Contributions to the 2030 Agenda for Sustainable Development

ECOSOC functional commissions and other intergovernmental bodies and forums, are invited to share relevant input and deliberations as to how they address goals and targets from the perspective of "*Ensuring that no one is left behind*".

Inputs could follow the following template, inspired by the report of the Secretary-General on Critical milestones towards coherent, efficient and inclusive follow-up and review at the global level (A/70/684).

Submissions will be publicly posted online at the United Nations Sustainable Development Knowledge Platform, at sustainabledevelopment.un.org, as input to the 2016 meeting of the High-level Political Forum on Sustainable Development.

Submission Form:

Sustainable Energy for All (SEforALL)

0. Executive Summary

Achieving the seventh Sustainable Development Goal (SDG 7) on energy is fundamental to all aspects of development. Sustainable energy is critical for improving the health and livelihoods of billions of people around the world. It provides new opportunities, enables businesses to grow, generates jobs, and creates new markets. Economies can grow more resilient and competitive. Families can generate income. Children can study after dark. Clinics can store life-saving vaccines. It is therefore imperative that we go further, faster to deliver universal access to affordable, reliable, sustainable and modern energy to support progress on other sustainable development goals.

Over the past two decades the world has made significant progress towards the interlinked development and climate change objectives embodied in SDG 7 but this progress is not moving fast enough to meet the challenge. Some 1.1 billion people do not have access to electricity and 2.9 billion people do not have access to clean cooking. Progress on energy efficiency is at two-thirds the required rate and more needs to be done to scale up renewables in the global energy mix. Finance flows are at one third of the USD 1.0-1.2 trillion a year needed to meet 2030 objectives.

All regions and constituencies continue to face impediments to social and economic development linked to the availability of affordable, reliable, sustainable and modern energy services. Africa, the Asia Pacific and Least Developed Countries (LDCs) face significant gaps in access to electricity.

Governments have acted to prioritize energy sector development, with some successes, but progress remains uneven. The Latin America and Caribbean region could close the electricity access gap for the 4 percent without services but faces challenges in financing the higher costs to deliver services to remote areas. Further regional integration could help the region exploit untapped renewable energy resources. The Middle East and North Africa region is heterogeneous when it comes to energy access and faces challenges to regional growth linked to the collapse in oil prices and an uncertain outlook. Countries have been focusing on diversification of energy resources and energy efficiency as a priority. Small Island Developing States (SIDS) also face challenges due to their dependency of fossil fuel resources and price volatility as well as vulnerability to climate change but have an opportunity, with the appropriate support and collaboration, to capitalize on their access to a wide range of renewable energy resources. Europe, in contrast, with its high energy consumption and contribution to global economic output needs to continue to reduce its energy intensity and make a substantial transition over coming years to reduce greenhouse gas emissions and minimize environmental impacts.

Sustainable Energy for All (SEforALL), established as a global initiative by United Nations Secretary-General Ban Ki-moon in September 2011, is a multi-stakeholder platform that promotes and supports new collaborative approaches for governments, business and civil society to work together towards achieving these objectives. Many countries are working through SEforALL to develop nationally tailored Action Agendas and Investment Prospectuses, which are recognized in the Finance for Development Outcome document, by the G20 and others as a useful framework to scale up action in priority areas, undertake strategic reforms, and attract new investments and financial support to meet 2030 objectives.

To go further, faster to deliver sustainable energy services, all regions will need continued targeted, adequate and efficient financial and technical support to prepare the necessary transition plans, develop a robust pipeline of national projects with financial models and structures to attract and scale up private finance, and build capacity for their implementation. In parallel, countries will need to continue efforts to establish an enabling policy and regulatory environment, improve the governance and management of the energy sector and enhance its creditworthiness.

We can and must meet this challenge because no one must get left behind.

1. Introduction

Achieving the seventh Sustainable Development Goal (SDG 7) on energy is fundamental to all aspects of development. We should thus aim to attain its targets earlier than 2030, to support progress on other goals.

Access to affordable, reliable, sustainable and modern energy is critical for improving the health and livelihoods of billions of people around the world. It is about new opportunities. It enables businesses to grow, generates jobs, and creates new markets. Economies can grow more resilient and competitive. Families can generate income. Children can study after dark. Clinics can store life-saving vaccines. And there are health benefits: many alternative lighting sources, like kerosene lamps, emit a dull light and are a major source of pollution, harming the health of household members and the local environment. With sustainable energy, countries can leapfrog over the limits of the energy systems of

the past and build the clean energy economies of the future. The Secretary-General has called sustainable energy the "golden thread" for development.

The sustained adoption of clean and affordable cooking solutions can improve the health and well-being of hundreds of millions around the world. The concentrations of small particulate matter in solid fuel used at home can be ten to a hundred times higher than the recommendations of the World Health Organization (WHO). They pose major risks for diseases like childhood pneumonia, heart disease, cancers, and chronic respiratory diseases among the poorest populations, with little or no access to health care. In 2012, WHO estimated that over 4 million premature deaths were linked to household air pollution associated with the primary reliance on solid fuels for cooking, of these 85 percent are women and children[1].

The Paris Agreement recognizes the need for deep reductions in global emissions and emphasizes the urgency in addressing climate change. With some 190 countries submitting Intended Nationally Determined Contributions (INDCs), the commitment to act is evident, even though greater ambition is needed to keep the global temperature rise well below 2 degrees Celsius. The energy sector, accounting for some two thirds of greenhouse gas (GHG) emissions, offers a compelling path to transform the global economy and reduce GHG emissions through the accelerated deployment of renewables and efforts to significantly boost energy efficiency, in developed and developing countries. The Paris Agreement acknowledges the need for the enhanced deployment of renewable energy to meet the objective of universal access.

This report considers the status of implementation towards the targets of SDG 7, provides a snapshot of regional progress, addresses the perspectives of various stakeholders and offers some recommendations for hastening the achievement of the goal.

It is imperative we go further, faster to deliver sustainable energy for all, and leave no one behind.

2. SDG 7 and Sustainable Energy for All

Sustainable Development Goal 7 contains three targets and two means of implementation:

Target 7.1. By 2030, ensure universal access to affordable, reliable and modern energy services.

Target 7.2. By 2030, increase substantially the share of renewable energy in the global energy mix.

Target 7.3. By 2030, double the global rate of improvement in energy efficiency.

Target 7.a. By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

Target 7.b. By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries,

[1] WHO and UNDP (2009) in UNIDO and UN Women *Sustainable Energy for All: the Gender Dimensions.*

Small Island Developing States, and Landlocked Developing Countries (LLDCs), in accordance with their respective programs of support.

Sustainable Energy for All

Sustainable Energy for All (SEforALL) was established as a global initiative by United Nations Secretary-General Ban Ki-moon in September 2011, with the mandate to develop a vision for sustainable energy that balanced poverty and climate change challenges and convened stakeholders around its delivery. This multi-stakeholder platform has been promoting and supporting new collaborative approaches for governments, business and civil society to work together towards achieving three interlinked objectives by 2030:

- Ensure universal access to modern energy services
- Double the global rate of improvement in energy efficiency
- Double the share of renewable energy in the global energy mix

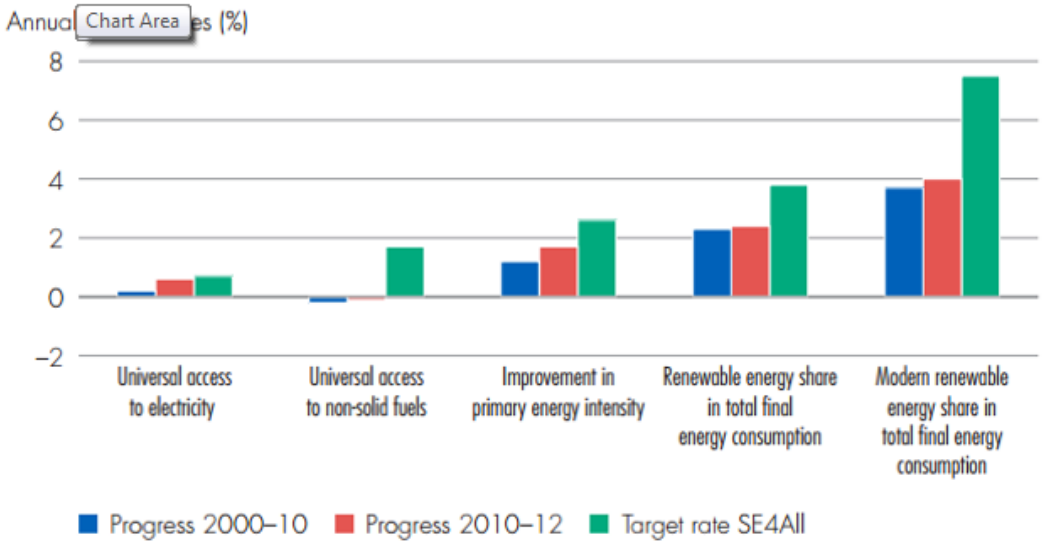
SEforALL supports the implementation of SDG 7. SEforALL empowers leaders to broker partnerships and unlock finance to achieve universal access to sustainable energy as a contribution to a cleaner, just and prosperous world for all. It connects stakeholders, marshals evidence, benchmarks progress, amplifies the voices of its partners and tells stories of success. As a global platform, SEforALL lifts up the great work of others. It demonstrates the art of the possible. It makes connections and investments happen. It tracks progress towards these three objectives in a transparent, accountable manner and produces measureable results.

3. Progress

This section considers global progress towards the three targets of SDG 7 on energy access, renewable energy, and energy efficiency. These targets are largely considered by the SEforALL Global Tracking Framework (GTF)[2], developed by a coalition of partners led by the World Bank and International Energy Agency. The material presented in this section and summarized in Figure 1 draws heavily from the GTF. What becomes clear is that: *currently, progress is too slow.*

[2] The most recent addition of which was released in 2015.

Figure 1: Rate of Progress to Attain Sustainable Energy for All



Source: World Bank Global Electrification database 2015; IEA, UN, and WDI data (2014); analysis by the International Renewable Energy Agency based on IRENA (2014).

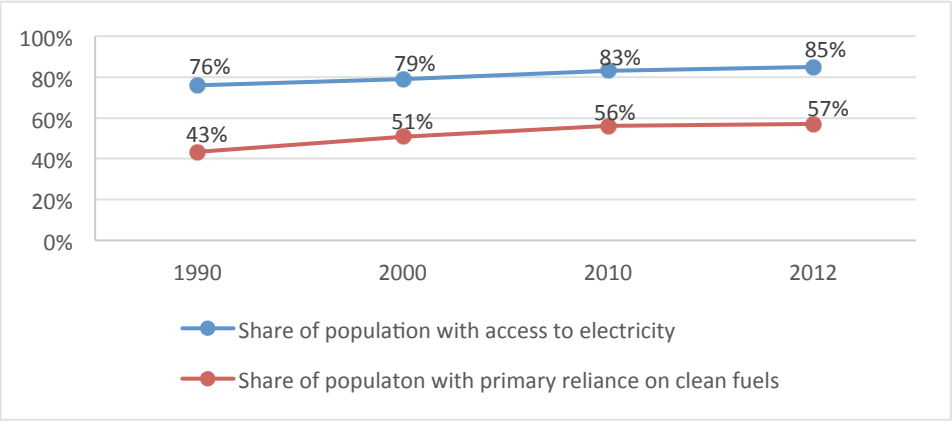
Note: Figure shows average annual growth rates for access to electricity and non-solid fuels, and compound annual growth rates for renewable energy and energy efficiency.

3.1 Access to Electricity

The global electricity access deficit in 2012 was about 1.1 billion people—down from around 1.2 billion people in 2010—representing about 15 percent of the population. During the GTF tracking period, 2010–12, for electricity access:

- The global electrification rate rose from 83 percent in 2010 to 85 percent in 2012, an increase of 222 million people with access to electricity (Figure 2 and Table 1).
- About 87 percent of those lacking access lived in rural areas, and 88 percent lived in Sub-Saharan Africa and South Asia.
- Incremental global access growth was overwhelmingly in urban areas, with only 46 million in rural areas (Figure 3). This includes about 36 million in South Asia, followed at a distance by Sub-Saharan Africa and Latin America and the Caribbean.
- Access expansion more than kept pace with the population increase. Of the 222 million gaining access to electricity, 85 million people in excess of population growth gained access.
- Annual growth in electricity access (net of population) was 0.6 percent, much higher than growth over the base period (1990–2010) of 0.1 percent and much closer to the target growth rate for reaching universal access by 2030 of 0.7 percent. Among the two highest access-deficit regions in 2010–12, South Asia reported the highest growth rate in electricity access at 1.6 percent, but Sub-Saharan Africa only 0.03 percent.

