. The annual decrease in primary energy intensity—the global proxy for energy efficiency—was only two-thirds of the pace needed, while the annual growth rate of modern renewable energy must double.

Overall progress over the two-year tracking period falls substantially short of what is required to attain the SE4ALL objectives by 2030. A partial explanation for slow progress on sustainable energy objectives is the shortfall in investment. Global investment in areas covered by the three objectives was estimated at around \$400bn in 2010, while requirements are in the range of \$1.0–1.2tr annually, requiring a tripling of current levels. Nevertheless, the 2010–12 tracking period does present some encouraging acceleration in progress relative to what was observed in prior decades.

Energy access: the solutions

In developing countries, there is a vast demand for electricity in both urban and rural areas. However, providing access to electricity in the quantity and quality needed is a costly undertaking, especially while financial resources are constrained. Energy planners have therefore no choice but to set priorities as to whom and where they can provide electricity.

Following the model of centralized power generation and national-scale distribution grids, which has dominated in developed countries over the last century, almost all developing countries have considered “extending the grid” as a precondition for development, with the delivery of electricity and infrastructure paving the way for economic growth. In urban areas the extension of an existing electricity grid is often the most cost-effective and logical choice. However, we have seen in an earlier section that the lack of access to electricity is primarily a rural problem, especially in SSA. To justify the substantial capital cost of high-voltage transmission lines, medium-/low-voltage distribution lines and the necessary auxiliary equipment, the extension of the national electricity grid makes economic and technical sense only for densely populated areas with high enough demand potential. The reality is that most rural villages, in SSA in particular, were destined to stay “in the dark” had the grid extension model been the sole electrification alternative. The IEA estimates that only 30% of the world’s rural population currently without access to electricity is best served by extending the main grid.

In rural settings, two other alternatives exist for electrifying small, remote and widely dispersed villages and communities that are often located in areas difficult to access. These are stand-alone systems and mini-grids.

Stand-alone systems constitute the opposite end of the spectrum to grid extension. They are small systems applied in scarcely populated areas to provide basic electricity services (e.g. lighting and phone charging) mainly to households. Although household income may benefit from these systems (through charging phones for a fee, for example, or due to lighting extending the working hours for a seamstress,) they are too small to generate motive power for productive uses such as grinding, carpentry or crop irrigation. Still, households are much better off using small solar systems or solar lanterns than relying on candles, firelight or kerosene lamps, which all come with distinct disadvantages.

In locations that are too remote for grid-connection to be a technically or economically feasible option, mini-grids constitute an intermediate solution—between conventional grid connection and stand-alone systems—for

Mini-grids have been used for the electrification of remote areas for at least two decades, yet they remain a marginal option for rural villages. There are no significant technology barriers that hinder mini-grids, whether they are powered by diesel generators, renewable energy or a combination of both (hybrid systems). The key challenging factor, rather, is financial sustainability. In general, the capital costs and the operation and maintenance requirements of mini-grids result in a high cost of energy, making it challenging to recover costs in poor villages with low income.

In the quest to lower the levelized cost of electricity of a particular mini-grid project, specific circumstances and the availability of particular types of primary energy sources will dictate the most economic technology. For example, the recent decrease in solar photovoltaic (PV) panel costs may render attractive 100% solar-battery mini-grids in a specific location. In another, a solar-diesel hybrid mini-grid may be the system of choice, while micro-hydropower continues to be least cost where the resource exists.

OFID is currently working with the Alliance for Rural Electrification (ARE) to support the accelerated deployment and productive use of hybrid mini-grids in Bangladesh, India, Mali and Mozambique. Implemented by private companies, the four projects target between 250 and 900 households, 25 to 40 productive users, and, in two cases public and community buildings. Each mini-grid utilizes PV technology together with either diesel or biomass.

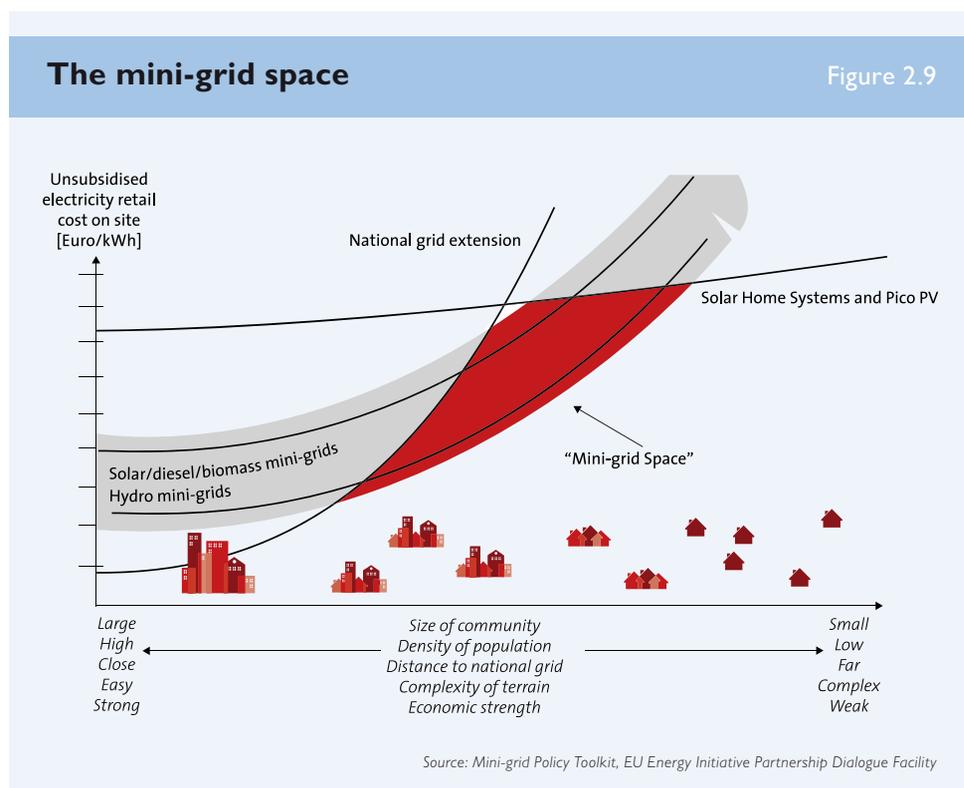
The financial contribution from OFID is designed to encourage private sector involvement in energy poverty alleviation by providing a de-risking mechanism for business ventures to stimulate replication and scaling up. A cash-flow analysis of all four projects demonstrated that they were only financially viable when OFID's grant was included. The projects emphasize the potential for scaling up and for local capacity building as well as the creation of partnerships to assist in the future development of projects.

the provision of electricity. Mini-grids are defined here as a power source of a typical capacity ranging from a few kW to a few MW, supplying electricity to consumers in a remote location through a local distribution grid justified by the population density in the concerned location. The power source could be a diesel-powered generator, a renewable energy power plant, or a hybrid power plant.

Properly designed mini-grid solutions have a clear advantage, in terms of service quality and the ability to supply productive uses, over individual

stand-alone home energy systems powering a small number of lamp lights. Figure 2.9 illustrates the space in which mini-grids are the most suitable rural electrification solution. This is found where mini-grids have the lowest cost compared to grid extension and stand-alone systems. The cost of the technologies is influenced to different degrees by various local conditions, e.g. the size of the community, the density of the population, the distance to the existing national grid, the topography, and general socioeconomic factors, such as energy demand and economic growth potential. Mini-grids are mostly used where grid extension is not economically attractive, but where communities live in a core village with houses in close proximity.

The IEA estimates that 40% of the new capacity needed to ensure universal access to electricity by 2030 will come from mini-grids. However, there are a number of financial and operational issues that are crucial to the long-term sustainability of mini-grids. When developing rural electrification programs, it is essential to consider questions such as operation and maintenance, the role of the private sector, tariffs and subsidies, and capacity building and training.



Chapter III

FINANCING UNIVERSAL ENERGY ACCESS

Alleviating energy poverty is impossible to achieve without adequate access to investment and finance. The financing requirements are bound to be large, and various ways of raising additional capital need to be considered. In addition, there are other important factors to consider: the wide variety of technology solutions; the multitude of different actors and stakeholders; and the broad diversity of regional/country circumstances. All of this makes increasing the funding available to fight energy poverty a necessary, but not sufficient, condition. Also needed are innovative approaches to financing the objective.

This chapter presents estimates for the investment needed to eradicate energy poverty at the global level by 2030, and points out the huge gap between the requirements and the committed resources. It emphasizes that, to close this gap, a regulatory environment that is conducive to investment is needed. It makes the case that meeting the goal of universal energy access will require concerted efforts by all stakeholders: governments, the private sector, local communities, civil society and international organizations.

Investment requirements

Due to the multifaceted, multitiered nature of energy access and the diverse range of applicable technologies, the amount of required financing varies when country-specific parameters are considered. Such parameters include the cost of delivery per region, financing costs and the level of development itself.

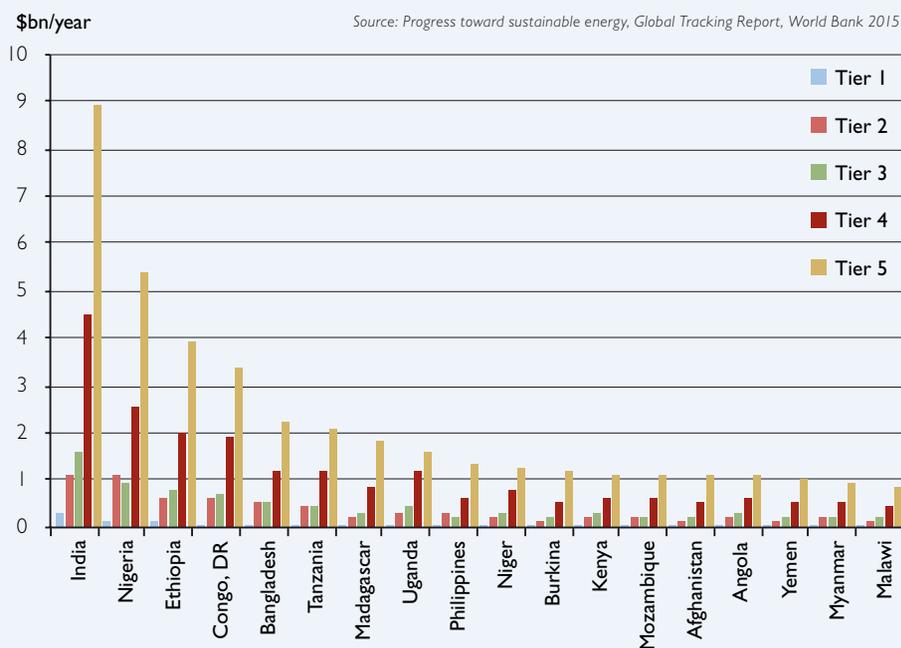
At the global level, estimates of the investment needed for universal energy access range from \$12bn to \$279bn per annum from 2010 to 2030, indicating a significant degree of uncertainty. The amount of required investment is highly dependent on the assumption of technical solutions, financing methods, and subsidies, among other country-specific attributes. For example, the International Institute for Applied Systems Analysis (IIASA) has estimated

an annual investment requirement of \$71bn for universal access to modern cooking facilities, assuming a final transition to LPG, the inclusion of fuel subsidies, and the provision of microfinance for cookstoves. Meanwhile, the IEA, in its “New Policies Scenario,” forecasts the annual investment in clean cooking facilities—including LPG stoves, improved biomass stoves, and biogas digesters—at \$0.6bn.

In the multitier approach to electricity access, the required amount of financing increases as higher tiers are considered. The analysis by the SE4ALL Global Tracking Report shows that, for the 18 high-impact countries holding 79% of electricity access deficit, the sum of the required annual investment increases from \$1bn for Tier 1 access, to \$40bn for Tier 5 access. By scaling up the figures for these countries, the global investment requirements could range from \$1.5bn to \$52bn a year. Figure 3.1 shows that the investment required varies dramatically for any single country—by more than thirty-five times. For example, the average annual investment needs for electricity access in Tanzania range from \$65m for Tier 1 to \$2bn for tier 5 access.

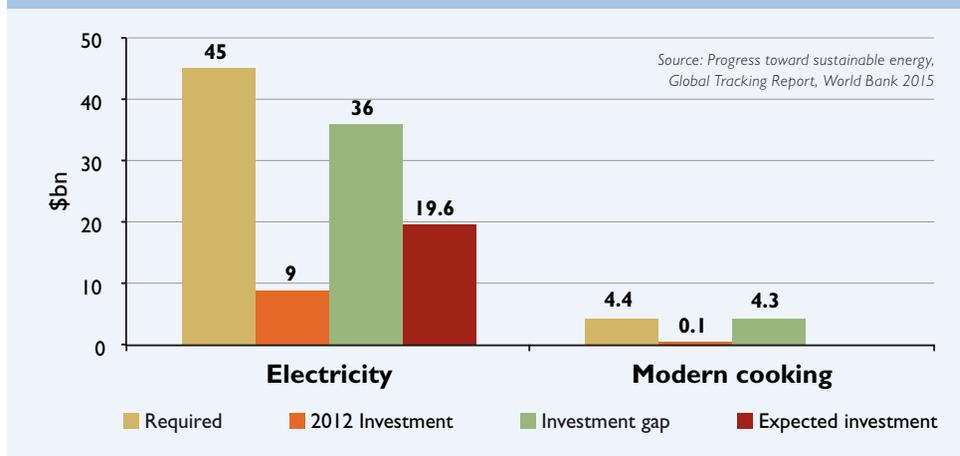
Average annual cost of electricity access per tier for 2010–2030

Figure 3.1



Annual investment for universal energy access by 2030

Figure 3.2



The investment gap

On the basis of estimates given by several sources, the SE4ALL Global Tracking Report 2015 assesses the annual investment required to achieve all three SE4ALL goals by 2030 at \$1.26tr, including \$560bn in energy efficiency, \$650bn in renewable energy and \$50bn in energy access. The investment required to achieve universal energy access includes both access to electricity (\$45 billion per year) and clean cooking facilities (around \$4.4bn per year).

In 2012, just over \$9bn was invested globally in improving access to energy. When this sum is compared to the amount required to achieve the goal of universal energy access, it reveals an investment gap of over \$40bn (Figure 3.2). According to the IEA, if all announced investment commitments and policies are realized, an average \$19bn yearly will be invested annually in power plants and new transmission and distribution lines through 2030. Again, this is far below the \$45bn annual requirement for universal electricity access.

The bulk of the required investment is needed in SSA and South Asia, mostly in the rural areas of the low-income countries. Together, these two regions account for more than 94% of the additional investment required for electricity access and 60% of the additional investment required for access to clean cooking facilities. The SSA region, which would depend heavily on mini-grids and isolated off-grid solutions, would alone require more than 60% of the additional investment required for electricity access.

More than finance: the investment environment

Regardless of the precise figure of the required investment, it is clear that meeting the goal of universal energy access will require dramatic improvement in efforts by all stakeholders: governments, the private sector, local communities, civil society and international organizations. The enormous investment requirements confirm the need for more innovative financing vehicles, cost-effective technology solutions, and consistent and credible policies. Despite the growth in liquidity in financial markets over the course of time, financing for energy supply might be challenging due to competition among various sectors of the economy over the amount of capital available.

What will underpin financing for universal access to modern energy services in developing countries is the creation of an investment-enabling environment at macro- and micro-level. In order to attract additional finance and technological solutions that will guarantee success, this environment must be politically, institutionally and economically stable at the macro-level and have a regulatory framework at the micro-level.

The main impediments to energy access projects in developing countries continue to be: political and economic risks and uncertainties; strong state control; a lack of appropriate institutional arrangements and mechanisms to channel finance toward low-income consumers; the small scale of projects; the credit risk of the power sector; and, the supply and size of a high-quality deal flow.

Analysts point out that governments need to maintain long-term policy commitments and devise energy-access strategies and implementation plans that are linked to national development plans. To support the process, countries need to have regulatory frameworks that can attract the support of national and international financial institutions and project developers. Countries also need to establish the institutional capacity to prepare and implement qualified pipelines of deals and bankable projects.

A financially healthy power sector could play a vital role in accelerating access, building the right capacity and mobilizing finance for small-scale projects. More transparent and targeted subsidies, a better pricing system, improved bill collection, and a reduction of commercial and technical losses would increase the creditworthiness of the power sector.

With a supportive regulatory framework and a well-governed utility sector in place, policymakers then need to develop customized financing models and de-risk financial structures to increase their share of different resources, especially private finance, in the pool of capital for energy access projects.

Examples of solutions

For countries with an energy access deficit, there are several tried and tested solutions they can tap into. One example is the development of dedicated project preparation facilities for identifying and converting concepts into bankable projects. Special energy funds could also mobilize other resources through tranche structures, where a part of the equity is provided by governments or other DFIs as a grant. This would result in a lower average cost of financing, making the fund profitable and attractive to other commercial finance institutes.

In a public-private partnership (PPP), a national government or another public sector entity partners with private organizations to implement projects in the context of infrastructure generally and energy technology specifically. The public partner sets service standards and monitors performance, whereas the private partner raises capital and assumes responsibility for building and operating the project. In recent years a new type of partnership, known as the pro-poor public-private partnership model (5Ps), has emerged. The UNDP defines the 5P as a business model that *“increases access of the poor to basic services by promoting inclusive partnerships between local government, business, community groups, NGOs, faith-based organizations and others.”* Profit motivations are blended with social concerns and empowering targeted communities, thus lowering the risk of investment for the private sector.

The 5P model for energy access projects

Box 3.1

The Pro-Poor Public Private Partnership (5P) business model was developed by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). It leverages the strengths of government and the know-how and innovation of the private sector, while incorporating community involvement in rural electrification projects. The 5P approach seeks to improve access to modern energy services for rural communities and to encourage the productive use of energy for income-generating activities. The public private partnership assures sustainability of rural development and energy supply by enabling community mobilization.

A successful example of this business model is the first 5P hydropower project in Cinta Mekar, Indonesia, in 2004, which was developed by UNESCAP and *Inisiatif Bisnis dan Ekonomi Kerakyatan*, a community-based NGO. The project

installed a 120kW, grid-connected micro-hydropower plant, with the community acting as both the consumer and co-owner. For more than a decade, the Cinta Mekar community has successfully run the micro-utility, which continues to provide valuable revenue for local development. The village was able to utilize the generated income to fund commercial and social activities such as providing electricity connection, paying education fees for the poorest households, building a health clinic, providing seed capital for income-generating activities, and improving village infrastructure. One example in particular is the purchase of a solar drying unit, which allowed rural women to increase their output of dried banana flower and resulted in increased income generation. Proper community mobilization has been the key element in enabling the operation and maintenance of this power plant on a sustainable basis.

UNESCAP is currently piloting 5P projects in Nepal's Debung and Raksirang villages, collectively home to 254 households. The Nam Ngim village in Lao PDR with 68 households is another project under this scheme. The main economic activities of these communities are agriculture and livestock and the current energy needs are primarily provided by firewood and kerosene. The pilot projects have a system size of 16–23kW and are planned to utilize locally available renewable energy resources through solar mini-grid and micro-hydro technologies.

Promoting the cross-sector partnership is another business model that has proven effective in providing energy access to poor communities while ensuring cost effectiveness to investors. In this partnership, an anchor consumer, such as a telecom company, is supplied with base-load electricity through an off-taker agreement with the energy provider. The tariff paid by the anchor customer is calculated to cover a substantial portion of the costs incurred by the energy provider. Other clients, such as local households and communities and public services, can then benefit from reduced tariffs that they can pay in exchange for access to electricity.