Figure 2: Share of Population with Access to Electricity and Primary Reliance on Clean Fuels



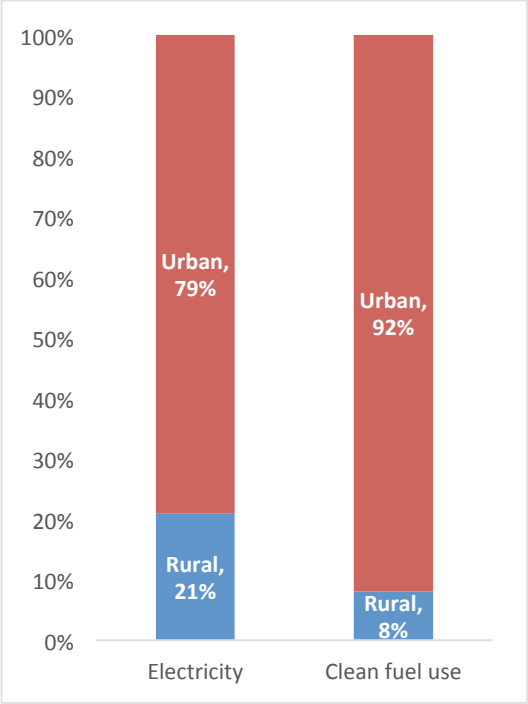
Source: SEforALL Global Tracking Framework 2015 and WHO

Table 1: Percentage of population with access to electricity
(Percentage)

	*1990	2000	2010	2012
World	75.6	79.3	83.2	84.7
Developing regions	68.9	74.3	79.4	81.3
Northern Africa	85.5	92.3	99.4	100.0
Sub-Saharan Africa	22.6	25.9	31.1	34.6
Latin America and the Caribbean	89.1	92.8	94.7	96.4
Eastern Asia	93.0	96.7	98.4	98.8
Southern Asia	51.6	62.9	75.5	78.9
South-Eastern Asia	69.4	79.4	87.8	90.1
Western Asia	88.9	89.5	91.4	93.2
Oceania	21.0	22.9	25.2	28.5
Caucasus and Central Asia	95.4	98.6	99.9	100.0
Developed regions	94.1	97.0	98.4	98.6
Least developed countries	19.6	23.4	30.8	33.6
Landlocked developing countries	41.1	40.8	43.2	45.5
Small island developing States	68.5	71.2	73.4	74.9

Source: World Bank

Figure 3: Share of Urban and Rural Population Gaining Access to Electricity and Clean Fuel Use 2010-2012



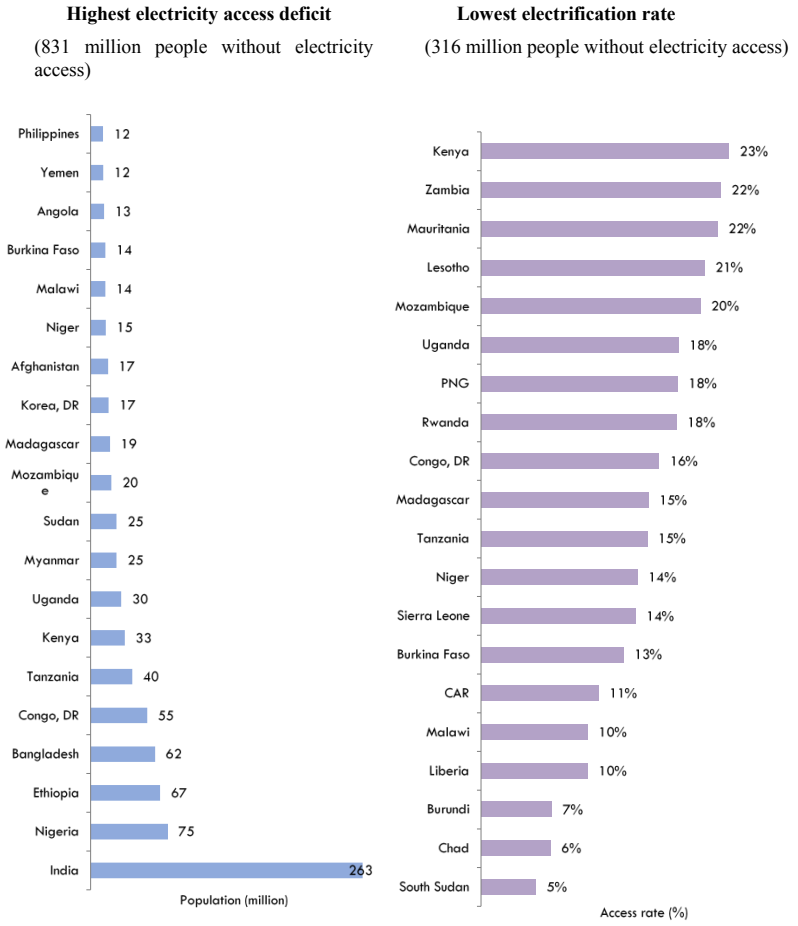
Source: SEforAll Global Tracking Framework 2015 and WHO

The GTF also identifies a group of 20 high-impact countries, accounting for 83 percent of the global electricity access deficit that are key to the achievement of the universal access objective. India alone had a little less than one-third of the global deficit (263 million), followed by Nigeria and Ethiopia (Figure 4). In this group, 13 are in Sub-Saharan Africa. Nine of the 20 high-impact access-deficit countries reported electricity access growth that was faster than the average global rate of 0.6 percent.

Another group of 20 countries are those with the lowest electrification rates, comprising about 316 million people (Figure 4). Nine countries, all in Sub-Saharan Africa, overlap the two groups: Burkina Faso, Democratic Republic of Congo, Kenya, Madagascar, Malawi, Mozambique, Niger, Tanzania, and Uganda.

While progress in the former group is essential in meeting the universal access goal, a focus on the latter is essential for human development and economic productivity.

Figure 4. Twenty countries with the highest electricity access deficit and lowest electrification rate



Source: World Bank

3.2 Access to Non-Solid Fuels for Cooking

About 2.9 billion did not have access to non-solid fuels as a primary source for cooking purposes, equivalent to 41 percent of the global population, in 2012. Reliance on clean fuels for cooking is a partial measure of the primary reliance on clean fuels and technologies that can be used until more comprehensive data becomes available.

During the most recent GTF tracking period, 2010-12, for non-solid fuels:

- About 84 percent of them live in rural areas, and about two-thirds in Sub-Saharan Africa and South Asia.
- The global rate of access to non-solid fuels for cooking rose steadily from 51percent in the year 2000 to 56percent in 2010, and has subsequently stagnated at around this level (Figure 2, Table 2). This represents an increase of 123 million people over 2010-12. India and China showed the greatest absolute population increase. Progress is almost exclusively confined to urban areas (Figure 3).
- The number of people relying on polluting (i.e., solid fuels and kerosene) fuels for cooking has increased in absolute terms and fell substantially short of global population growth over 2010-12.

- The global annual net growth was negative 0.1 percent, the same rate as in the base period. East Asia reported the highest annual growth rate, 0.4 percent.
- Among the 20 high-impact access-deficit countries for non-solid fuels identified in the GTF, only India and China among the reported access growth higher than the global rate.

Table 2. Percentage of population with primary reliance on clean fuels
(Percentage)

	1990	2000	2010	2012
World	43	51	56	57
Developing regions	29	40	47	48
Northern Africa	75	90	99	100
Sub-Saharan Africa	8	11	12	13
Latin America and the Caribbean	66	78	84	85
Eastern Asia	34	47	55	56
Southern Asia	13	26	33	34
South-Eastern Asia	15	23	44	48
Western Asia	87	92	95	95
Oceania	6	16	26	28
Caucasus and Central Asia	62	76	85	86
Developed regions	94	97	99	99
Least developed countries	5	8	10	11
Landlocked developing countries	21	24	25	25
Small island developing States	42	53	60	61

Source: WHO

3.3 Improvements in tracking access to energy

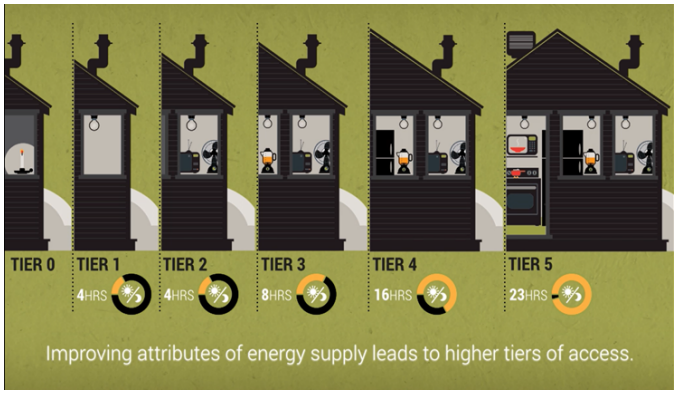
Currently, electricity access and access to modern cooking solutions are measured in a binary way. Metrics typically assess whether populations "have / do not have an electricity connection" and "have / do not have access to non-solid fuels". The advantage of this mode of tracking is that it is simple and relies on available data. However, these metrics provide a simplified picture because they are not able to determine how such access translates into a reliable, affordable and modern service (SDG 7).

In 2013, SEforALL's Global Tracking Framework (GTF) first introduced the need for complementary, multidimensional approach to measuring energy access. A Multi-tier Framework (MTF) to measure energy access was subsequently published in 2015: *World Bank, Sustainable Energy for All: Beyond Connections; Energy Access Redefined*. The MTF was developed by the SEforALL Knowledge Hub, led by the World Bank with the support of the Energy Sector Management Assistance Program (ESMAP) and in partnership with multiple SEforALL stakeholders.

The MTF acknowledges that energy access is represented by a spectrum of service levels experienced by households and characterized by whether a service is "usable", "reliable" and "affordable" from the household's perspective. It classifies energy services in tiers – starting from Tier 0 (no service) to Tier 5 (full service), as charted in Figure 5. For electricity, Tier 1 provides a basic service level, such as lighting and cell phone charging. This type of service, for example, can be provided by a small solar lighting kit. Higher tiers imply higher capacity and service duration, allowing households to acquire more domestic appliances and use power for productive purposes. While the highest Tier 5 may be the ultimate objective, MTF acknowledges the incremental benefits of each tier. In fact, numerous studies show that even the first step – from kerosene-based lighting (Tier 0) to a basic

electricity service (Tier 1) – can significantly impact a household's welfare. The equivalent in cooking is moving from open fire and traditional stoves to cleaner and more efficient cookstoves and fuels.

Figure 5. Access as a continuum of energy services



Source: World Bank

An MTF assessment provides decision makers with a framework for assessing the status of their access progress and identifying specific actions to address priority needs. For example a decision maker may have access to limited funding, and could choose to provide new services to unserved (Tier 0) customers, or improve services (e.g. from Tier 1 to Tier 3) for existing customers, or a combination of the two. To facilitate this decision making process, SEforALL developed the Access Investment Needs Model (AIM) to estimate the financial requirements for achieving different tiers of access on a country-by-country basis.

The World Bank and ESMAP are partnering with the Scaling up Renewable Energy Program (SREP) to carry out a global baseline survey for the MTF. The survey, covering household access to electricity and clean cooking, is carried out through a household questionnaire applied to a nationally representative sample of households.

In addition to the baseline surveys, a short energy access module has been developed, which is now being introduced in the routine national household surveys carried out by national statistical offices. The inclusion of this module in routine household surveys ensures that updated data will be collected regularly and at low cost, allowing regular reporting on the progress of multi-tier energy access against the baseline. The World Bank and ESMAP are also testing technology innovations to reduce collection costs, such as use of remote monitoring devices and cell phones.

3.4 Renewable Energy

The share of the renewable energy in the world's total final energy consumption rose gradually from 17.4 percent in 2000 to 17.8 percent in 2010, and accelerated to reach 18.1 percent in 2012 (Table 3). The global increase in renewable energy consumption between 2010 and 2012 was enough to power the whole of Thailand. Although the global share of renewable energy has increased, the share in developing regions has actually fallen over this period from 32.5 percent in 2000 to 24.4 percent in 2012. This is due to a reduction in traditional uses of biomass that outweighed the simultaneous expansion of other forms of renewable energy (solar, wind, hydro, geothermal, modern biofuels).

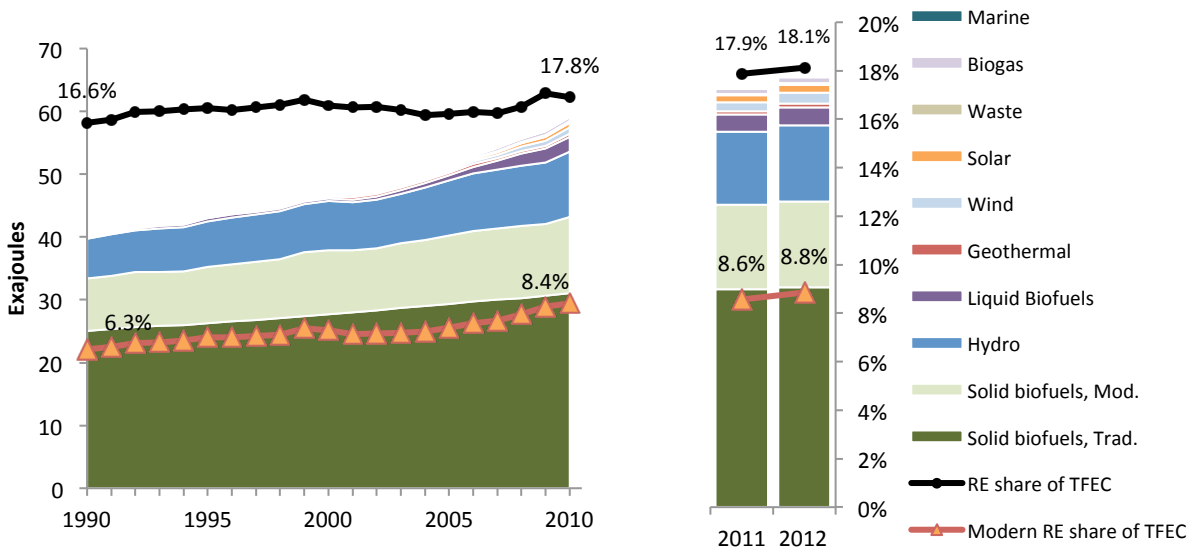
Table 3. Renewable energy share in total final energy consumption
(Percentage)