The perceived high risks of small-scale energy access projects can be mitigated through subordinated debt funding or convertible grants provided by devoted funds. To attract private and commercial financial resources, the fund's contribution, provided at an early stage of the project life, is converted to a grant to cover the losses in case the project fails (first loss). Otherwise it is paid back to the contributor.

Aggregation solutions are financial clustering mechanisms or vehicles that convert a broad range of small projects into large enough pools to reduce

transaction costs and meet investor's requirements for diversification, scale and liquidity. Aggregation solutions in an enabled investment environment can tackle the issue of financing of small-scale projects. They enable investors for a better system design and project development, reduced cost of technical assessment and transaction costs, enhanced environmental assessment and improved contractual terms.

Returnable grants: Offering a hand to startups

Box 3.2

Access to modern, affordable energy resources is an essential and primary goal for many impoverished communities that also often face serious challenges in accessing water and food. All three elements are essential for human development, but they are inter-linked and tackling one of them can aggravate another. The energy-water-food nexus approach aims to treat the three elements in a holistic manner.

Energy companies offering solutions in the agro-food value chain—be it improved irrigation for smallholder farmers or the mechanization of food processing—are mostly early-phase enterprises with one common problem: access to adequate finance. In order to encourage such companies to adopt the nexus approach, OFID recently cooperated with the Renewable Energy and Energy Efficiency Network (REEEP) to establish the “OFID-REEEP Revolving Capital Pool.” The Pool offers repayable grants at zero interest to start-up businesses to help them provide affordable modern energy services and unlock their potential for scale up.

In its first round in 2014, the Pool partially funded two energy access projects that impact the water and food sectors. In Kenya, 825 solar irrigation pumps were installed on smallholder farms and three alternative microfinance products tested. The proven business model is to be developed for consumer financing of solar irrigation to prepare for private sector investment to unlock scale and increase uptake of solar irrigation, potentially reaching 20,000 smallholder farmers. In Tanzania, two pilot 87.5 kWp “pay-as-you-go” solar farms were installed for renting to the agrifood sector. The concerned start-up will develop a fully operational agrifood-processing-focused marketing and sales channel and work to attract sufficient private sector investment to finance the scale up of the service, potentially to 5.2 MWp. The project will also demonstrate the use of food-processing plants as mini-grid-anchor customers, by dedicating about 10% of the solar farms' output to a mini-grid providing power to adjacent residential users. The lessons learned from both experiences will be disseminated in order to stimulate scaling and replication of the successful business models.

Cross-sector tax/subsidy, where some profitable sectors pay higher tariffs or special taxes to cover the costs or subsidies required in another sector, can be a self-sustained finance approach to the benefit of small-scale energy access projects. For example, the tariff paid by grid-connected customers could be adjusted slightly upward in order to provide subsidies to mini-grid projects in remote areas.

In remote, poor communities, the design of payment systems for affordability and to suit local end-users' preferences is also essential. Some innovative business models such as prepaid approaches, pay-as-you-go systems (where customers make a small initial down-payment for an energy system and then prepay for the energy service, topping up their systems in small, user-defined increments using a mobile phone) can lower the risk for investors, and improve both bill collection and the economy of projects. The one-stop-shop business model, where the physical acquisition of an energy system (e.g. a solar home system) by a customer is accompanied by a financial package from one single vendor, could increase penetration into the market by providing both technology and finance.

Seed capital is another successful way of catalyzing finance. The public sector can provide the seed capital directly or through special funds to increase the deal flow. The Seed Capital Assistance Facility, for example, targets early stage investments in sustainable energy in Asia and Africa.

A role for DFIs

Clearly, the scale of the task is much bigger than the efforts of any one organization. All partners need to concentrate their efforts and work together. Combining strengths could create exceptional synergy that could make a real difference in the fight against energy poverty.

For DFIs, there is a clear need for better coordination to reduce the current fragmentation of aid. In line with international declarations including the Paris Declaration, the Accra Agenda for Action, and the Busan Development Agenda, DFIs can further harmonize their approach to combat energy poverty, share analysis and knowledge, and avoid unnecessary overlaps for the benefit of concerned countries.

SME energy enterprises fall into the “missing middle” of many developing countries' economies. In general, such businesses have little access to traditional finance: they fail to meet conditions set by formal financial institutions, but at the same time are too large to qualify for micro-financing. In many countries, this hinders the emergence and potential growth of an effec-

Bridging the financing gap of the energy SMEs involved in small-scale energy access projects could tackle energy poverty through a market-driven approach. Off-grid and mini-grid solutions in many countries are generally managed by SMEs, which have been historically overlooked by traditional financiers. In addition, these local businesses often need coaching in management, governance, energy efficiency, and environmental best practices.

The Energy Access Fund (EAF) is an impact investment fund aiming at supporting the growing number of energy-related SMEs struggling to access financing in rural and peri-urban areas in developing countries. The Fund focuses on equity investments of €2.5m–€5m, with an average investment size of around €3.5m.

EAF, sponsored by Schneider Electric, has a double objective: to generate a financial return for its investors, and to make investments with a measurable social impact on local communities. It achieved a first close at €54.5m with commitments from many institutions, including the European Investment Bank and OFID, which extended €5m in equity participation.

The Fund targets investment opportunities in countries that include Burundi, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe. It also invests in institutions involved in financing energy access projects, or in distributing energy loans to rural or suburban microfinance-related companies. Moreover, EAF offers practical help and advice to local businesses through a range of technical support services, leveraging its sponsors' sector knowledge, networks and technical expertise.

A further example of making finance available to energy SMEs comes from Armenia, where the government created favorable legislation to promote the development of small-scale hydropower plants (SHPPs). The financial viability of the SME-led SHPP projects is ensured through a number of mechanisms: an inflation- and exchange rate-adjusted tariff, annually revised, for SHPP-based electricity; adequate feed-in tariffs; and a predictable, long time-horizon of 15 years' guaranteed purchase agreements.

This conducive investment environment encouraged OFID to provide a \$10m loan to Armenia's Ardshinbank through its private sector lending window. It is a bilateral loan provided on a senior, secured, pari-passu basis. The financing is being used by Ardshinbank to fund local SMEs involved in the construction and operation of SHPPs. The loan will assist Armenia in developing its alternative energy sources and will contribute to broadening access to energy in the country. It will also serve as a catalyst in stimulating job creation and income generation for socially vulnerable population groups.

tive energy sector. Therefore, providing the right financing models for smaller businesses diversifies the energy mix and raises energy security in low income countries. Here, multilateral development banks and DFIs have a prominent role to play, together with other public and private resources.

Local banks who, with their local knowledge, are better equipped to offer loans to local private sector and small credits to consumers are important actors in realizing universal energy access, especially in the sphere of distributed solutions. International aid agencies, however, can provide assistance to local financial sectors, including providing credit enhancement and risk mitigation, in addition to significant project finance training and capacity building.

Governments with a clear commitment and firm policy on enhancing access to modern energy services can consider issuing sovereign guarantees for their public utilities to benefit from low-cost loans for projects that benefit from the inherent characteristics of utilities in both grid extension and mini-grids, for example.

Chapter IV

GPEDC, THE SDGs AND ENERGY FOR DEVELOPMENT

In parallel with the facts that 1) the SDGs are based on a systematic approach to development problems, 2) the links between the goals, targets and interventions are complex, and 3) an overall perspective is required, there has been a change in the analysis of aid effectiveness. The emphasis has shifted toward consideration of development results as a whole and the need for all partners to make sure that, working together, their combined efforts will be successful.

The Global Partnership for Effective Development Cooperation (GPEDC) is based on this holistic approach. The GPEDC principles emphasize the role of national perspective and country ownership of development planning, while enhancing the enabling environment that will facilitate domestic and international financing of projects. The Partnership is a platform for knowledge- and experience-sharing in order to build the capacity of the partner countries. At the heart of the Partnership is a focus on results. Projects that are implemented successfully contribute to economic growth and social progress, with minimal environmental impact, while make it easier to justify and finance further investments.

This chapter will explain that the effective development approach is particularly relevant to interventions in energy. Paying proper attention to the interconnections between modern energy services and every aspect of life should raise the domestic profile of energy investment and push it higher on the development agenda of countries. The need to mitigate macroeconomic and commercial risk through government policy is essential for expanding the pipeline of bankable energy projects. Cooperation between stakeholders can assist with energy planning, project preparation and risk mitigation. The traditionally poor technical and financial performance of energy infrastructure can be improved through better monitoring and control.

GPEDC background and principles

The model for the international aid system that developed in the second half of the twentieth century was the so-called “Marshall Plan” which provided American government funds to reconstruct the European economies after 1948. The program operated for four years and aimed to remove trade barriers, rebuild infrastructure and modernize industry.

Central to this model was the control exercised by donors. Donors thought that they knew best. Moreover, the capacity to take control of development was weak in many of the recipient countries. Some European countries did not re-establish sovereign governments until many years after the end of World War II. The motivations for aid in this period were mixed. Humanitarian considerations played some part, but aid also helped to promote the geopolitical interests of donor countries. It was only after the end of the Cold War in 1991 that the declared focus of official aid began to move closer toward the alleviation of poverty and the promotion of development. Nevertheless, donor countries continued to pay attention to national interests. For example, as late as 1999–2001 only 46% of all bilateral overseas development assistance from countries of the OECD Development Assistance Committee (DAC) was reported as being completely untied.

It is against this background that the international aid effectiveness movement began taking shape in the late 1990s. In 1996 the OECD DAC published “*Shaping the 21st Century: The Role of Development Cooperation*,” which set out the basic concepts of aid effectiveness. The MDGs, until today, have served as the focus for global development effectiveness.

In 2002, an international conference on financing the MDGs was held in Monterrey, Mexico, and yielded what came to be known as the “Monterrey Consensus.” The conference led to increased development aid commitments from donor countries as well as agreed positions on other issues such as debt relief, reducing corruption, and increasing policy coherence. The Monterrey Consensus helped bring together both donors and developing countries around a shared concern that aid be used as effectively as possible. A new paradigm of aid as a partnership, rather than a one-way relationship between donor and recipient, was emerging and evolving. In 2003, the High Level Forum on Harmonization was held in Rome. Donor agencies committed to work with developing countries to better coordinate and streamline their activities at the country level. Together, cumulatively and over time, these international agreements defined key goals and objectives for the aid effectiveness agenda.

That agenda took a major step forward with the endorsement of the Paris Declaration on Aid Effectiveness in 2005. The Paris Declaration identified and endorsed five key principles for effective aid. First, *ownership*: developing countries should set their own strategies to reduce poverty, improve their institutions, and tackle corruption. Second, *alignment*: donor countries should align behind these objectives and use local systems. Third, *harmonization*: donor countries should coordinate and avoid duplication. Fourth, *results*: developing countries and donors should focus on development results, and results should be measured. Fifth, *mutual accountability*: donors and partners are both accountable for development results. Compared with previous joint statements on aid harmonization and alignment, the Declaration provided a practical, action-oriented roadmap with specific targets to be met by 2010.

Three years on, in 2008, the Third High Level Forum in Accra, Ghana, took stock of progress and built on the Paris Declaration. The Accra Agenda for Action proposed actions needed to accelerate achievement of the Paris commitments.

In 2011, the Busan Fourth High Level Forum reaffirmed the commitment to address the unmet reform targets set by the Paris and Accra agreements, and addressed a range of additional priorities for action. The Forum established the Global Partnership for Effective Development Cooperation (GPEDC), as a broader community of actors (including emerging economies as donors) working together to improve the effectiveness of their development cooperation.

The GPEDC marked a shift from the traditional aid effectiveness discussion between donors and recipient countries to one of inclusive partnerships for effective development cooperation, including donors and recipients (South-South cooperation), multilateral organizations, international financial institutions, and civil society organizations. The four principles of the GPEDC owe much to the groundwork set out in the Paris Declaration:

1. Ownership of development priorities by developing countries. Partnerships can only succeed if they are led by developing countries, implementing approaches that are tailored to country-specific situations and needs.

The Busan Partnership agreement reaffirms the importance of using and strengthening government sector systems for building effective institutions. Country ownership is vital because development requires good governance and supportive state policy. For development cooperation efforts to be most

effective, they need to respond to developing countries' priorities and be provided in a way that uses and strengthens developing countries' own institutions and systems. Studies which evaluated the Paris Declaration confirmed this by showing that efforts to put effectiveness principles in action have helped to ensure that development cooperation is better managed while also strengthening the core state functions, for example by improving the management of all public expenditure, procurement and accountability.

Since governments are the prime mover, if external development cooperation is to be in any way effective, large-scale interventions should be integrated with the plans and projections of the state. Infrastructure projects, for example, create networks which require planning over geographies, sectors and technologies. Tasks include projecting demand, fixing the technology and scale of needed investments, identifying the bottlenecks, organizing the finance, setting the tariffs and organising maintenance. Most importantly, infrastructure is always a very significant capital item which requires long-term funding.

2. Focus on results. Investments and efforts must have a lasting impact on eradicating poverty and reducing inequality, on sustainable development and on enhancing developing countries' capacities, aligned with the priorities and policies set out by developing countries themselves.

Countries and organizations have agreed to adopt transparent, country-led and country-level frameworks as a common tool to assess performance based on a manageable number of output and outcome indicators drawn from the development priorities and goals of the developing country. These frameworks, which are unique to each country, define each country's approach to development results and the systems and tools to monitor and evaluate progress in achieving such results.

Evaluation is important because of the scale and tenor of the commitments from all parties—both in terms of financial resources and human resources. Investments, especially in infrastructure and energy, impose large opportunity costs. Countries need to be sure that the investments have produced proportionate social, economic and environmental benefits in order to justify ongoing and new commitments to all stakeholders. In this connection, it is important to remember that historical investments in infrastructure (including energy) have not always been productive. The recent study by the IMF "*Public Investment as an Engine of Growth*" has found little evidence that public capital spending has, in fact, accelerated economic growth in low-income countries.

3. Inclusive development partnerships. Openness, trust and mutual respect and learning lie at the core of effectiveness partnerships in support of development goals, recognizing the different and complementary roles of all actors.

The Accra Agenda for Action in 2008 broadened the definition of country ownership—which previously focused on the executive branches of central governments—to give greater recognition to the role of societies as owners of development. The Busan Partnership agreement aims to promote a more effective development agenda for civil society and private sector engagement, to enable them to fully contribute to development while encouraging greater accountability.

This principle recognizes that the benefits of development do not always reach all segments of society. An exclusive focus on economic growth can lead to greater inequality. It is important that development plans consider disadvantaged and vulnerable groups, such as women and those living in rural areas, to make sure that the benefits of interventions are widely shared.

4. Transparency and accountability to each other. Mutual accountability and accountability to the intended beneficiaries of our cooperation, as well as to our respective citizens, organizations, constituents and shareholders, is critical to delivering results. Transparent practices form the basis for enhanced accountability.

By 2005 the Paris Declaration on Aid Effectiveness had already recognized transparency as a prerequisite for public support for development efforts and for effective resource mobilization and allocation. In 2008 the Accra Agenda for Action increased the focus on developing countries' parliamentary oversight of—and transparency in—public financial management, also highlighting the need for stronger measures to fight corruption. In their turn, aid providers promised to disclose granular, detailed and timely information on development expenditure. Overall, these moves signalled a clear recognition that transparency is essential for building mutual trust.

The GPEDC: challenges in Implementation

All development partners welcomed the principles of the GPEDC which emerged from the Busan High Level Forum. Nevertheless the Partnership has faced various challenges since the launch of the initiative in 2011.

The first area of concern is that many commitments embodied in the Paris Declaration, also those included in the GPEDC, remain unfulfilled. These various gaps constitute the “unfinished business” of the development effectiveness agenda.

The first High Level Meeting (HLM) of the Partnership was held in Mexico City in April 2014. As part of the preparation for the HLM, the report “*Making Development Cooperation More Effective– 2014 Progress Report*” was prepared by the OECD and UNDP to assess progress in effective development cooperation since the 2010 Paris Declaration Monitoring Survey. The report indicates that only half of ODA disbursements rely on the recipient country’s own procurement and financial management systems, about the same share as in 2010, pointing to the further potential to strengthen and use country systems.

The report shows that further efforts are needed to ensure that country-led results frameworks are adopted as a common tool to assess performance. Progress will require strengthening the multistakeholder country-level dialogue in this area, as well as identifying and promoting relevant operational policies and instruments.

The HLM recognized gains made by developing countries in setting clearer development strategies and ensuring country ownership, as well as a greater drive to increase transparency at the global level. The meeting also acknowledged, however, that more effort was required to meet countries’ needs in areas such as development planning and accountability for development results, and that more work was needed to make inclusive partnerships a reality. Progress towards untying aid has also been mixed as some donors have made modest or no commitments in this direction.

Second, the HLM in Mexico further broadened the effectiveness agenda to include development financing issues. The HLM communiqué stressed the importance of domestic resource mobilization for financing national development, and the role of international cooperation in supporting the broadening of tax bases; strengthening tax administration; improving governance of extractive industries; and cracking down on illicit financial flows. It also highlighted the potential to partner with the private sector to achieve development results and augment development finance, noting the need for enabling business environments that are conducive to inclusive development and for private sector accountability.

In addition, the HLM emphasized the importance of maintaining development cooperation for middle-income countries, while recognizing the need to take into account the complex and diverse realities of MICs, as well as the importance of broadening and strengthening South-South and triangular cooperation as a complement to North-South cooperation.

It is not clear whether this widening of the effectiveness agenda might result in reduced pressure on DAC donors to fulfil the existing Busan (and

The Coordination Group as a model for effective development cooperation

Box 4.1

The Coordination Group (CG) is a policy and operational alliance among a number of national and regional Arab development funds, the Islamic Development Bank and OFID. The Group has been a consistent supporter of the development effectiveness agenda, is a member of the Steering Committee of the GPEDC and operates to a set of principles that are fully aligned with those of the Partnership. Many of the GPEDC indicators are already standard working practice for the CG, which approaches development cooperation from the unique perspective of a set of countries that are themselves developing.

Long-established features of the Group's work include Partner Country sovereignty and ownership; an untied and predictable flow of aid; responsiveness and flexibility; and mutual accountability, among others. Through its practice of sharing initiatives, synchronizing programs, and pooling knowledge and resources, the Group has made appreciable progress toward maximizing development effectiveness.

The CG is committed to solidarity with the poor, a firm commitment to development results and support for South-South cooperation. It follows that all the institutions of the CG, including OFID, will continue to work towards the achievement of the goals of the Partnership.

Looking forward, the CG institutions have decided a strategy for integrating the GPEDC working principles and devised a Group agenda to address common issues, gain synergies and ensure effectiveness. The CG strategy is built on three pillars:

Pillar I aims at enhancing the internal systems and procedures of the CG and integrating the demand for information by stakeholders and by the GPEDC requirements. Pillar II aims at developing an information disclosure policy, as well as a reformulation of the Group's databases. Under Pillar III, the Group will support in all ways and means the principles of development effectiveness and contribute to the clarification of indicators that are still under research, especially now that the Group has gained membership of the GPEDC Steering Committee.

The enhancement of CG procedures involve strengthening the processes in the project cycle that determine project effectiveness. Further efforts are being made to agree partnership policies that define priorities and country-level targets; also to prepare and negotiate the results framework for monitoring and assessing performance. Moreover, Group plans greater engagement with civil

society, women's groups and the private sector as well as an analysis of stakeholder priorities. It seeks to improve the predictability of cooperation flows by increasing the proportion of aid which is disbursed in the scheduled year and by the provision of indicative triannual forward-spending plans.