	2000	2005	2010	2012
World	17.4	17.0	17.8	18.1
Developing regions	32.5	28.7	26.1	24.4
Northern Africa	7.3	6.1	5.5	5.0
Sub-Saharan Africa	68.2	66.6	65.8	57.9
Latin America and the Caribbean	28.2	28.5	28.6	27.4
Eastern Asia	25.2	19.6	17.5	17.0
Southern Asia	43.4	39.8	33.9	32.6
South-Eastern Asia	38.5	33.9	31.7	31.2
Western Asia	5.8	5.1	4.1	3.8
Oceania	54.0	42.8	36.7	-
Caucasus and Central Asia	5.1	4.7	4.7	4.1
Developed regions	7.0	7.5	9.5	10.1
Least developed countries	75.7	72.3	67.8	51.3
Landlocked developing countries	44.3	43.3	42.4	29.2
Small island developing States	23.8	20.9	17.3	11.1

Source: Secretary-General's report on Progress towards the Sustainable Development Goals, 2016

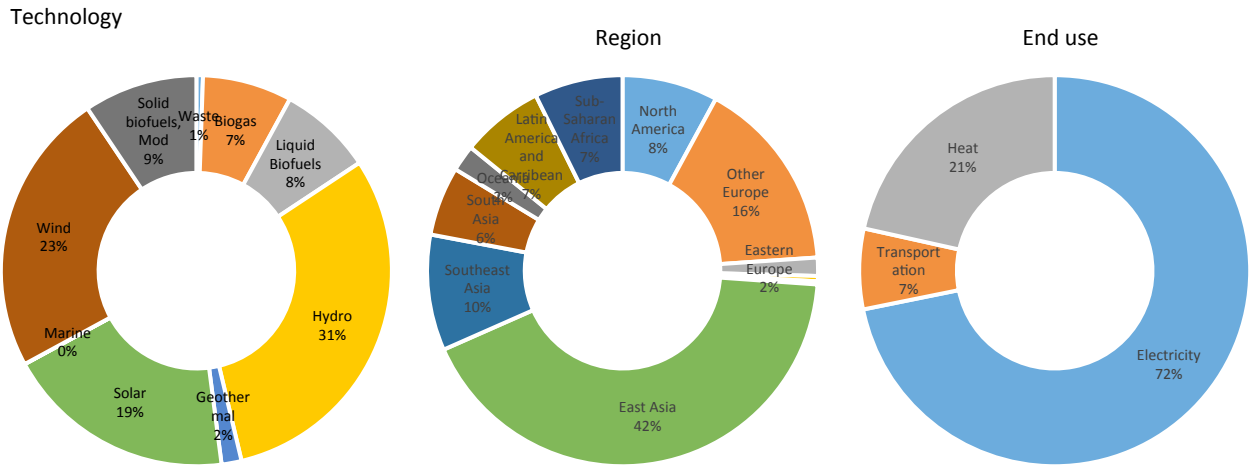
This trend has been compensated at the global level by a rising share of renewable energy in developed regions from 7.0 percent in 2000 to 10.1 percent in 2012. Some 72 percent of the expansion in renewable energy consumption since 2010 has come from the use of renewable electricity, with much more limited progress in the use of bioenergy for heating, transportation and other purposes (Figure 6). The technologies making the largest contribution over this period have been hydro, wind and solar; together accounting for 73 percent of the total increase (Figure 6). In absolute terms, about 72 percent of the increase between 2010 and 2012 came from the developing world, in particular from East Asia.

Figure 6. Trends and renewable energy share of total final energy consumption by source, 1990-2012



Source: SEforALL Global Tracking Framework 2015

Figure 7. Composition of net increment of modern renewable energy in total final energy consumption, 2010-12



Source: SEforALL Global Tracking Framework 2015

3.5 Energy efficiency

Global primary energy intensity fell at a steady rate of 1.2 percent annually from 2000-10, and this rate of improvement accelerated substantially to 1.7 percent per annum for the period 2010-12 (Figure 8). The global energy savings that were achieved between 2010 and 2012 were enough to power the whole of Japan.

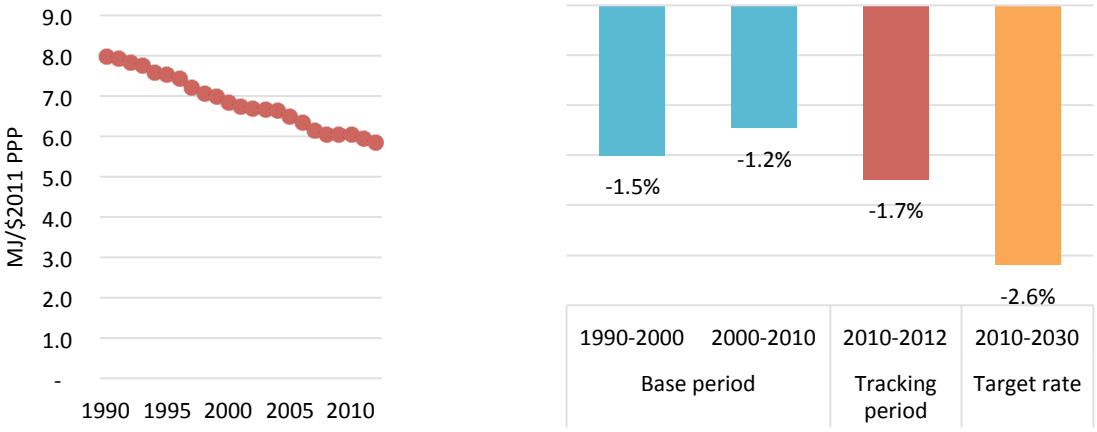
As a result, global energy intensity, which stood at 6.7 (MJ/$2011 PPP) in 2000 had fallen to 5.7 by 2012. Among end-use sectors, industry was the largest contributor to reduced energy intensity, followed closely by transportation. About 68 percent of the savings in energy intensity between 2010 and 2012 came from the developing world, with the largest contribution being East Asia (Table 4).

Table 4. Energy intensity measured in terms of total energy supply and GDP (MJ/$2011 PPP)

	2000	2005	2010	2012
World	6.7	6.3	5.9	5.7
Developing regions	6.8	6.6	6.1	6.1
Northern Africa	3.7	3.9	3.7	3.9
Sub-Saharan Africa	10.4	9.1	8.0	7.8
Latin America and the Caribbean	4.4	4.3	4.2	4.1
Eastern Asia	10.0	9.6	8.3	8.1
Southern Asia	6.8	6.1	5.5	5.4
South-Eastern Asia	5.5	5.2	4.7	4.5
Western Asia	4.7	4.6	5.0	4.9
Oceania	10.3	13.6	12.1	11.0
Caucasus and Central Asia	16.7	12.4	9.2	9.2
Developed regions	6.6	6.1	5.6	5.3
Least developed countries	8.9	7.5	6.5	6.4
Landlocked developing countries	14.0	11.3	9.0	8.8
Small island developing States	5.3	5.1	4.4	4.2

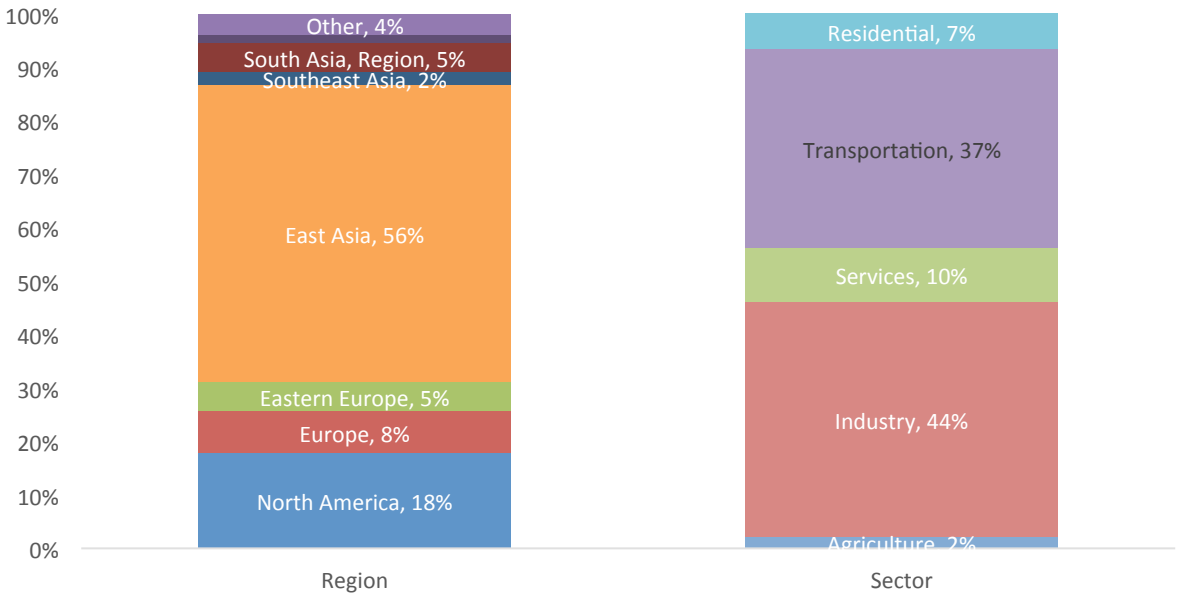
Source: Secretary-General's report on Progress towards the Sustainable Development Goals, 2016

Figure 8. Energy intensity (left) and rate of change of energy intensity (right), 1990-2012



Source: SEforAll Global Tracking Framework 2015

Figure 9. Share of avoided global final energy consumption, 2011-12



Source: SEforAll Global Tracking Framework 2015

4. Implementation

To realize a future with Sustainable Energy for All national governments are implementing integrated country actions to strategically transform their energy systems. To spur investment, action is needed to create national policy and financial environments that enable changes which the market alone will not deliver. This applies to developing and developed countries, although the challenges to be overcome in each case may be substantially different.

Governments from 106 countries and the European Union have expressed an interest in advancing Sustainable Energy for All. Sixty eight developing country partners have prepared a Rapid

Assessment and Gap Analysis (RAGA) of the specific national context within which the goals are to be pursued. In essence, the Rapid Assessments and Gap Analyses are intended to describe the status quo of energy in the national development context, providing the political, economic, social, and environmental background for the subsequent drafting of plans to promote Sustainable Energy for All in a particular country. They draw on existing documents or studies and describe the national policies and efforts in relation to the three targets of energy access, energy efficiency, and renewable energy sources. They are descriptive in nature and are meant to consolidate information that exists in disparate plans, documents or sectoral studies.

Thirty six countries are now taking the steps to prepare SEforALL Action Agendas and twenty six countries are developing Investment Prospectuses to scale up action in priority areas, undertake strategic reforms where needed, and attract new investments and financial support. The Action Agenda provides a long-term vision which ensures overall sector-wide coherence and synergy of the accumulated efforts towards the three objectives of SEforALL in the country. It is endorsed by the Government and national stakeholders. It could serve as a basis for donor coordination and assistance on energy and a reference document for the private sector and civil society. The investment prospectus aims to translate these plans into a blueprint for investment. It identifies and develops a set of implementable programs and projects, including their investment requirements, that can be presented to potential private and public investors.

Several international and African conferences have highlighted the role of the Action Agenda for implementation of SDG 7, including:

- The SEforALL Energy Access Committee (23 April 2015): "*Encourage that the [SEforALL] Action Agenda be formally recognized as an implementation tool for proposed SDG 7 at national level"*
- The SEforALL Advisory Board (19 May 2015): "*The Advisory Board agreed that national action agendas, investment prospectuses […] present a robust framework for accelerating the implementation of energy related goals and targets at the country level, and urged acceleration of their development in a wider set of countries"*
- The Financing for Development Outcome Document (16 July 2015): *"We welcome the Secretary-General's Sustainable Energy for All initiative as a useful framework, including its regional hubs, and the development of action agendas and investment prospectuses at country level, where appropriate"*
- The G20 Action Plan on Energy Access in Sub-Saharan Africa (2 October 2015): *"Support the ongoing and future African voluntary country-led processes to develop [SEforALL] Action Agendas with appropriate goals as an umbrella framework for energy sector development at the national level"*
- The South Africa International Renewable Energy Conference (SAIREC) declaration (7 October 2015): "*We welcome the development of [SEforALL] Action Agendas as umbrella energy sector development documents looking at access, renewables and energy efficiency in a holistic manner"*
- *The* 2016 SEforALL Africa workshop (10 February 2016): "*To promote continuous partner coordination through the [SEforALL] Action Agenda [(AA)] process at country level and to formally establish the AA as a framework for SDG 7 implementation at national level".*

5. Clean Energy

5.1 Renewable Energy

Ubiquitous in nature, renewable energy offers an economically attractive answer to climate and energy security concerns, and new opportunities for sustainable livelihoods for the millions who lack access today. Its business case is strong and continuously improving, buttressed by falling costs and technology advancements.

Renewable energy production is soaring, growing far more quickly than many predicted, and today, mainstream projections for its future envisage a profound impact on the global energy mix. Investment passed USD 285 billion in 2015, more than five times what it was only a decade ago. Renewable technologies have snowballed from niche area to a rising global industry with a speed and intensity that has changed the global energy landscape in a matter of years.

This global rush has brought economies of scale to what had been infant industries, and the cost of wind and solar energy fell drastically. As a result, renewables today constitute some 30 percent of all installed power capacity, the largest share of any source. Renewable generation capacity increased by 8.3 percent in 2015 only, making it a record year for both wind and solar. Wind power grew 63 GW (17 percent) driven by declines in onshore turbine prices of up to 45 percent since 2010. Solar capacity increased 47 GW (26 percent) due to price drops of up to 80 percent for solar photovoltaic modules in the same time period. Hydropower capacity increased by 35 GW (3 percent), while both bioenergy and geothermal energy capacity increased 5 percent each (5 GW and 1 GW respectively)[3].

The majority of the new renewable capacity added in each of the past three years has been in developing countries, but ambitious plans on renewables deployment have taken root on every continent. In 2015, 164 countries around the world had adopted some form of national renewable energy target, up from 43 countries in 2005[4], demonstrating that the common vision of a significant increase in the share of renewables is already being realized.

As countries look to simultaneously meet different development and climate objectives, renewable energy is best understood as part of a holistic strategy to promote economic prosperity, well-being and a healthy environment. Many economies face low growth, and the socio-economic benefits of renewables have become a strategic consideration. Job creation has been an important driver, with the sector creating on average more jobs than fossil fuel technologies. Solar PV, for example, creates more than twice the number of jobs per unit of electricity generated than coal or natural gas[5]. IRENA estimated that, in 2014, over 9.2 million people worked in the renewable energy sector globally. This number included the first-ever global estimate of large hydropower employment, showing approximately 1.5 million direct jobs in the sector.[6] The solar PV industry is the largest renewable energy employer worldwide with 2.5 million jobs, followed by liquid biofuels with 1.8 million jobs, and wind power, which surpassed 1 million jobs for the first time. The employment increase extends across the renewable energy spectrum with solar, wind, biofuels, biomass, biogas and small hydropower all seeing increases in employment.

[3] IRENA (2016) Renewable Capacity Statistics
[4] IRENA (2015) Renewable Energy Target Setting
[5] IRENA (2015) Renewable Energy and Jobs – Annual Review 2015
[6] Jobs data for 2015 will be released in May 2016

These are compelling facts. They reflect a new era of change, one in which the energy transformation will drive economic transformation. With sustained effort renewable energy can play a decisive role in achieving sustainable development and keep GHG emissions at levels that allow us to fulfil the Paris Agreement.

5.2 Energy Efficiency

Energy efficiency is a cornerstone for achievement of SDG 7 and plays a foundational role in 165 of the submitted Intended Nationally Determined Contributions[7]. The International Energy Agency has recognised energy efficiency as the best option for bringing about GHG emission reductions to keep the global temperature increase below 2 degree Celsius, estimating that it could contribute 49 percent of the needed GHG emission reduction[8]. The Paris Agreement further amplifies the global imperative of energy efficiency measures, given their relative cost-effectiveness and economy-wide multiple benefits compared to other mitigation options.

Good progress has been made in improving energy efficiency in key energy-using sectors, such as industry, transport, building, and appliances and lighting. Governments, businesses and civil society have shown that they can act together to deliver successful efficiency programs through, for example, the adoption of appliance standards and labelling programs that now operate in over 80 countries.

Global primary energy intensity, which improved by more than 1.7 percent during the period 2010-12[9], further improved by 2.3 percent in 2014[10]. Eight of the top 20 energy consuming countries—collectively responsible for nearly three-quarters of global energy use—had intensity improvements exceeding the Sustainable Energy for All target of 2.6 percent a year during 2010-12. Similarly, several large emerging countries, notably Indonesia, South Africa and Saudi Arabia, had high rates of improvements in energy intensity. Among the top energy consumers, however, Brazil and Nigeria experienced rising energy intensity between 2010 and 2012[3].

Energy efficiency investments over the last 25 years are the primary reason for the uncoupling of energy consumption from economic growth, and have enabled consumers in International Energy Agency member countries to spend USD 5.7 trillion less on energy, while enjoying higher levels of energy service.[11] In 2013, global investments in energy efficiency totalled an estimated USD 130 billion in buildings, transport and industry (excluding fuel switching). The World Bank has estimated that investments of about USD 310 billion per year will be required to meet the SEforALL energy efficiency objective. Funding on this scale cannot be met by the public sector alone and calls for significant funding and engagement from the private sector. Financing and private sector engagement thus remains one of the biggest challenges to improving energy efficiency. The SEforALL Energy Efficiency Global Accelerator Platform (Box 1) aims to foster greater private sector engagement.

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[7] UNEP. "Climate Change Adaptation: Economics and Finance," 2014. http://www.unep.org/climatechange/adaptation/EconomicsandFinance/tabid/29585/ Default.aspx, \n; UNFCCC. "INDC - Submissions." Accessed January 29, 2016. http://www4.unfccc.int/submissions/indc/Submission Pages/submissions.aspx.

[8] IEA: Redrawing the energy climate map, IEA, June 2013

[9] Sustainable Energy for All, "Progress towards sustainable energy : Global Tracking Framework 2015- Key Findings", 2015

[10] International Energy Agency, "Energy and Climate Change - World Energy Outlook Special Report", 2015

[11] International Energy Agency, *Energy Efficiency Market Report 2015*

Despite this progress, the energy efficiency market is at a nascent stage in most countries. Experience has shown that government commitment and support lie behind successful energy efficiency initiatives and are essential for more rapid progress. A good example of the value of government support is India's Efficient Lighting Program, which resulted in over 92 million energy efficient LED lamps being deployed in households in one year at a costs of less than USD 1.5 per lamp[12].

Economics is one driver of energy efficiency and lower fossil fuel prices and subsidies affect the cost effectiveness of energy efficiency measures and programs. The International Energy Agency estimates that fossil-fuel consumption subsidies worldwide amounted to USD 493 billion in 2014[13]. Even if low fossil fuel prices or subsidies are absent, governments often use normative instruments such as mandatory energy performance standards, codes or specific energy consumption norms to overcome market barriers.

Many energy efficiency opportunities remain untapped in developing and developed countries. Countries face challenges including: a) weak or absent high-level commitments to energy efficiency by governments; b) lack of availability and access to finance; and c) poor access to knowledge and technologies. Additional challenges that are more prevalent in developing countries include: i) lack of well-functioning energy efficiency delivery entities; ii) lack of engagement by the private sector; iii) lack of data and information to support energy efficiency policy and programmes; iv) absence of monitoring, verification, enforcement, and evaluation of energy efficiency measures.

The realisation of energy efficiency potential requires the interplay of instruments, policies and programs:

- Regulatory Instruments: These instruments are 'normative' or 'informative' in nature. Examples of normative regulatory instruments include standards, building codes and specific energy consumption requirements for industries. Examples of informative regulatory instruments are labelling of appliances and certification of buildings.

- Economic Instruments: These instruments help improve the cost effectiveness of energy efficiency initiatives and measures or help in reducing the higher first cost of energy efficient products. Examples of these instruments include rebates, targeted subsidies, tax, interest rate draw down programs, accelerated depreciation, and rational pricing of energy.

- Information/education: These instruments aim to guide purchasing decisions and behavior of consumer or end users. Examples of these instruments include awareness campaigns, energy efficiency tips, demonstration projects and training programs.

[12] http://www.delp.in/
[13] http://www.worldenergyoutlook.org/resources/energysubsidies/

Box 1: SEforALL's Global Energy Efficiency Accelerator Platform

The Global Energy Efficiency Accelerator Platform provides a multi-sectoral access point for public jurisdictions (i.e. national, sub-national and city governments) to engage with non-government actors to implement their energy efficiency plans. The Platform comprises a series of sector-specific 'Accelerators' that offer a menu of activities to governments in priority sectors including buildings, industry, lighting, appliances, district energy and passenger vehicles. The Platform provides a valuable mechanism for building collaborative partnerships, by providing a channel by which the SDG 7's energy efficiency target can be realised through the development of bankable and high-impact projects. The Platform continues to build its global reach and champion best-in-class approaches to energy efficiency improvements across key economies, while bringing policymakers, the private sector and the finance community together to accelerate energy efficiency action. For more information visit www.eeplatform.SEforALL.org/

http://www.SEforALL.org/energyefficiencyplatform

6. Finance and Investment

6.1 Investment and financing needs

A range of approaches to scaling-up and attracting private sector investment are essential to achieve sustainable energy for all. Detailed knowledge is needed of where, and in what types of projects, more than USD 1 trillion of annual investment from both public and private sectors will be needed. The SEforALL Finance Committee report (2015) estimates investment needs for the period from 2010 to 2030 of:

- Energy Access – USD 49.4 billion annually (up from current annual spending of USD 9 billion). Focus is needed in Sub-Saharan Africa, South Asia and East Asia and the Pacific.

- Renewable Energy – USD 442-650 billion annually from a current baseline of USD 258 billion. Except for Europe all regions need to increase investment. The largest annual funding gap by far is in developing Asia.

- Energy Efficiency – USD 560 billion annually up from current spending of USD 130 billion. Energy efficiency investment needs to increase by 4.3 times relative to current levels, with the greatest opportunities in Europe, developing Asia and North America.

Table 5: Annual Investment Flows and Needs

Annual investment	Universal access to modern energy services	Universal access to modern energy services	Doubling the global rate of improvement in energy efficiency	Doubling the share of renewable energy in the global mix[a]	
Source	Electrification	Cooking	Energy efficiency	Renewable energy	Total
Actual for 2012[b]	9	0.1	130	258	397
Required to 2030[c]	45	4.4	560	442–650	1,051–1259
Gap	36	4.3	430	184–392	654–862

Source: International Energy Agency (IEA) and the World Bank. 2015. "Sustainable Energy for All 2015—Progress Toward Sustainable Energy" (June), World Bank, Washington, DC. Doi: 10.1596/978-1-4648-0690-2 License: Creative Commons Attribution CC BY 3.0 IGO

The SEforALL Finance Committee report highlights the following overriding challenges to delivering investment:

- Developing the pipelines of projects – higher-level aggregation or blended finance structures will not work without an ecosystem that promotes preparation and implementation of projects, including:
    - Regulatory framework, capacity to prepare and implement, transparent long-term pricing structures, clear Power Purchase Agreements.
    - Need for national/local finance infrastructure able to support process – commercial banks, state-owned utilities, and local investment pools.

- Deploying financing models and structures that will attract private finance to form a larger share of the capital mix:
    - With notable exceptions such as facilities for long-term hedging of foreign-exchange risk for non-G20 currencies, tools required to de-risk investments do exist but need further development, and the partnerships, structures and commitment to support their rapid adoption need to expand.
    - Developing markets represent the greatest challenge, given investors' preference for investment-grade opportunities. There is a greater need for patient capital, blended capital structures and collaboration to accelerate de-risking of opportunities.

- In most developing countries, governments and power utilities need to improve governance and management of their energy sector to enhance its creditworthiness:
    - Governments need to improve regulation, strengthen public governance to help power utilities reduce losses and increase bill collection, make subsidies better targeted and transparent, and enhance capacity of government agencies as well as increase the operational and financial efficiency of power utilities.
    - Power utilities need to play an important role in scaling up and accelerating access and facilitating financing of small-scale projects.

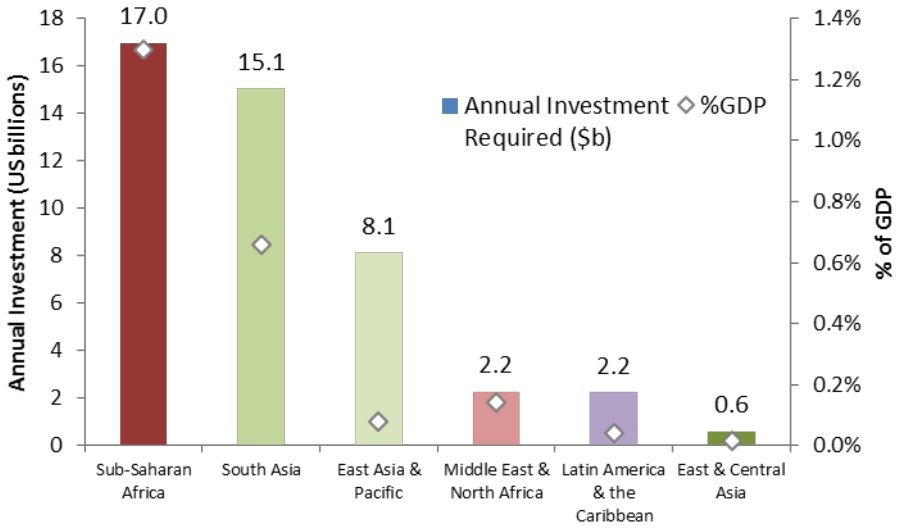
- Developing a robust national project pipeline is a key constraint, and there are a variety of best practices that should be disseminated to enhance project preparation and project finance:
    - Use of dedicated project preparation funds.
    - More systematic use of project structuring to better allocate risks among parties.
    - Use of more diverse contractual instruments, particularly those that could de-risk project finance for different investors.

6.2 Investment in energy access

Although not the largest category in terms of the quantum of funding needed, energy access remains a difficult and complex area for investment. The majority of financing is currently from public sector sources. The Global Tracking Framework shows that the top ten countries with the largest access deficits represent approximately 65 percent of the global deficit, and approximately 50 percent of the investment required to achieve the goal. Among this group of countries, seven are in sub-Saharan Africa.

Countries can achieve universal access through various pathways, choosing tiers of access based on their energy strategies and plans, as well as financial realities. The range of investment needs varies significantly across the "tiers of access" presented in the MTF. The SEforALL Access Investment Needs Model shows that, for example, Nigeria and Ethiopia, the largest access deficit countries in Sub-Saharan Africa, have to spend USD 1-3 billion annually to deliver even basic levels of electricity access. The spread across the MTF access "tiers" is the highest for Ethiopia, where reaching the highest tier is over seven times more expensive than the lowest tier of access.