The 2030 Agenda

The concept and the formulation of the 2030 Agenda is at the heart of the strategies and plans of the CG institutions for the immediate and long term. The CG also supports the UNFCCC/COP 21 on climate finance; particularly the fact that developing countries should be provided with the necessary help for adaptation and mitigation programs, and that developed countries should work towards their financial commitment by 2020.

The CG believes that each SDG is relevant in terms of its contribution and its potential to enhance the welfare of the developing countries and to meet the aspirations of their people to prosperity. However, it is necessary to build on the achievements of the MDGs and continue with cooperation. In addition, the CG considers that the partnership between developed and developing countries is essential in embracing the means of implementation of the 2030 Agenda, and that support should be delivered mainly to least developed and conflict affected countries.

Furthermore, the Group acknowledges that data is key to measuring, evaluating and tracking progress in implementing the SDGs at national and global levels. It also believes that unrestricted trade, technology transfer and innovation, and capacity-building are important in advancing the implementation of the SDGs.

earlier) commitments. It is noteworthy that total ODA flows from DAC member countries in 2013 was, as indicated in Chapter 1, less than half the equivalent of 0.7% of GNI. This longstanding commitment was accepted by most DAC members in 1970.

A third challenge is the further fragmentation of the development community. Important countries such as China, India and Brazil are emerging as donors in their own right and these countries (also Russia) chose not to participate in the Mexico HLM. Moreover, 2014 saw the launch of two new development banks, both based in China. The New Development Bank will focus on infrastructure and sustainable development projects in all developing countries whilst the Asian Infrastructure Bank will concentrate on infrastructure and productive projects in Asia.

The straightforward post-war pattern of donor-recipient relationships has ended and it seems likely that ODA, as captured by the OECD DAC, may comprise a smaller proportion of total aid. The new, more complex relationships/opportunities between developed and developing countries create prospects of (widely) different goals, as donors have different perspectives on development and conditionality.

Some donors place emphasis on assistance which has a commercial purpose. Projects to extract resources provide raw materials for further processing. Investments in infrastructure can serve assembly or manufacturing operations owned by companies from the donor country. These projects integrate productive operations in developing countries into international value chains. Investors from China, Korea, Brazil and India have been particularly significant in the infrastructure sector in Africa since 2000. In addition to new donors from developing countries, it seems likely that private sector investors and philanthropic agencies will also play a greater role.

It seems clear that the task of effective development coordination will become more difficult as the twenty-first century proceeds. The Global Partnership will have to acknowledge the different motivations and strategies of a wide range of development partners while maintaining focus on the four key principles.

Effective development and the energy sector

In recent years the international community has come to realize the widespread lack of modern energy services in developing countries. What is remarkable is that inadequate energy provision impacts a very wide range of countries, including some with relatively high levels of GDP per capita, significant industrial sectors and substantial natural and human resources.

This problem demonstrates that there are many obstacles that deter investment in energy projects. This section highlights some of these obstacles and outlines the role of the GPEDC. The Partnership can make contributions in four areas.

First, the GPEDC can underline the importance of country ownership of national development objectives. Large-scale investment in the energy sector requires political will and commitment at the highest level. Political will may be needed to overcome vested interests and mobilize backing for very large investments over long periods of time. Economic history shows that dedicated government action over decades has usually been necessary to extend and improve power networks. Even in the free-market environment of the United

States, it was only government spending in the 1930s which brought electricity to rural America. More recently, the scale of the extension of electricity networks through China, India, South Africa and Brazil would not have occurred without central government direction.

National development objectives, which should be agreed as part of the Partnership process, can help governments advance energy issues up the domestic agenda since better energy services can be shown to have a significant, positive effect on the economy, the environment and social conditions.

The importance of political visibility has been recognised by the SE4ALL initiative. In order to achieve SE4ALL objectives the key implementation mechanism for each country is the Country Action Agenda. According to SE4ALL: “It is crucial that there be clear national ownership of the Country Action Agenda and, therefore, its development process must be an inclusive exercise of stakeholder engagement led by the national government authorities preferably under the coordination of a national lead entity.”

Second, the GPEDC can help improve the enabling environment. The Partnership encourages governments to improve the enabling environment for development. For the energy sector, greater macroeconomic stability and more effective institutions can reduce the perceived risk of investment. Better management and financial control can increase the revenues of utilities. Such policies can boost international and domestic financing and therefore expand the pipeline of bankable projects.

The recent Mexico HLM of the Partnership stressed the potential for improving domestic revenue flows. Many parts of the energy industry suffer from uneconomic tariffs. According to the World Bank, the annual operational and maintenance needs of the power sector in sub-Saharan Africa total \$14bn. However, total annual expenditure (including capital spending) is less than \$12bn.

Confidence in economic conditions, political stability and supportive legal and regulatory structures constitute a high priority for a private sector-led pipeline of bankable projects. Considering the sensitivity of energy demand to economic conditions, sharp fluctuations in GDP or high inflation will force private investors to demand very high rates of return on their investments. A rapidly depreciating currency will also discourage foreign investment since utility bills are denominated in local currency. If investors fear that tariff contracts will not be honored in the long-term, the cost of capital will be higher and potentially viable public/private projects will never be financed.

The importance of action to mitigate risk was underlined by the recent report from the SE4ALL Finance Committee entitled “*Scaling-Up Finance for Sustainable Energy Investment*”. The report suggested four themes where action could boost investment from the private sector: 1) developing the Green Bond market, 2) using DFIs to de-risk investments, 3) exploring insurance products, and 4) developing aggregation structures to pool and diversify the risks of small-scale projects. All these proposals are likely to be much more successful in countries which are making a determined effort to moderate political, economic and financial risk.

Third, the experience of development institutions, other developing countries and the private sector can be channeled through the Partnership to help governments build capacity. Cooperation can provide critical knowledge based on shared experience and lessons from previous energy development programs. Technical assistance and knowledge sharing can assist with energy planning and project preparation.

Whilst leadership is essential to motivate progress and prepare the investment environment, energy projects require much detailed planning and preparation work. The foundation for energy investment is a good understanding of the effective demand for energy services from every sector in every region of the country, urban and rural. Critical also is a proper estimation of what people are able and willing to pay for energy services, and the impact of better services on their incomes and standard of living.

Planning should also take account of the benefits which are not captured by the direct revenues of the utility companies. These benefits, the so-called “external economies”, consist of gains in output, employment and incomes as an indirect result of cheaper (and more reliable) access to energy. Since energy is a very capital intensive sector, once capacity is installed the long run cost of power should decline as production increases. This should encourage all business users of power to expand the scale of their activities. As has been noted above, planning for the crucial nexus sectors must also take technical and economic interrelationships into account. Improved energy and transport services can make a huge difference to the productivity and market access of rural farms.

Fourth, the GPEDC places a strong emphasis on results. Planning, financing and commissioning energy projects is a challenge, but obtaining satisfactory operating and financial performance from installed infrastructure requires yet further effort. The results orientation of the Partnership should improve project implementation and the technical and financial efficiency of energy infrastructure in operation.

Inadequate maintenance and poor utility management can depress the output of the generating, transmission and distribution systems. Utility managements should be provided with incentives to improve technical and financial performance and reduce the crippling burden of power cuts and brown-outs. The culture of non-payment for electricity should be resisted. Customers should be prepared to pay for reliable power, especially if lifeline tariffs or other arrangements can provide subsidies for the poorest users.

These four contributions have been described separately for clarity but, in fact, they are all closely interrelated. The starting point is that, for many countries, incremental change will not suffice. As shown in Chapter 2, the energy investment gaps are so large that only significant changes in policy are likely to make much of an impact. Such high-level change can only happen as part of a national strategy that respects the country ownership principle of the Global Partnership. But initiatives favoring higher investment spending will not, of themselves, generate resources. Financing these projects will also require an effort to increase the flow of domestic resources into investment and to reduce country risk. Such policies to improve the enabling environment for development are central to the principles of Effective Development. Greater international development cooperation to share knowledge and add technical capacity will help countries plan their energy infrastructure. The Partnership expects that countries which have completed such investment programs will be able to advise based on recent practical experience. Once energy projects have been commissioned, the Partnership emphasis on results will come into play. In so far as the operating and financial results of energy investments are good, all sectors—households, business and public services—will benefit accordingly. There can be a dynamic process at work whereby properly structured and administered infrastructure investments can boost the underlying productivity and growth rate of the whole economy. Faster economic growth can, in turn, permit further investments in infrastructure and other national priorities.

The energy and investment challenges facing developing countries are certainly substantial, indeed are growing in some regions as populations expand. This section has shown that countries which are striving to upgrade their energy infrastructure can expect to benefit from the GPEDC. It is relevant to note the close alignment of the Partnership with the modalities of SE4ALL. This underlines that Partnership principles have much to offer countries which are actively seeking to improve energy access as part of their progress towards the SDGs.

Chapter V

OFID AS PIONEER AND CHAMPION OF ENERGY POVERTY ERADICATION

The 2030 Agenda for Sustainable Development is a plan of action for people, planet and prosperity. The recently adopted 17 Sustainable Development Goals and 169 targets demonstrate the scale and ambition of this new universal agenda, and the analyses presented in this pamphlet show that now is the time to give a higher priority to energy. The preceding chapters have established that access to modern energy services is a key enabler to achieving these goals and targets, and demonstrated the important role an effective global partnership can play in overcoming the many obstacles that deter investment in energy access projects. This chapter looks at the pioneering role OFID has played as both an advocate and practitioner of energy poverty eradication.