Figure 10. Regional annual investment to meet energy access objectives



Source: World Bank

Application of potential financial structures will vary from country-to-country because of differing local circumstances. New business models involving, for instance, pre-payment or pay-as-you-go for a certain level of service have been implemented in some countries and can be commercialised by the private sector. Promoting productive uses of energy and energy services often results in business models that make the compelling case for returns on investment for off-grid and on-grid situations.

Unreliable power supply has been identified by African enterprises as the most pressing obstacle to the growth of their businesses, ahead of access to finance, red tape or corruption. Relieving this uncertainty helps every dollar of additional power sector investment in the IEA's African Century Case[14] to boost GDP by an estimated USD 15. Further, reducing the risks facing investors, assumed in this scenario, makes oil and gas projects more competitive with production in other parts of the world. This allows more of these projects to go ahead and a higher share of the resulting fiscal revenue to be used productively to reverse deficiencies in essential infrastructure.

The scale of investments required to realise universal access to modern cooking solutions by 2030 is much smaller than for access to electricity, but progress is still slow. There is no agreed upon range of required investments and estimates vary dramatically. The approach to the dissemination and promotion of clean cookstoves needs radical rethinking, including design appropriateness, focus on productive and more socially relevant applications in cities, and new dissemination tools, such as concessional financing and microfinance.

6.3 Enabling investment

Significant improvements in the enabling environments for relevant projects and programs are also needed. To better understand and expand country-level policy support for these investments and services, the SEforALL Knowledge Hub developed the Readiness for Investment in Sustainable Energy (RISE) index. For each of the three pillars of sustainable energy – energy efficiency, energy access, and renewable energy – RISE evaluates whether a country's energy sector policy framework includes key elements that help drive investment and contribute to the SEforALL and SDG 7 goals. RISE benchmarks national policies with a series of comparable, objective indicators based on up to 350 data points per country, and highlights good practices relevant to attract investments. The RISE indicators focus on what is under the control of energy sector policymakers, and represent a unique effort to distil the most important attributes of successful policy frameworks into a set of objective and verifiable criteria. RISE can be used to compare each country's policy framework to a clear set of best practices, highlighting specific and actionable policy reforms and generating the motivation to drive their implementation.

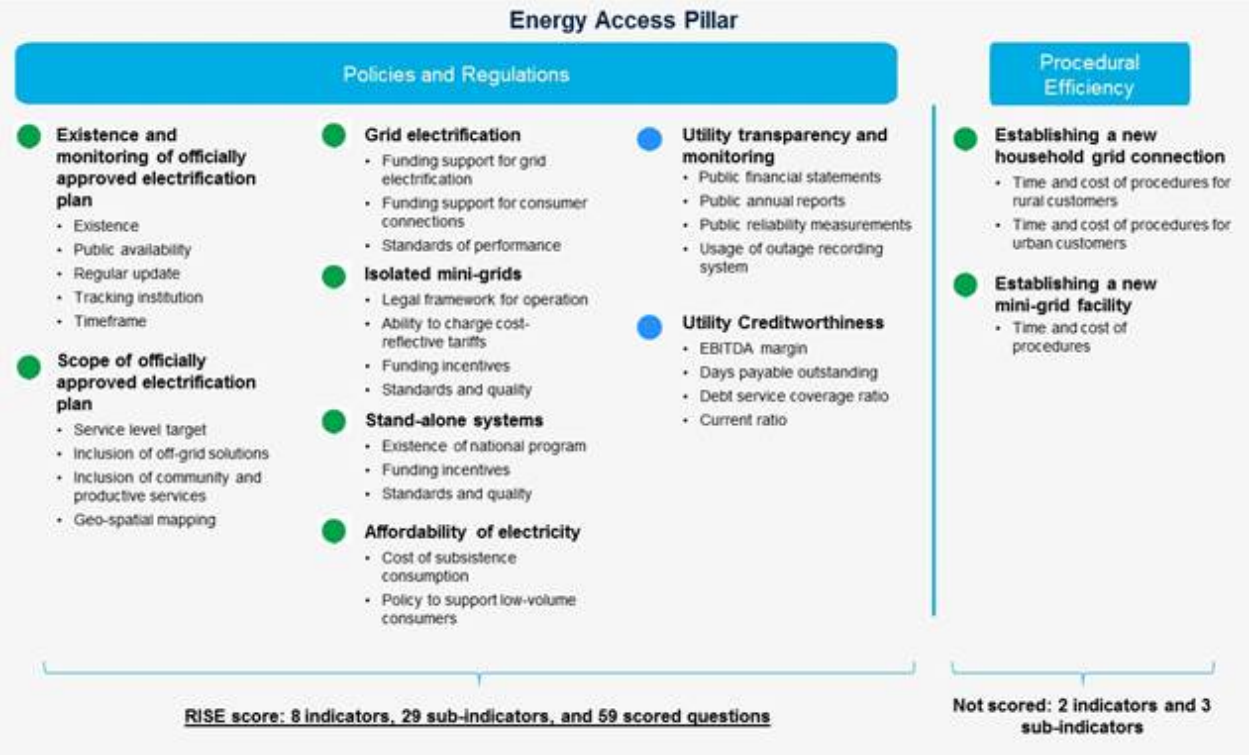
The wealth of country-specific policy data provides valuable information to private sector players who develop and invest in energy access projects, products and services. However, RISE is just one element of a much larger toolkit to assess the risks and rewards of investment – it does not cover many factors that are important to investment, such as market conditions, macroeconomic stability, resource endowments, and access to financing – but it can help direct companies to countries where the government prioritizes the types of investments they provide, or where specific regulations or incentives are in place.

For energy access for example, indicators include the presence and scope of electrification plans, fiscal support and financing mechanisms for grid electrification, incentives and regulations that help attract private investment in mini-grids and stand-alone power systems, and the affordability of electricity for lowest-volume consumers. RISE addresses the enabling environment for the power sector, such as the transparency and performance of key power utilities and the retail electricity tariff

[14] The International Energy Agency's "Africa Century Case", a scenario where significantly higher electricity access rates are attained compared to central projections, shows annual investments in the power sector averaging USD 60 billion per annum from 2014 to 2040. Though these figures still see approximately 300 million people without access to electricity in 2040.

structure, and looks at the procedures in each country to connect a household to the grid and to establish an independently operating mini-grid. The RISE energy access indicators are shown in Figure 11.

Figure 11. RISE Energy Access Indicators, 2016



Source: World Bank

RISE[15] was piloted in 17 countries in 2014. The first global report will be released in autumn 2016 and cover 112 countries. RISE is expected to be updated regularly, benchmarking country performance and allowing countries to measure the impact of incremental changes.

7. Interlinkages between SDG 7 and other Sustainable Development Goals

Sustainable energy is central to sustainable development and interlinked with many other aspects of development.

The 2015, the GTF considered the energy, water, food, public health, and gender nexus. This helped to better understand these interdependencies, and how they could be leveraged to enhance efficiency, balance trade-offs, build synergies, and improve governance. Energy helps to achieve secure and equal access to productive resources and inputs, helps to sustain food production systems, and helps to boost investment in rural infrastructure and technology. It facilitates access to safe drinking water and sanitation, improvements in water quality, and expansion of wastewater treatment. Energy can help reduce death and illness from air, water, and soil pollution and contamination. It can support women's

[15] All source data will be made available online at the RISE website, rise.worldbank.org.

rights to economic and natural resources, enhance use of enabling technology, and help prevent violence against women and girls in public and private places.
SDG 7 generates multiple nexus opportunities and challenges. Water security may be increased if water-related risks are managed well and contamination risks minimized. Similarly, food security may improve, and renewable energy sources may help decouple food prices from energy prices, while managing production of energy crops. Global health may improve further as efforts focus on reducing air pollution and strengthening health services delivery. Finally, gender equality can be enhanced as time poverty decreases through better energy services and as women participate more actively in the energy value chain.

The SDG framework is used to illustrate this and explore some of these relationships below, starting with SDG 7.

Target 7.1. By 2030, ensure universal access to affordable, reliable and modern energy services
Access to electricity directly impacts people and the services they need. It enables better health (SDG 3) and education (SDG 4), and helps ensure clean water supply (SDG 6). It provides opportunities for increased agricultural productivity (SDG 2), new jobs, income and economic growth (SDG 8). Energy access is therefore central to eradicating poverty (SDG 1) and reducing inequality (SDG 10).

Modern fuels for cooking and heating relieve women from the time-consuming drudgery. Women can invest the time gained in empowering to start a business or participate in decision-making processes (SDG 5). Modern fuels and devices such as efficient cookstoves reduce peoples' exposure to major health risks (SDG 3) associated with indoor air pollution. They can also reduce air pollution and deforestation (SDG 15).

Target 7.2. By 2030, increase substantially the share of renewable energy in the global energy mix
Increasing the share of energy from renewable sources is key to addressing climate challenges and reducing global greenhouse gas emissions (SDG 13). All energy sources have some impact on the environment. Renewable energy reduces air and water pollution, damages to public health, wildlife and habitat loss, water use, and land use (SDG 15). Transitioning to renewable energy can help build the resilience of countries against fuel price volatility, promote green growth and create new jobs (SDG 8). Renewable energy development and deployment is central to building resilient infrastructure (SDG 9) and to meet the rapidly expanding energy needs of cities (SDG 11).

Target 7.3. By 2030, double the global rate of improvement in energy efficiency
Energy efficiency improvements are an immediate and effective option to reduce GHG emissions (SDG 13). Energy efficiency measures in various sectors from households to industries and businesses lead to improved production and consumption (SDG 12). They can reduce utility bills, provide cost-savings, economic growth and new jobs (SDG 8). With enhanced efficiency, air quality improves and pollution levels can be reduced (SDG 15).

Target 7.a. By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
Development and application of clean energy technologies is critical to addressing climate change including adapting to its impacts and mitigating associated risks (SDG 13). Investments in clean

energy infrastructure and technology in developing countries will need to be scaled up significantly in the coming years to support the broader development agenda including inclusive industrialization and resilient infrastructure (SDG 9).

Target 7.b. By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support

Inadequate access to energy infrastructure is a key barrier to social and economic growth particularly in the most vulnerable countries such as in least develop countries and small island developing states. Access to energy infrastructure such as renewable energy infrastructure for electrification of health centres, schools, industries, and markets is vital for building resilience and promoting inclusive and sustainable industrialization (SDG 9).

SDG 1 Poverty. End poverty in all its forms everywhere

Despite the important role that sustainable energy plays in poverty reduction, about 1.1 billion people still lack access to electricity and 41 percent of world's population still rely on solid fuels for cooking. Poor people pay a high price -in cash or in labor for the energy they use. Moreover, they spend a much greater share of their household income on energy than wealthy people. No country has managed to substantially reduce poverty without greatly increasing the use of energy.

SDG 2 Food. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Energy is needed in all steps along the agri-food chain: in the production of crops, fish, and livestock and forestry products; in post-harvest operations; in food storage and processing; in food transport and distribution; and in food preparation.

SDG 3 Health. Ensure healthy lives and promote well-being for all at all ages

Modern energy helps improve health in many ways. By powering equipment for pumping and treating raw water, it helps ensure a clean water supply, reducing the incidence of waterborne diseases. By boosting agricultural production and household incomes, it helps reduce the malnutrition that is a big factor in child mortality. By allowing households to switch to modern fuels, it enables the poor to avoid cooking with biomass fuels like wood and dung, whose emissions cause respiratory ailments that are a major health risk in developing countries.

Modern energy helps improve health indirectly. Electricity enables health clinics to refrigerate vaccines, operate medical equipment, and provide treatment after sunset. It allows the use of modern tools of mass communication needed to fight the spread of HIV/AIDS and other preventable diseases. Through its benefits for education, it leads to higher literacy among women, which translates into better health for children.

SDG 4 Education. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

For poor people everywhere, access to modern energy services frees time for education—time that would otherwise be spent collecting traditional fuels or in other menial work. It frees children to attend school, boosting productivity and allows adult labor to substitute for child labor. For adults and children, electric lighting in homes enables them to study after their daytime activities. In rural areas, modern energy helps retain teachers by improving their quality of life.

SDG 5 Women. Achieve gender equality and empower all women and girls

Increasing access to energy brings disproportionate benefits for women - in health, education, and productive activities. In many parts of the world women spend more time than men cooking and collecting water and fuel. Modern cooking fuels free women from the burden of collecting and carrying large loads of fuel-wood and from exposure to smoke from primitive cooking stoves. Modern energy for lighting and motive power enables women to develop businesses, for example in agro-processing industry that can increase their incomes.

SDG 6 Water. Ensure availability and sustainable management of water and sanitation for all

Energy and water are intricately connected. All sources of energy (including electricity) require water in their production processes: the extraction of raw materials, cooling in thermal processes, in cleaning processes, cultivation of crops for biofuels, and powering turbines. Energy is itself required to make water resources available for human use and consumption (including irrigation) through pumping, transportation, treatment, and desalination.

SDG 8 Economy. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Modern energy boosts poor people's productivity and incomes. Most economic activity would be impossible without energy, even the small and medium-scale enterprises that are the main source of jobs for the poor. The kind of economic growth that creates jobs and raises incomes depends on greater and more efficient use of energy. Energy security and resilience against economic shocks due to volatile fuel prices is also key to sustained economic growth.

SDG 9 Infrastructure. Build resilient infrastructure, promote inclusive and sustainable

Expanding energy infrastructure and upgrading technology to provide clean and efficient energy services is crucial and can encourage economic growth, induce cost-savings and help the environment.