OFID and energy access

OFID, a development aid institution with a 40-year standing and a presence in over 130 countries, has long placed energy and cooperation at the core of its strategic framework. OFID firmly believes that human development and energy use are inseparably linked and considers energy to be a key enabler of sustainable development. In fact, it was OFID that first labelled access to energy services the “missing 9th MDG”.

OFID’s commitment to energy access received a considerable boost from the Third OPEC Summit held in Riyadh, Saudi Arabia, in November 2007. The Riyadh Declaration recognized that energy is essential for poverty eradication, sustainable development and the achievement of the MDGs, and called upon OFID to intensify its efforts in the fight against energy poverty.

OFID responded to this mandate promptly and arranged for a workshop in Abuja, Nigeria in June 2008 to study the causes of, and solutions to, energy poverty. Attended by a wide range of stakeholders, the workshop engaged experts in intense and productive discussion. The choice of sub-Saharan Africa as the location of the meeting reflected its unenviable position as the region with the lowest electrification rate in the world. Immediately following

the Abuja workshop, the late King Abdullah bin Abdul-Aziz Al Saud of Saudi Arabia announced an “Energy for the Poor Initiative” during a meeting of energy producers and consumers in Jeddah. The initiative urged the World Bank to organize a meeting for donor countries as well as regional and international financial institutions to discuss ways and means of meeting the energy needs of developing countries. It also called on OFID to consider a program of \$1bn for alleviating energy poverty. Later that same year, OFID launched its own Energy for the Poor Initiative (EPI). Since then, energy poverty alleviation has been OFID’s primary strategic focus, with activities carried out at both an advocacy level and an operational level.

Partnerships on the world stage

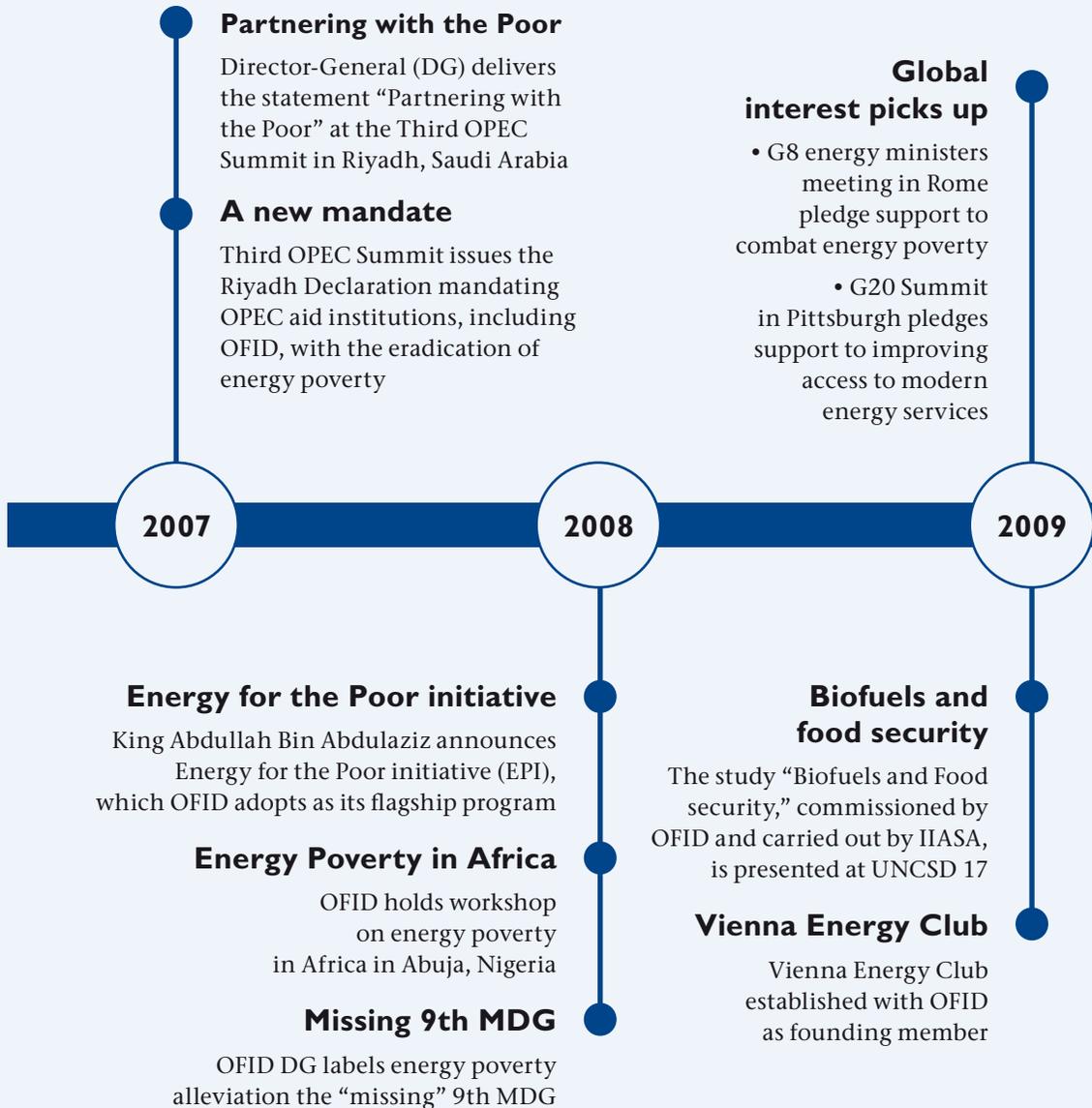
As the pioneers and champions of energy poverty eradication, OFID was involved in the UN-led SE4ALL initiative from its early days. OFID’s Director-General was nominated to the UN Secretary-General’s High Level Group for the initiative in 2011 and has served on the SE4ALL Advisory Board since 2013.

OFID’s association with SE4ALL enhances its role in the context of international framework and partnerships, where it continues to address and advocate issues relating to energy poverty, and to find solutions. In this context, OFID has established formal partnerships with a number of organizations, including the World Bank, the Asian Development Bank, the Latin American Development Bank (CAF), and the International Fund for Agricultural Development.

In terms of advocacy, OFID has worked to push the issue of energy poverty up the international agenda by highlighting the widespread absence of modern energy services and its detrimental impact on economic and social progress in developing countries. Within the framework of SE4ALL OFID has taken several initiatives. In April 2014, it hosted the inaugural meeting of the Energy Access Sub-Committee to prepare the committee’s recommendations to the first Annual SE4ALL Forum, which held in New York in June of the same year. In early November 2014 it hosted at its Vienna HQ a symposium on Petroleum Industry Support for Universal Energy Access. This gathering was co-organized by the World Petroleum Congress (WPC) and attended by high-level representatives from both national and international oil companies.

**Timeline:
OFID and the fight against energy poverty**

Figure 5.1



12th International Energy Forum

- At the 12th IEF in Cancun, OFID delivers a statement at a special session devoted to the role of energy in fostering human development
- Ministers state in the closing communiqué that “reducing energy poverty should be added as the 9th goal in the MDGs”

Energy-water-food nexus

OFID initiates analysis on the energy-water-food nexus within the framework of energy poverty alleviation

2010

OFID signs cooperation agreements

- MoU with CAF highlights cooperation on energy poverty alleviation
- MoU with the World Bank includes focus on energy sector
- Framework agreement with IFAD highlights energy for the poor

Sustainable energy for all

UN declares 2012 the International Year of SE4ALL

SE4ALL initiative

UN launches SE4ALL initiative; OFID DG invited to join the Secretary-General’s High-Level Group

SE4ALL in Vienna

OFID hosts SE4ALL’s first technical meeting at its HQ in Vienna

Collaboration with IEF

OFID hosts 2nd IEF-OFID Symposium on Energy Poverty

2011

Energy poverty forum

OFID hosts the Crans Montana Forum’s High-Level Panel: “Energy poverty: A key issue for peace, stability and development”

New cooperation agreements

- MoU with BADEA with a focus on energy poverty
- MoU with ADB highlights access to modern energy services

World Petroleum Congress

At the 20th WPC in Doha, OFID calls for oil industry involvement in energy poverty alleviation. DG delivers statement: “Industry support for sustainable energy for all”

2012

Decade of SE4ALL

UN declares 2014–2024 the Decade of underscoring the importance of energy for sustainable development

OFID Ministerial Declaration

OFID Ministerial Council issues a Declaration on Energy Poverty committing a minimum of \$1bn toward OFID’s EPI

Universal access by 2030

At the 13th IEF in Kuwait, OFID DG delivers the statement: “Universal access by 2030: A sustainable development goal”

Rio+20 Summit

- OFID DG announces the \$1bn pledge as an affirmation of the seriousness of its intent.
- OFID coordinates session “Financing actions to scale up from the ground;” DG delivers statement “Energy is the golden thread”

Sustainable energy: missing MDG

OFID active in Global South-South Development Forum in Vienna; DG delivers statement “Sustainable Energy: The Missing MDG”

2013

SE4ALL Advisory Group

OFID DG appointed member of SE4ALL Advisory Group

\$1bn revolving pledge

OFID Ministerial Council turns \$1bn commitment from one-time obligation to revolving pledge

Vienna Energy Forum

OFID opening statement at Vienna Energy Forum: “Maintaining momentum and encouraging action in the fight against energy poverty”

Energy for rural poor

OFID hosts joint OFID–GIZ expert meeting on access to modern energy services for rural communities

Energy poverty eradication non-negotiable

OFID DG speaks at the Center for Global Dialogue and Cooperation: “Yes, the challenges are huge. But, the bottom line is, we don’t have a choice. If we want to build a world free from want and human misery, we must find a way to vanquish energy poverty”

Energy Access Committee

OFID hosts 1st SE4ALL Energy Access Committee meeting

Petroleum industry engagement

- At the 21st WPC in Moscow, OFID DG urges petroleum industry to engage with the SE4ALL Action Agenda “given the enormous scope to contribute leadership, technology and much relevant experience”
- At 10th International Energy Conference in Tehran, OFID DG states: “The petroleum industry needs to search for the best ways to contribute to addressing energy poverty in the host communities”

Rural electrification

OFID and the Alliance for Rural Electrification (ARE) sign an MoU to facilitate identification of suitable projects for co-funding

Mini-grids as effective solution

OFID joins SE4ALL’s Clean Energy Mini-grids High Impact Opportunity.

2014

OFID/WPC Symposium

OFID/WPC symposium starts discussions on developing a unified platform for the petroleum industry to work on universal energy access

Energy and sustainable development

OFID publishes “Energy: The key for Sustainable Development—Selected Statements of Suleiman Jasir Al-Herbish, Director-General”

2015

Vienna Energy Forum

OFID organizes High-level Panel “Ending Energy Poverty—Concrete Commitments and Action on the Ground” at 2015 VEF

Corporate Plan 2016–2025

Ministerial Council approves OFID’s Corporate Plan 2016–2025, which focuses on the energy-water-food nexus

Agenda 2030

UN General Assembly adopts the 2030 Agenda for Sustainable Development, with energy access as SDG7

Practicing on the ground

In June 2012, OFID's Ministerial Council issued a Declaration on Energy Poverty, which committed a minimum of \$1bn to bolster activities under the EPI. OFID announced this pledge at the Rio+20 Summit as an affirmation of the seriousness of its intent. These additional resources have boosted OFID's portfolio of energy access initiatives, enabling outreach to over 80 countries. The diverse range of projects includes—among others—the construction and rehabilitation of energy infrastructure, institution strengthening, funding for research, the provision of low-cost grassroots solutions and capacity building. Given the scale of demand from OFID's partner countries and the number of energy operations successfully conducted, OFID's Ministers have since turned the \$1bn commitment from a one-time obligation to a revolving pledge.

Electricity access: Quantity and quality

Box 5.1

Being connected to the electricity grid does not necessarily mean that a person has escaped the grip of energy poverty. Most developing countries—even those enjoying electrification rates close to 100%—are characterized by a level of electricity consumption per capita that is very low when compared with that of developed or emerging countries. Moreover, in many cases the electricity service is characterized by long periods of blackouts and voltage instability. In a multitier system of energy poverty measurement, access to electricity for all required energy applications across the whole economy is defined by attributes that include, among others, quantity, adequacy, availability and reliability.

Through its public sector lending window, OFID supports projects that expand the electricity generation capacities of a centralized system, thereby raising the quantity of electricity needed to meet rising demands, and/or projects that extend and improving central transmission and distribution grids. These projects are most often executed by local public utilities in partner countries.

In **Bangladesh**, the electricity sector suffers from heavily overloaded power plants, transmission line constraints, high distribution losses and poor quality of service. In addition, less than half the population is connected to the electricity grid, while demand is growing rapidly. In its master plan for the sector, the government projects a required tripling of electric generating capacity by 2021. In line with this goal, OFID provided a \$30m loan to support the construction of a new combined cycle power plant in the Chittagong District, Bangladesh's commercial capital and focal point of energy supply deficit. The 225MW plant will

integrate liquid fuel with gas to create a dual fuel facility. By increasing Bangladesh's generation capacity, the project will improve electricity access, reliability, and quality of supply.

In **Kenya**, where electricity production and consumption are among the lowest in the world, OFID approved a \$15m loan to help finance the Kenya Electricity Expansion Project (KEEP). The project forms part of the country's economic development plan, Kenya Vision 2030, which pinpoints energy as a key economic pillar. KEEP will double Kenya's geothermal capacity from 140MW to 280MW to represent 20% of the country's total installed capacity. This effort will result in approximately 300,000 new connections for households, small businesses and public institutions, benefiting around 500,000 inhabitants. By increasing access to affordable electricity, KEEP will help enhance Kenya's economic competitiveness and improve the socioeconomic welfare of low-income households.

In the **Dominican Republic**, decades of limited economic development have been attributed to an inefficient electricity sector. The problems include insufficient generation capacity to satisfy consumer demand, unreliable and poor-quality service, vast losses along the distribution network, and high costs. Recently, the government identified energy as a cornerstone of its national development strategy 2030. OFID recently provided a \$60m loan for electricity distribution rehabilitation and power loss reduction. The project conforms to the country's economic strategy, which aims at reducing poverty and improving living standards. It is expected to benefit approximately 622,500 inhabitants and result in increased availability of electricity, improved service quality and enhanced energy efficiency.

With an electrification rate of just 12% (5% in rural areas), electric power shortage remains the single greatest obstacle to economic growth in **Uganda**. To address this deficit, the government has included electricity access as a core component of its national development plan, with a particular focus on meeting the energy needs of the population for social and economic development. In keeping with these objectives, OFID provided a \$15m loan to support a rural electrification project, which will extend the national grid by over 1,000km. The project will connect over 12,700 households in some 120 villages, ultimately benefiting 235,000 inhabitants. By meeting the growing demand for electricity in the unserved rural areas, OFID's loan will help catalyze the economic transformation of the rural economy.

OFID has taken concerted action to work with its partner countries to prioritize universal access to sustainable modern energy services. Its activity in fighting energy poverty extends to all regions of the world, finances all types of cleaner and efficient technologies, and boosts cooperation with all kinds of financial partners, without imposing any conditionality. Operations span a broad range of energy projects covering conventional and renewable technologies, from large, capital-intensive power plants and grid expansion to small, individual home energy systems and cookstove solutions. OFID projects include a new power plant in Egypt, for example, and rural electrification schemes in Morocco, Mozambique and Uganda.

At the same time, OFID supports innovative solutions that provide additional benefits, such as protection of the environment and climate change mitigation. OFID loans and grants have contributed to the financing of renewable energy projects in countries like Cambodia, India, Kenya and Tanzania, as well as the distribution of solar lanterns in Kenya and Tanzania and modern cookstoves in Ethiopia, Honduras, Malawi, Uganda and Zambia.

In order to meet the wide variety of needs, OFID deploys all of its financing windows in the battle against energy poverty. So, in addition to public sector infrastructure projects, resources are also channeled through OFID's private sector window. This facility is financing large-scale wind energy installations in Honduras, Jordan, Kenya and Pakistan, among other interventions. It is also co-funding an energy access fund that offers stable financing to SMEs engaged in providing electricity to off-grid communities in sub-Saharan Africa. Also aimed at SMEs is a project in Armenia to support the development of small-scale hydropower plants.

In many developing countries, not having access to energy is a major barrier to trade and can restrict companies to small domestic markets. Through its trade finance facility, OFID extends finance to developing country companies who need to access energy products in order to run their manufacturing, trade or service operations. Guarantees can provide credit enhancements for local borrowers, increasing their ability to obtain finance for their energy needs.

Via its dedicated grant program for energy poverty alleviation, OFID funds projects that aim at improving access to modern energy services in poor communities. It also helps small energy businesses with the aim of improving economic conditions in such communities. And it supports scholars and students from developing countries who are pursuing energy research lines and studies.

In **Jordan**, all but a fraction of the annual energy consumption is based on imported fuel. With limited conventional energy resources of its own, the country is vulnerable to oil price increases. Since 2010, the cost of imports has risen due to disruptions in the delivery of low-cost gas from Egypt. Jordan nevertheless, has strong solar and wind energy resources and the government is actively developing new sources of energy production. Following the introduction of the Renewable Energy and Efficiency Law in 2010, Jordan aims to increase the proportion of energy from renewable sources from 1% in 2007 to 10% by 2020. The law allowed the public utility in Jordan to sign long-term power purchasing agreements with independent power producers (IPPs).

Under its private sector lending facility, OFID provided a \$25m loan in support of two photovoltaic solar power plants: Jordan Solar One, located in the Mafrag region, and Falcon Ma'an, in the city of Ma'an. The two projects will generate a combined 98GW/h of electricity annually, meeting the growing demand for electricity in the country while diversifying the fuel mix and providing for energy security. The investment forms part of the "Jordan Solar Seven Sisters" program led by the International Finance Corporation. With a combined capacity of 102MW, the seven installations represent the largest private sector solar initiative in the MENA region.

Honduras is one of the least developed countries in Latin America. Half of the population lives in poverty and income per capita is among the lowest in the region. The capacity for energy production is insufficient to meet domestic demand, which is highly concentrated on fossil fuels. Government priorities focus on increasing generating capacity and improving the energy matrix so as to have 60 % of domestic demand supplied by renewable resources by 2022. This plan opened the door to private sector IPPs to participate in the country's energy market.

To help Honduras realize its objectives, OFID provided a \$15m private sector loan to *Vientos de Electrotecnia (VESA)* to develop the San Marcos Wind Farm. In all, 25 wind turbines with a combined 50MW of installed capacity have transformed life for 100,000 households in the rural Choluteca region and, at the same time, contributed to efforts to diversify the energy mix. The installation was branded "Renewable Infrastructure of the Year 2015" by the 13th Latin American Leadership Forum on Infrastructure. VESA has since requested a second OFID loan to expand the facilities by between 12MW and 13.2MW.

The involvement of OFID in these projects demonstrates that it indeed practices what it preaches. Firstly, OFID respected the leadership and choices of each partner country; both projects are in line with the respective government's strategy and its national plan vis-à-vis renewable energy. Secondly, the principle of technology neutrality is invoked: the use of solar photovoltaics and wind energy is motivated, in both countries, by resource endowments as well as economic considerations. In each case, the chosen technology represents the least cost solution. Thirdly, the role of the private sector in securing access to modern energy services is promoted: the OFID loans provide financing for cost-effective and eco-friendly energy projects, conditional on the concerned governments setting up the requisite suitable legal and regulatory frameworks.