SDG 10 Inequality. Reduce inequality within and among countries

Reducing the global disparity in energy is key to reducing income inequalities, gender inequalities, and inequalities in other dimensions such as rural/ urban income disparities. A lack of adequate, reliable and affordable supplies of modern energy disproportionally impacts women and children. It is more severe in rural communities and it limits their productive opportunities, enterprise growth and employment, and exacerbates income inequality and persistent poverty. Some regions with the lowest energy consumption and greenhouse gas emissions, for example countries in Sub-Saharan Africa and South Asia, are the most vulnerable to climate change impacts and will suffer the most. Sustainable energy can help build the resilience of these communities against climate change impacts and reduce inequality between and among nations.

SDG 11 Cities. Make cities and human settlements inclusive, safe, resilient and sustainable

About two-thirds of the global primary energy supply is consumed in cities and over seventy percent of the global energy-related carbon dioxide emissions are generated from cities. As urbanization accelerates, demand for energy services will drastically increase. Therefore, providing affordable, reliable, sustainable and modern energy services will be critical. Sustainable energy can also contribute to other urban issues such as air quality, waste management, safety and resilience towards disasters.

SDG 12 Consumption. Ensure sustainable consumption and production patterns

The production, distribution and consumption of energy have environmental implications. At the global level, the choice of fuels in energy systems is a major determinant of greenhouse gas (GHG) emissions. More efficient energy production patterns and reduced energy consumption will have benefits for the global environment and the economy.

SDG 13 Climate. Take urgent action to combat climate change and its impacts

Energy production and use account for two-thirds of the world's GHG emissions. Deep cuts in GHG emissions and more efficient energy use will be needed to achieve the Paris Agreement. Modern energy enables productive uses and diversifies livelihoods away from vulnerable activities thus building resilience to adverse events, including the impacts of climate change. Sustainable energy allows access to knowledge and information technology which powers innovation and enables experimentation and testing of different adaptation options.

SDG 15 Ecosystems. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

A substantial share of today's energy consumption for cooking and heating comes from the use of wood and charcoal by households in the developing world. This can be associated with unsustainable forestry practices and deforestation and often has knock-on effects on wildlife, soil erosion and increased flooding.

SDG 17 Partnership. Strengthen the means of implementation and revitalize the global partnership for sustainable development

Transforming the world's energy systems requires deep cuts in energy-related emissions while sustaining the growth of the world economy, boosting energy security, and bringing modern energy to billions without it. This can only be done if means of implementation are put in place, such as a conducive policy environment, regulatory and budgetary frameworks to scale-up clean energy technology, infrastructure and solutions, and measures to de-risk and leverage finance from a variety of sources including private sector. Building the capacity of countries at all levels, and forging partnerships that bring together multiple stakeholders including governments, the private sector, and civil society are vital to achieve SDG 7 and its targets at the national and global level.

8. Regional Perspectives

8.1 Africa

Africa's economic performance has remained resilient amid global and regional headwinds. Average real GDP grew by 3.5 percent in 2015, higher than the global average of 3.1 percent. Africa was the second fastest growing region after East Asia. Five of the world's fastest growing economies with real GDP growth of 6.5 percent or higher were in Africa. However, this growth has not been inclusive. Poverty has deepened and inequalities persist. Some African countries are embarking on structural transformation based on resource-efficient industrialization to add value to raw materials and increase global competitiveness. The prospects for 2016 and beyond are favorable, underpinned by relatively stable macroeconomic conditions, strong domestic consumer demand, robust public investment in infrastructure and fiscal consolidation to contain the commodity price shock. In the medium term,

downside risks include a potential drag in low commodity prices and El Nino weather patterns, which are expected to persist in a number of African countries.

The lack of energy is a critical challenge facing Africa today. More than 640 million Africans are estimated to lack access to electricity and nearly 730 million people use hazardous, inefficient forms of cooking. Energy shortages, high costs and poor access remain major impediments to Africa's continued social and economic progress costing the continent more than 2 percent of GDP annually. Paradoxically, Africa is blessed with abundant fossil fuels and renewable energy resources. About 7.7 percent of the world's proved conventional oil reserves, 7.6 percent of proven natural gas reserves, and 3.7 percent of remaining coal reserves are in Africa. The continent has well over 10 TW of solar potential, 350 GW of hydroelectric potential, 110 GW of wind potential and an additional 15 GW of geothermal potential. With adequate financing, Africa is capable of achieving universal access to energy services while reducing its contributions to global CO_2 emissions.

In recent years, more African Governments have prioritized the development of the energy sector as a critical development enabler, and development partners and private sector stakeholders have increased their involvement in the energy sector. All 53 African INDCs include energy sector goals and renewable energy measures, 37 include energy efficiency measures, 35 include energy measures in the transport system and 22 include household energy measures. Moreover, adaptation in the energy sector is a key component in many of the INDCs.

Average annual renewable energy investments in Africa are projected to reach USD 7 billion a year over 2014-20 compared to USD 2 billion over 2000-13[16]. The Africa-EU Energy Partnership identified more than 50 existing major energy programs and initiatives and several important initiatives were launched in 2015-16. This includes the African Development Bank's New Deal on Energy for Africa with the aspirational goal of universal energy access by 2025; its Transformative Partnership on Energy for Africa that provides a platform for coordinated action among partners; the Africa Renewable Energy Initiative (AREI) that has the aspirational target of adding 300 GW of renewable energy by 2030; and the African Energy Leaders Group (AELG) that brings together political and business leaders at the highest level to drive the reforms and investment needed in the energy sector.

Achieving universal access to affordable, reliable, sustainable and modern energy in Africa will need significant financing, and transformative partnerships with all actors (public and private). Effective coordination of the various energy initiatives is needed to leverage investments and achieve development impacts at scale.

The SEforALL Action Agendas are national framework documents that support SDG 7. They are being developed by many African countries facilitated by the SEforALL Africa Hub hosted by the African Development Bank with the African Union Commission, the NEPAD Agency and UNDP. The Action Agendas are largely aligned with the INDCs of African countries. Table 6 illustrates the objectives of some of the Action Agendas.

[16] World Energy Outlook Africa 2014

Table 6. Sample of SEforALL Action Agenda Objectives by 2030

		SEforALL Action Agenda Objectives by 2030			
	Action Agenda status	**Access target Electricity**	**Access target Clean cooking**	**Renewable Energy** (share in Total Final Energy Consumption)	**Energy Efficiency** (rate of improvement in energy intensity)
Cabo Verde	Finalised	100 percent	100 percent	100 percent[17]	-20 percent by 2030[18]
DRC	Pending approval	100 percent	100 percent	52 percent[19]	-30 percent[5]
Kenya	Finalised	100 percent by 2022	100 percent	80 percent	-2.78 percent / year
Nigeria	Finalised	90 percent	78 percent	20 percent[2]	100 percent efficient lighting
Sierra Leone	Finalised	82 percent	75 percent	86,8 percent	100 percent efficient lighting
Tanzania	Finalised	>75 percent	>75 percent	50 percent	-2,6 percent / year
Uganda	Finalised	> 98 percent	>99 percent	>90 percent	-20 percent[20]

Source: African Development Bank

8.2 Asia and the Pacific

In 2012, 455 million people in the Asia Pacific region lacked access to electricity and 2.06 billion people relied on solid fuels for cooking[21]. Between 1990 and 2012 the electrification rate increased by 14 percent and 16 percent of the population shifted from using non-solid fuels to cleaner forms of energy. 350 million people were connected to electricity. Of these 158 million resided in India, 67 million in China, 50 million in Indonesia, 32 million in Pakistan, 20 million in Bangladesh, 11 million in Thailand, 9 million in Philippines and 7 million in Viet Nam[22].

Most countries improved energy efficiency. Twenty countries performed better than the world average of reducing energy intensity by more than 1.7 percent a year over 2010-12. Between 1990 and 2012, the following countries have at least halved their primary energy intensity: Armenia, Azerbaijan, Bhutan, China, Georgia, Kyrgyzstan, Mongolia, Myanmar, and Tajikistan[23]. In terms of cumulative avoided energy consumption, China saved 867,487 petajoules (about 20.7 billion toe[24]), and India saved 92,518 petajoules (about 2.2 billion toe) due to energy efficiency improvements.

Asian Pacific countries increased their consumption of modern renewable energy. However due to the even higher growth in total final energy consumption (TFC) the share of renewable energy in TFC reduced. Despite that, the share of renewable energy in power generation increased significantly. In

[17] Share in electricity mix
[18] Reduction of Final Energy Demand compared to the Base Case
[19] Without biomass
[20] Electricity savings in high consuming sectors
[21] ESCAP, 2016. Asian Pacific Energy Portal, 2016. The calculation is based on population of ESCAP member States and GTF 2015 report. Difference with relevant to the previously cited 621.5 million by IEA lies in the off-grid systems, because IEA uses utility data while GTF 2015 adopts household surveys.
[22] Asia Pacific Energy Portal.
[23] GTF 2015. Progress Toward Sustainable Energy 2015.
[24] Toe: tonne of oil equivalent.

2012, 100 percent of Bhutan's electricity was generated from renewable energy. Tajikistan, Nepal, Lao PDR and Kyrgyz Republic all have more than 90 percent of electricity generated by renewable energy[25]. China is leading in investment in renewable power and fuels, as well as renewable power generation[26]

All countries with energy access deficits have set targets to improve access to electricity, but only 22 countries have a clear goal for improving access to non-solid fuels. Most countries have a goal of achieving 90 percent nationwide electrification through grid connection and distributed energy systems before 2020. Commonly adopted policy strategies include national action plans, subsidies and bi- and multilateral mechanisms for expanding energy access. 18 developing countries have standards for energy service quality.

Almost all countries have adopted clear targets for energy efficiency improvement in the form of reduced energy demand and decreased energy intensity. Most targets are set before 2020. Countries have enacted legislation, provided loans/ grants, adopted tax incentives, subsidies, codes and labelling, and demand-side management. 33 countries intend to adopt energy efficiency strategies in their submitted INDCs[27].

All countries have clear targets for renewable energy development. For example, India intends to increase its renewable energy power capacity from 35GW in 2015 to 175 GW by 2022. Four countries have legislation on renewable energy, and three are considering legislation. Most countries have included renewable energy in national action plans and provided subsidies and grants to support its development. 18 countries have adopted feed-in tariffs and 8 have adopted net metering. The Cook Islands aim to achieve 100 percent renewable energy power generation by 2020, Tuvalu and Samoa have set a target for 2025 and Papua New Guinea for 2050. 35 countries intend to adopt renewable energy strategies in their submitted INDCs[28].

There remain significant financial and investment gaps to achieve SDG 7, especially in developing Asia.

[25] GTF 2015 Report and ADB, 2015 "Sustainable Energy for All Tracking Progress in Asia and the Pacific: A Summary Report 2015"
[26] REN21. Renewables 2015. Global Status Report.
[27] UNFCCC, INDCs. http://www4.unfccc.int/submissions/indc/Submission percent20Pages/submissions.aspx
[28] UNFCCC, INDCs. http://www4.unfccc.int/submissions/indc/Submission percent20Pages/submissions.aspx

Box 2. China's Renewable Energy Policy Development

As of 2015, cumulative installation of solar PV reached 43.2 GW, of which newly addition in 2015 was 15.1 GW, accounting for more than 25 percent of total PV installation in the world and 1/3 of China's total PV production[1]. New installation of wind power in 2015 reached 129 GW, about 8.6 percent of total new installation. Wind power generation was 186,300 GWh, sharing 3.3 percent of total power generation in 2015[1].

Rapid development of renewable energy in China attributes much to the policy support. Following the promulgation of the *Renewable Energy Law of the People's Republic of China* in 2005, a range of supporting policies have been established, including concession bidding, feed-in tariffs (FIT), subsidies, and pilot demonstration. The FIT ensures a reasonable profit margin for major renewable energy power. The tariff surcharge has been adjusted over time, to reflect the gradual drop of technological costs of renewable energy power. The policy framework also evolves accordingly so that the central government put more efforts in planning, research and development, but delegate project approval authority to lower levels of the government. Emphasis was focused on salient bottlenecks such as grid connection of renewable energy power generation. The National Energy Administration explored innovative financing to facilitate the development of distributed renewable energy applications. Steady investments have been made to promote renewable energy heating, natural gas supply and pilot demonstration to accumulate valuable experiences and model-building for localize large-scale exploitation of renewable energy resources.

In the newly adopted Thirteenth Five-Year Plan (2016-20), it is planned that the share non-fossil fuels in total primary energy consumption will increase from 12 percent by 2015 to 15 percent by 2020[1].

8.3 Europe

The United Nations Economic Commission for Europe region is of critical importance as it produces 40 percent of the world's energy while consuming 45 percent. It is home to important energy industries, produces nearly 50 percent of global economic output, and is dominant in the world's financial infrastructure. The region is very diverse, comprising high and low income countries, countries that are energy rich and energy poor, and countries that are in the midst of economic transition. The region has the potential for an economic competitive advantage compared to other regions given the relatively modest distances between energy supply sources and energy demand centers. Full integration of the region's energy markets under an efficient framework would significantly improve the sector's technical, social, economic, and environmental contribution.

Using energy intensity in the region decreased dramatically between 1990 and 2010. Aggregate energy intensity fell by 34 percent for OECD members and by 61 percent for non-OECD states. However since 2007 the rate of improvement has stagnated. The penetration of modern renewables in the 17 countries of Southeast and Eastern Europe, the Caucasus and Central Asia remains modest, despite considerable potential and supporting measures, and attracting investment represents a major challenge. In recent years, investments in renewable energy in all of the countries have declined. Although comprising over 300 million inhabitants, these countries represented only 0.5 percent or USD 0.9 billion of global renewable energy investment activity in 2014.

Building a sustainable energy system will involve a substantial transition. Improving efficiency will involve energy efficiency measures at the consumer-level and upstream in energy production/ generation, transmission and distribution. Such a transition provides an opportunity to accelerate the change from the traditional model of selling energy commodities to one of providing energy services based on innovation. Growth in distributed generation, shaping energy demand through IT, separating the time of production from time of consumption through energy storage, and improving management of an integrated system are all indicators of an energy revolution that is underway. The development of smart energy networks with common rules of access and operation is an important opportunity to enhance the collaboration among technologies, thereby enhancing the cost-effective penetration of lower-carbon technologies, improving the resilience of the energy system, and improving quality of life for all.

Ensuring reliable, affordable, sustainable and modern energy is a key challenge for the countries of the region. Fossil fuels comprise 60 percent of primary fuel in the region, making it one of the largest emitters of greenhouse gases, accounting for about half of global emissions. It will be necessary to reduce greenhouse gas emissions by 50 percent to address climate change while supporting development. The transition to a sustainable energy system provides an opportunity to improve energy efficiency from source to use, minimize environmental impacts, reduce energy and carbon intensities, and correct energy market failures. A challenge in reporting on progress is the lack of quality data for an appropriate set of indicators.

The UNECE's Committee on Sustainable Energy aims to ensure access to sustainable energy for all and to help reduce greenhouse gas emissions. The current program is developing normative instruments, including standards and best practice guidance in energy efficiency, renewable energy, natural gas, clean electricity, and coal mine methane. UNECE helps countries improve management of their natural endowments through the United Nations Framework Classification and has published recommendations on carbon capture and storage. The Committee undertakes certain activities or oversees cross-cutting activities:

- **International Fora on Energy for Sustainable Development**. Since 2014 these fora have been organised collaboratively by all five regional commissions. These annual international fora on energy for sustainable development explore the policy options that countries might implement, outline the assistance that the UN's regional commissions can provide, report gaps between countries' ambitions and their actions, and assemble the countries of the region to adjust their actions to meet the sustainability and climate goals. In 2014, the Executive Secretaries of the regional commissions signed the Hammamet declaration[29]. In 2015, the regional commissions agreed to a statement of common action that described how they could assist countries in achieving their goals. The October 2016 forum will explore gaps between countries' ambitions and their actions. The 8th forum in June 2017 will include a ministerial event at which countries are expected to agree on actions to ensure attainment of the sustainability and climate goals.
- **Pathways Project**. UNECE is working with countries to explore what sustainable energy means for the region, from the perspective of reducing the environmental footprint of energy and assuring the energy needed for sustainable development. The dialogue is designed to support

[29] This Declaration affirmed that the objectives of energy sustainability are attainable and that proposed a set of economically-rational actions to help countries meet their sustainable development and climate goals.

stakeholders in identifying activities needed to achieve the sustainable development and climate goals.

- **Methane Management in Extractive Industries**. UNECE is working with key partners to develop best practice guidance for a) monitoring, recording, and reporting methane emissions; and b) abatement of methane emissions.

UNECE is extending its work in three critical areas: reconciling the reality of fossil fuels' enduring share of the energy mix with the need to address climate change, enhancing integration of the region's energy markets, and facilitating the transition to a sustainable energy system.

8.4 Latin America and the Caribbean

According to SIEE/OLADE[30] the Latin America and Caribbean region reached 96 percent electricity coverage in 2016 and could be the next developing region to achieve universal access to electricity. However, the percentage of the population with access to clean ways to cook and heat is much lower (86 percent)[31]. The region's energy intensity is not decreasing as fast. The rate of improvement in energy intensity is three times slower than the rest of the world, highlighting an opportunity for optimization. Renewables account for 30 percent of the region's energy mix and 63 percent of total electricity generation in the region.

Many challenges remain to be addressed to meet 2030 goals.

The first challenge is to provide modern electricity services to 4 percent of the population that still lacks access. About 90 percent of the 25 million people who lack access to electricity are concentrated in 11 countries. This means dealing with much higher costs because these populations live in remote areas that lack economies of scale. Shifting cooking practices from the use of unsustainable biomass to modern fuels remains a challenge for about 86 million people in the region. IDB's preliminary estimate of the cost of achieving universal access indicates an investment need of at least USD 700 million a year for 15 years to reach 100 percent electricity coverage.

The second challenge involves improving energy efficiency. Accelerating the implementation of energy efficiency practices will require investments to overcome initial capital cost barriers, and institutional and regulatory measures to promote growth in the energy efficiency market. There are several good, replicable examples of energy efficiency programs in the region. For example: Buenos Aires, São Paulo, and Managua are currently implementing programs to replace street lights with high-efficiency LED lighting systems. Most countries have already banned or are banning incandescent bulbs, including large markets like Brazil, Mexico, and Argentina. Several countries are in the process of approving and/or expanding energy efficiency laws and regulations.

The third challenge, increasing the share of renewables requires innovative solutions through coordinated efforts from the public and private sectors. The untapped benefits of further regional integration have the potential to enhance energy security and to help manage hydroelectricity seasonal issues and intermittent energy sources like wind power and solar energy which are abundant in the

[30] SIEE/OLADE: Economic and Energy Infomation System, Latin American Organization for Energy (*Sistema de Información Económico Energético, Organización Latinoamericana de Energía*).
[31] Global Tracking Framework Report "Progress towards sustainable Energy 2015"

region. Continued integration can benefit from the lessons learned from SIEPAC[32], which interconnected six countries in Central America and helped develop a regional electricity market.

The Inter-American Development Bank (IDB) with UNDP, ECLAC, and OLADE - as the SEforALL Latin America and Caribbean Hub –have partnered to create a joint work plan to help address these challenges and meet the region's priorities. At the 2012 UN Rio+20 Conference, the IDB announced a financing target of USD 5 billion over 2012-17 to support the three pillars of SEforALL. Since June 2012 the IDB group has provided over USD 3 billion in loans and technical assistance to LAC countries, and it is estimated to deliver over USD 600 million in 2016.

The Hub has supported several activities at the country level, including making energy sector information available in local languages, helping countries identify key barriers and opportunities to achieve the objectives of SEforALL, and planning additional country level actions to help meet the 2030 goal. It is important to strengthen energy sector information systems like those provided by OLADE to have standard and comparable information and to measure the progress of the region. The Hub has supported the development of Rapid Assessment Gap Analysis reports for 18 countries; is preparing Action Agendas and Investment Prospectuses for 3 countries; and set up a website to consolidate regional SEforALL information and tools.[33]

The Hub has promoted dialogue with public and private sector stakeholders through seven regional and national events. These events highlighted that to achieve the SEforALL and SDG 7 objectives the region needs to provide support for private, public, and public-private projects and to increase the number of projects and their quality. The public consultation identified the following priority action areas: (i) closing knowledge gaps associated with costs, benefits, best practices, and country baselines related to the SEforALL/ SDG 7 objectives; (ii) supporting project development, especially during project design; and (iii) providing better information on how to make access to energy in rural areas more sustainable.

The Hub is currently developing a toolkit on geospatial planning for Universal Access to be piloted in Mexico, Ecuador, Honduras, and Nicaragua. For energy efficiency the hub is preparing a regional program to finance energy efficiency measures in the public sector, including hospitals, schools, public buildings, municipal services, and SMEs; expanding ECLAC's successful EE Base Indicators (BIIE) initiative[34] to the remaining six countries in the region; and helping design energy efficiency programs in Central America to support Central American Integration System (SICA) regional integration activities. The hub is financing studies for three renewable energy projects for the Sustainable Energy Marketplace (SEM) with IRENA, to make them bankable. The hub is additionally partnering with IRENA and NREL to provide "just-in-time" advice to countries based on international best practices, and knowledge products related to further integration of renewables in the region. Lastly, the hub is developing a methodology to collect SEforALL indicators to improve data quality and consistency across the region.

The SEforALL and SDG7 goals are closely linked to addressing other cross-cutting social and environmental issues such as gender and climate change. The Hub is committed to promoting the objectives of SEforALL and SDG 7 in the region with the goal of working towards a more sustainable

[32] Central American Electrical Interconnection System (*Sistema de Interconexión Eléctrica para America Central*).
[33] http://www.iadb.org/en/topics/energy/SEforALLamericas/home,17743.html
[34] http://www.cepal.org/drni/biee/

future for its citizens. For instance, OLADE has developed a guide for promoting equal opportunities for women in the energy sector35 which was adopted by 13 countries in the region. All investments in energy infrastructure financed by the IDB now include climate proof specifications, which will allow infrastructure to be more resilient in the face of changing weather patterns. OLADE and the IDB are working on a methodology for Central America and Andean Region to adapt hydroelectric systems due to climate change.

8.5 Middle East and North Africa

The energy sector in Arab countries plays a pivotal role in achieving sustainable development. It satisfies energy needs for economic development and contributes to social stability by attracting investments and creating new job opportunities. While the Arab region is endowed with energy resources, both fossil fuels[36] and renewable energy, there is no homogeneity in terms of energy access and energy services stability.

Many countries are not able to provide adequate energy services for a significant portion of their population. About 54 million people (excluding South Sudan) have no access to the electricity grid, and about 48 million people rely on biomass for cooking. In Mauritania, Sudan and Yemen only 22 percent, 31 percent and 52 percent of respective populations have access to electricity. In other Arab countries access rates are above 99 percent.

Low electricity access rates are linked to a shortage of supplies, weak infrastructure and the absence of maintenance programs. Energy sector reforms including pricing and subsidy policies are required in most countries, whether in net oil exporting or importing countries. Hence adopting new approaches to realize SDG 7 that take into consideration the national priorities, challenges and opportunities and enhance regional integration is important.

The price collapse that has shaken the oil market since June 2014, coupled with uncertain prospects have become predominant economic concerns. Oil wealth is vital for oil exporting Arab countries and is the primary source of positive spillovers to oil-importing Arab countries. It constitutes the fundamental pillar of regional growth, upholding a certain level of intraregional flows of capital, remittances and aid from the region's major oil producers.

Most Arab countries have focused on the efficient management of energy resources and the sector by adopting policies that target energy subsidy, sector reforms and upgrading relevant infrastructure. Several countries have adopted legislation and policies to encourage private sector investment in energy projects.

With the aim to diversify energy resources, most Arab countries have set up strategies and goals to promote renewable energy as an integral element of their national energy mix and to support climate change mitigation. Many countries have renewable energy programs, mainly based on solar and wind energy, with a focus on rural electrification to develop such areas and improve living conditions. For example, Morocco, Tunisia and Egypt have implemented commercial large-scale grid-connected wind

[35] http://www.olade.org/wp-content/uploads/2015/08/old0335.pdf

[36] The Arab region holds abundant oil and gas reserves with different distribution among the Arab countries. The natural geography of the Arab region compromises 3 sub-regions: Gulf, Mashreq and Maghreb; most of the fossil fuels sources are concentrated in the Gulf area, in addition to Iraq, Libya and Algeria and to a lesser extent in other countries such as Egypt, Syria, Yemen and Sudan.

energy power projects. Meanwhile, Morocco, Jordan, Lebanon and Saudi Arabia are interested in implementing off grid solar energy projects. Many countries established institutional renewable energy frameworks, such as Morocco, Algeria, Libya, Egypt, Jordan, and Syria. Several Arab countries are interested in endorsing the role of the private sector in this respect.

It is worth mentioning that the League of Arab States, in its third session of the Arab Summit for Economic Development held in January 2013 in Riyadh, endorsed the "Pan Arab Strategy for Renewable Energy Development 2010 – 2030". Interconnections (electricity and natural gas) are a cornerstone for regional cooperation and to implement the Arab electricity market as endorsed by League of Arab States. Efforts exerted by Arab countries to develop, promote and support the sustainability of the energy sector have created massive pools of local expertise and capabilities in relevant fields.

Several countries have realized the importance of energy efficiency measures. Some countries such as Algeria, Tunisia and Lebanon have established institutional frameworks or energy efficiency programs, set up goals and enhanced related policies; while others such as Bahrain, Iraq and Egypt have established department/ section/ unit for energy efficiency programs. Still energy efficiency efforts need to be widely endorsed, particularly in the electric energy, residential and transportation sectors.

Despite this policy challenges remain a major concern for policymakers in the region. Major Arab Oil exporting countries experienced substantial reductions in their national income and some have started using accumulated cash reserves to maintain public spending levels, respond to increasing energy demand and growing populations. Another challenge relates to the management of the pattern of energy consumption, including domestic energy pricing and efficiency improvements. Economic diversification, and the reliance on energy-intensive strategies of energy producers, is likely to become even more pressing. The high volume of waste generation and climate change impacts on natural resources also represent hurdles that need to be tackled.

The wide scale promotion of renewable energy and energy efficiency measures still needs to be developed and synergized to deliver substantive impacts on the ground. To attract private sector investment supportive strategies and policies, incentives, and flexible financing mechanisms, will need to be adopted. Renewable energy technology transfer and capacity building are crucial. Arab cooperation and integration, in terms of value chains, research and development activities, the exchange of expertise and information and consistent regional energy policies for energy security, still need to be strengthened.

UN ESCWA is positioned to help countries follow a more sustainable development path that relies on policy coherence across the water, energy and food nexus, and policy dialogue across line ministries and stakeholders at the national and regional level. UN ESCWA can help build strong and resilient institutions, support more efficient management of natural resources, facilitate policy dialogue for greater food, water and energy security, and assist countries to develop mechanisms for coordinated responses to climate change, natural disasters and extreme weather events.