These are a few examples of how OFID has moved from promises to concrete action on the ground. The ultimate objective is to ensure access to modern energy services. The actions that OFID supports provide integrated solutions; are income generating; and maximize local content and ownership. OFID believes that the fight against energy poverty should be based on sound economic grounds and be technology neutral. Its approach to combating energy poverty looks at the problem through the prism of balance. The focus is on alleviating energy poverty within a coherent framework based on the three interdependent and mutually supportive pillars of sustainable development: economic growth, social progress and the protection of the environment.

Linking the interventions

In the execution of its mandate, OFID recognizes the necessity of an overall perspective that does not ignore the complex links between the SDGs, their targets and interventions. This approach is reflected in the adoption of the energy-water-food nexus as the theme of OFID's Corporate Plan 2016–2025. The strategic direction laid out by the Corporate Plan recognizes that the optimum use of natural resources requires that the three sectors of energy, water and food be treated holistically, thus aligning with the 2030 global development agenda.

The Corporate Plan emphasizes that OFID, as a development aid institution, should invest in strengthening the food supply chain, including through coordinated investments in energy and transport infrastructure, which would enable efficient food processing and faster access to markets. Improved transport, storage, refrigeration and port facilities will enable trade in food and non-food products and reduce the costs of fertilizers, thus laying the founda-

tions for agriculture as an expanding, income-generating and profitable business sector in low-income countries, where agriculture is the priority sector.

Partnership for effective development

The lending and project management policies of OFID provide well-established examples of the practical implementation of the principles guiding the GPEDC. Since its inception in 1976, OFID has consistently respected key principles such as country ownership and the requirement to fully untie aid. Putting countries in the driving seat, using country systems and internalizing development impact have always been the main goals of OFID dialogue with its partner countries.

In the energy sector OFID recognizes the diverse needs of urban and rural communities; also the importance of improved grid supply for commerce and industry. Efficient energy systems must take account of geography, the resource endowment of each region and the customers' ability to pay. All these factors help determine the optimal technology which may differ in each case. OFID takes its lead from the energy authorities of partner countries and seeks to provide the best solution, whether based on renewable or fossil fuel technology. This policy of active engagement with partner countries is completely aligned with the principles of the GPEDC. Going forward, OFID will maintain this engagement as the whole development community works towards the achievement of the SDGs.

Annex I: Energy linkages with other SDGs

Goal	Linkage	Targets
<p>Goal 1 End poverty in all its forms everywhere</p>	<p>Access to basic energy services is a requirement for poverty eradication.</p>	<p>1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.</p> <p>1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate related extreme events and other economic, social and environmental shocks and disasters.</p>
<p>Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture</p>	<p>Agriculture and energy at times compete for land—for instance in biomass feedstock production.</p>	<p>2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.</p> <p>2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.</p>

Goal**Linkage****Targets****Goal 3**

Ensure healthy lives and promote well-being for all at all ages

Air pollution from traditional biomass usage is a prime cause of premature deaths, particularly amongst women and children.

3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

Goal 4

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Basic energy services are required to deliver education.

4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.

4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.

4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.

Goal 5

Achieve gender equality and empower all women and girls

Women's use of traditional biomass methods for cooking puts their health at risk.

5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

Goal 6

Ensure availability and sustainable management of water and sanitation for all

Conventional forms of power generation have substantial water requirements.

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse by globally.

Goal**Linkage****Targets**

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

Goal 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

The energy intensity of economic growth needs to be reduced.

8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries.

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

Goal

Linkage

Targets

Goal 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Resilient grid and transport infrastructure across borders is required to ensure access to energy for all, and to maximize energy efficiency.

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and increasing the number of research and development workers per 1 million people and public and private research and development spending.

9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.

Goal 10

Reduce inequality within and among countries

Distributed generation brings potential to genuinely bring energy for all, including in remote rural areas, thus reducing inequalities.

10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 percent of the population at a rate higher than the national average

Goal

Linkage

Targets

Goal 11

Make cities and human settlements inclusive, safe, resilient and sustainable

Cities require careful energy planning – especially to minimize combustion-driven air pollution for residents.

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

Goal 12

Ensure sustainable consumption and production patterns

Renewable energy and energy efficiency are a key part of a future in which there is sustainable consumption.

12.1 Implement the 10-year framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.

12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

Goal**Linkage****Targets**

12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.

12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

Goal 13

Take urgent action to combat climate change and its impacts

The carbon-intensive energy sector is a key driver of climate change.

13.2 Integrate climate change measures into national policies, strategies and planning.

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.

Goal

Linkage

Targets

Goal 14

Conserve and Sustainably Use the oceans, seas and marine resources for sustainable development

The ocean space can be used for marine energy (e.g. offshore wind).

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of “The future we want”.

Goal 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Energy projects need to be carefully sited and the energy mix needs to be carefully planned to avoid a negative impact on ecosystems and biodiversity.

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation globally.

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.

Goal

Linkage

Targets

Goal 16

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Transparent and corruption-free regimes are key to delivering energy services affordably.

16.1 Significantly reduce all forms of violence and related death rates everywhere.

16.5 Substantially reduce corruption and bribery in all their forms.

16.6 Develop effective, accountable and transparent institutions at all levels.

16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels.

16.b Promote and enforce non-discriminatory laws and policies for sustainable development.

Goal 17

Strengthen the means of implementation and revitalize the global partnership for sustainable development

Finance is required for capex-heavy energy infrastructure investments, Free trade will help to ensure affordability.

17.3 Mobilize additional financial resources for developing countries from multiple sources.

17.5 Adopt and implement investment promotion regimes for least developed countries.

17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism when agreed upon.

17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.

Goal

Linkage

Targets

17.8 Fully operationalize the technology bank and science, technology and innovation capacity building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.

17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda.

17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access.

17.14 Enhance policy coherence for sustainable development.

17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development.

17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.

17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries.

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Annex 3: Glossary of terms

ADB	Asian Development Bank	EAF	Energy Access Fund
ARE	Alliance for Rural Electrification	EPI	Energy for the Poor Initiative
BADEA	Arab Bank for Economic Development in Africa	ESMAP	Energy Sector Management Assistance Program
Biomass	Organic, often plant-based matter used as a fuel, e.g. in a power plant (also applies to both animal and vegetable derived material)	FAO	Food and Agriculture Organization of the United Nations
CAF	Latin American Development Bank	FfD	Financing for Development
CBDR	Common but differentiated responsibilities. Principle 7, the Rio Declaration of the 1st Rio Earth Summit states: <i>“In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command”</i>	G8	Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States
CG	Coordination Group of National and Regional Arab Development Funds, the Islamic Development Bank and OFID	G20	Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, South Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union
CO2	carbon dioxide	GDP	gross domestic product (the monetary value of all goods and services produced within a nation’s geographic borders over a specified period of time)
DFIs	development finance institutions	GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
DG	Director-General	GNESD	Global Network on Energy for Sustainable Development
		GNI	gross national income (the sum of a nation’s GDP plus net income received from overseas)
		GPEDC	Global Partnership for Effective Development Cooperation

Green bond	fixed-income financial instrument issued by governments, multi-national banks or corporations in order to raise finance for climate change solutions, including clean energy and energy efficiency projects and climate change adaptation.	LCoE	levelized cost of electricity (an economic assessment of the cost of electricity-generating system including all the costs over its lifetime; it is the minimum price at which electricity must be sold for an electricity project to break even)
GWh	gigawatt-hours	LDCs	least developed countries
HDI	Human Development Index (a statistical measure of a country's overall achievement in its social and economic dimensions)	LPG	liquefied petroleum gas
HIV	Human Immunodeficiency Virus	MENA	Middle East and North Africa
HLM	high-level meeting	MDGs	Millennium Development Goals
IEA	International Energy Agency	MoU	memorandum of understanding
IEF	International Energy Forum	MW	megawatt
IFAD	International Fund for Agricultural Development	MWp	megawatt peak
IIASA	International Institute for Applied Systems Analysis	NGO	non-governmental organization
IMF	International Monetary Fund	NPV	net present value (the difference between the present value of cash inflows and the present value of cash outflows)
IPCC	Intergovernmental Panel on Climate Change	ODA	official development assistance
IPPs	independent power producers	OECD	Organization for Economic Cooperation and Development
KEEP	Kenya Electricity Expansion Project	OECD DAC	Development Assistance Committee of the OECD
km	kilometer	OFID	OPEC Fund for International Development
kWh	kilowatt-hour	OPEC	Organization of the Petroleum Exporting Countries
kWh/cap.	kilowatt-hour per capita	OWG	Open Working Group
kWp	kilowatt peak	PPP	public private partnership
Wp	watt-peak (the power produced by a photovoltaic device when subjected to precisely defined Standard Test Conditions, i.e. solar radiation intensity of 1000 W/m ² , with a spectrum similar to solar radiation incident at the earth's surface at latitude 35°N in the summer, the temperature of the PV cells being 25 °C)	PV	photovoltaics (a method of converting solar energy into direct current electricity using semiconducting materials)
		REEEP	Renewable Energy and Energy Efficiency Partnership

REN 21	Renewable Energy Policy Network for the 21st Century	UNCTAD	United Nations Conference on Trade and Development
SCAF	Seed Capital Assistance Facility (created by the United Nations Environment Program, the Asian Development Bank and the African Development Bank to provide seed financing to early stage clean energy enterprises and projects)	UNDESA	United Nations Department of Economic and Social Affairs
SDGs	Sustainable Development Goals	UNESCO	United Nations Educational, Scientific and Cultural Organization
SE4ALL	Sustainable Energy for All initiative	UNDP	United Nations Development Program
SHPPs	small-scale hydropower plants	UNFCCC	United Nations Framework Convention on Climate Change
SMEs	small and medium-sized enterprises	UNGA	United Nations General Assembly
SSA	sub-Saharan Africa	VEF	Vienna Energy Forum
UN	United Nations	WB	World Bank
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific	WEF	World Economic Forum
		WHO	World Health Organization
		WPC	World Petroleum Congress



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