Policy-makers in the region should focus on embracing and pushing towards sustainable, non-oil price- dependent sources of financing, improving the investment climate and creating a more enabling environment for capital markets. In this context, countries can benefit from opportunities to promote investment in renewable energy to increase its share in the energy mix; e.g. solar and wind, which are

potential resources that can be developed locally, and can address rural-urban disparities in terms of very low access to energy in rural and remote areas. Intensified efforts should be undertaken to push for the reform of domestic energy prices, to moderate overconsumption and improve energy efficiency, which will lead to savings in government spending and make available budget for investment in social infrastructure. There is an urgent need to adopt development policies for economic diversification. Further collaboration in the area of technology transfer and knowledge sharing in the region and with developed countries is required, including in the area of climate change mitigation.

In 2015, ESCWA launched the SEforALL Decade for the Arab region which reflects the regional roadmap proposed by the Executive Secretaries of the five UN Regional Commissions to accelerate delivery of 2030 objectives. The regional roadmap calls for a redesign of renewable energy policies and greater energy efficiency. ESCWA is collaborating with the Secretariat of League of Arab States' Arab Ministerial Council of Electricity to help mainstream SDG 7 energy and related goals and targets into the energy policies of member countries at regional and national level.

8.6 Small Island Developing States

Energy remains a major constraint to sustainable growth and development in Small Island Developing States (SIDS). This is recognized by the SAMOA Pathway which urges the international community to continue to provide adequate support including capacity building and technology transfer for the development and implementation of national, regional and inter-regional energy policies, plans and strategies. SIDS face additional challenges and opportunities due to their small size and unique geographical location. To address energy challenges the UN Decade of Sustainable Energy for All has been launched separately for SIDS.

Since SIDS are still largely dependent on fossil fuel imports for energy generation, they are highly affected by fuel price volatility. Their remoteness from mainland markets and consequent high transportation costs of fossil fuel cause many SIDS to spend up to 30 percent of their GDP on fuel imports, making energy use one of the most expensive and inefficient in the world. Large parts of the SIDS population thus remain without reliable access to energy. Many archipelagic SIDS face the challenge of providing access to energy to their dispersed populations. Such situations often lead to further increases in the cost of energy.

High vulnerability to the effects of climate change further aggravates the energy situation. SIDS are among the most vulnerable groups to climate change with severe impacts on energy supplies and efficiency as climate effects such as rising sea levels, frequent storms and floods risk damaging energy infrastructure. Limited capacities for public management and poor data availability often intensify these challenges preventing necessary actions from being identified or implemented.

SIDS have access to a wide range of renewable energy sources such as solar, wind, geothermal, ocean thermal and tidal. They have the potential to become forerunners in transitioning to low carbon economies that are largely able to satisfy their energy demand from indigenous renewable sources. Hence, a focus on rapid renewable energy development is essential. Different renewable energy solutions such as hybrid power plants, mini-grids and floating solar systems need to be explored and implemented according to local circumstances.

The deployment of renewable energy technologies can have a transformational impact on the economic and social well-being and could play a vital role in national development and climate change resilience efforts. Building the capacity to develop energy projects and operate new technologies is crucial. Additional funding has to be mobilized from domestic and international, private and public sources. To attract investment, renewable energy projects have to be made economically viable by, for example, implementing risk-sharing mechanisms or launching cluster projects to reduce transaction costs. Focused attention is needed to expand the necessary infrastructure and upgrade technology in SIDS to facilitate the effective uptake of renewable energy projects. Improved data collection will be necessary to identify target areas for action and to evaluate project impacts.

SIDS as well as the international community have recognized the great potential of renewable energy in ensuring energy access and promoting sustainable development and have launched multiple initiatives pursuing their exploitation. Under the 'Barbados Declaration' from 2012, six SIDS – Cape Verde, Cook Islands, Dominica, Maldives, Solomon Islands, and Tuvalu - have committed to achieve carbon-neutrality by either 2020 or 2030. The 'Sustainable Energy Industry Development Project' by the World Bank aims to improve data availability on renewable energy options in SIDS and to help countries integrate renewable energy sources into existing power systems. The 'SIDS Lighthouse Initiative' launched by the International Renewable Energy Agency and the 'SIDS DOCK' Initiative by the Alliance of Small Island States aim to connect SIDS to international finance, sustainable technologies and carbon markets to mobilize the support to advance renewable energy. Regional initiatives including the Caribbean Centre for Renewable Energy and Energy Efficiency and the Pacific Centre for Renewable Energy and Energy Efficiency are providing essential technical support to regional projects by public and private partners and promoting renewable energy and energy efficiency investments.

Further collaborative efforts at the national and international level will be needed for SIDS to fully capitalize on their renewable energy sources. The role that the private sector plays in the development of innovative SIDS appropriate technology is critical. There is also need for the reform of power utilities in SIDS to make them able to adopt new and innovative technologies and energy services.

There are many new innovative and technical solutions being proposed or used by SIDS that can be implemented with supportive regulatory frameworks that balance new innovative technologies and models with the need for reliable and affordable energy.

8.7 Least Developed Countries

Access to sustainable energy is one of the key determinants of structural transformation and rapid development of the least developed countries (LDCs). Due to its interlinkages with other sectors such as health, education, agriculture and women's empowerment, sustainable energy in LDCs is critically important for eradicating poverty, accelerating inclusive and rapid growth, improving living standards and advancing sustainable development. There is a strong correlation between the energy poverty and the incidence of multidimensional poverty. Recognizing the importance of sustainable energy for development, the UN Decade of Sustainable Energy for All has been launched for LDCs in 2014 with great vigor and expectation.

LDCs lag other developing countries in access to energy with two-thirds of their population living without electricity. Access to electricity increased slightly from 31.5 percent in 2010 to 34.5 percent

in 2012[37]. With such a low growth rate, it would take almost forty years to provide energy access for all. The energy gap between urban and rural areas remains high as 70 percent of the urban population in LDCs had access to electricity in 2012, against only 20.7 percent of the rural population.

Progress across LDCs has been equally uneven. While electricity access in Asia and the Pacific is 56.2 percent on average, it is only 22.2 percent in the African LDCs[38]. However, energy access rates often do not adequately reflect the reliability and quality of the energy provided. Frequent power outages, brownouts and voltage fluctuations severely limit the use of energy services and electrical appliances even in areas that are connected to electricity grids.

To combat the large deficits in the energy sector, various LDCs have launched successful programs aimed at providing electrification especially to rural areas. Bhutan has launched the 'Sustainable Rural Electrification Program' with assistance of the Asian Development Bank and Uganda the 'Energy for Rural Transformation' Program financed by the World Bank, both aiming to extend the existing electricity grid and provide solar panels to rural areas. Bhutan has been able to improve significantly its rural electrification rate while lowering connection costs and increasing government ownership. Similarly Uganda, suffering from very low rural electrification rates, has succeeded in increasing its electrification rates. In Nepal, with the support of the World Bank, micro hydropower plants have slowly increased in number and capacity to become a major source of off-grid electricity in rural areas. By 2014, more than 1,000 micro hydropower plants with total generation capacity of 22 MW had been developed, providing off-grid electricity access to 20 percent of the population[39].

There has been a surge in the off-grid and household level energy services in LDCs. However, scaling them up rapidly, and aggregating them with a medium term plan of linkages with the grid energy is critical to realize their full potentials. This is particularly important given the fact that the majority of the population in LDCs live in the rural areas, where access to modern, reliable energy for income-generating activities is the biggest challenge. Further, energy generation in LDCs remains among the most expensive in the world with severe effects on household use, industrial competitiveness and the structural transformation of those countries.

Energy efficiency plays an equally important role as it helps to ensure the efficient use of limited electricity supplies. Access and reliability of supply can be substantially improved with efficient use of electricity. With modernization of the electrical equipment, appliances and machines, can help LDCs enhance their productivity with a possibility to link up with the higher value chains of production.

Despite the great potential for renewable energy sources, the share of renewable energy in the total energy capacity has declined from 57.0 percent in 2010 to 55.1 percent in 2012[40]. This decline has largely been caused by a reduction in renewable energies in the energy mix of African LDCs who have a comparatively high share of renewable energy of over 70 percent since 2000. However, Asian and Pacific LDCs show an increase in renewables from 29 percent in 2000 to 36.5 percent in 2010, but large discrepancies between the individual countries exist.

[37] Report of the Secretary-General on Implementation of the Programme of Action for the Least Developed Countries for the Decade 2011 to 2020.
[38] Ibid
[39] http://www.worldbank.org/en/news/feature/2015/09/26/ensuring-sustainable-rural-electrification-in-nepal
[40] Report of the Secretary-General on Implementation of the Programme of Action for the Least Developed Countries for the Decade 2011 to 2020.

Most LDCs have joined the SEforALL initiative and are now at different stages of implementation. 25 of the participating 39 LDCs have prepared their Rapid Assessments and Gap Analyses and three have already adopted individual Action Agendas and Investment Prospectuses. Another 20 are developing Action Agendas. Through the joint collaboration with SEforALL, and other international institutions, UN-OHRLLS has been advocating for dedicated support to LDC efforts to accelerate the energy transition, bridge the access gap and promote the effective use of sustainable energy resources. This global advocacy will help bring a sharper focus on their need for greater investment capacity development, policy analysis and institutional support at the national level.

Many challenges need to be overcome to achieve SDG 7 in the LDCs.

Accessing finance is a major challenge for the least developed countries. LDCs need targeted, adequate and effective financial and technical support to develop transition plans and substantially scale up investment.

The main constrains for LDCs in accessing financing include low project preparation capacities and skills to deploy financing models that encourage blended finance to attract more funds. The existing energy financing models do not fully respond to the LDC specific challenges. Institutional capacity remains inadequate. The lack of organizational reform, coordinated leadership and sustained policy implementation in power utilities hampers the energy sector transition in a number of LDCs.

To address the financing gap at the national level, domestic resource mobilization and private sector engagement have to be scaled-up with appropriate and innovative instruments. In many LDCs, there is enough liquidity for smaller scale projects, but due to the lack of capital market development, institutional capacity, relevant experiences and risk mitigation measures, these resources have remained unproductive. To strengthen private sector engagement, the energy sector needs to be reformed and the associated risk for small and medium scale energy projects needs to be lowered.

In general, weak policy and legal frameworks in many LDCs discourage investment into the energy sector and price subsidies by the government often prevent the engagement of the private sector. At the national level, governments need to ensure a strong coordinated and sustained leadership with a multi-stakeholder participation that includes the private sector, civil society and subnational authorities. National sustainable energy policies with clear implementation and monitoring plans are essential and need to be complemented by a strong monitoring and review mechanism. The establishment of a legal and regulatory framework is indispensable to ensure better governance of the energy sector and promote commercial investment on a longer term basis. Since most of the energy sector investments are of long-term nature, fair and proper management of the long term risks is crucial.

Inadequate infrastructure for electricity generation, transmission and distribution, particularly in rural areas, poses another severe restriction to achieving the target. Further, the lack of human capacity and access to technology at affordable rates prevents the full exploitation of renewable energy sources.

Efforts need to be made to ensure pro-poor approaches to allow for the greatest development impacts on the ground. To this end, microfinance schemes can be established to enable the poorest population to afford access to modern energy services and appliances. Alternative sources of energy – especially off-grid solutions such as micro hydro power systems and solar panels – offer the opportunity to close

the energy gap between urban and rural areas. These solutions would be upgraded in the medium term to allow people to engage in income generating and other commercial activities. Capacity building programs need are needed to train staff to operate and maintain new technologies.

Landlocked LDCs face significantly higher prices of energy due to high transportation costs. Thanks to national leadership and growing international support and focus, there has been some progress in some of these areas in the last few years. Yet there is a long way to go to scale-up and sustain such policies and support mechanisms, which can unlock the huge potentials in LDCs at a scale that can meet their collective ambition.

LDCs present an opportunity for pooling resources across national boundaries through regional cooperation. Enhanced regional cooperation has the potential to increase energy generation and lower prices creating spin-off effects on other areas. It can address the absence of domestic energy resources or the lack of scale to develop those resources effectively.

9. Stakeholder Perspectives

9.1 Measuring Gender Equality and Women's Empowerment in SDG 7

The vision enshrined in Agenda 2030 for Sustainable Development, by pledging that no one is left behind, guarantees transformation of the lives of the most vulnerable and marginalized in a sustainable way. This requires that a new level of ambition whereby SDG indicators are disaggregated across various parameters of measurement, including sex, so that the particular barriers to gender equality and the empowerment of women and girls are captured and addressed. SDG 7 indicators do not yet recognize this ambitious principle to measure progress across the sexes.

This obscures the interactions between energy and development as gender equality and women's empowerment are fundamental to meeting the objectives of SEforALL. The 2015 Global Tracking Framework ascertains that the nexus between energy systems and gender equality offers numerous opportunities that can arise from wider cross-sector perspectives and more holistic decision-making in energy. Therefore, the limited or lack of measurement of gender equality for sustainable energy would inhibit assessment of women's and girls' participation and rights as agents of change in the efforts to meet SDG 7 targets by 2030.

To this end, UN Women and UNEP have recently joined forces to address some of these measurement shortcomings by establishing a Global Joint Programme on Women's Entrepreneurship for Sustainable Energy Access. This joint programme recognizes that rapidly falling renewable energy technology costs and innovative business models for decentralized energy solutions provide new opportunities for women entrepreneurs to lower customer acquisition and servicing costs and drive these decentralized solutions. Specifically, the program aims to:

- Promote gender-inclusive energy planning and policies by increasing women's participation in policy formulation, developing targeted policy measures and linking energy policy making with other sectors, notably education and health.
- Remove skills, information and social norms barriers for women sustainable energy entrepreneurs, and ensure safe, bias-free working environments that attract, retain and promote women.

- Improve access to finance for women entrepreneurs, particularly by strengthening traditional and innovative financial intermediation services (e.g. direct and directed lending, credit enhancement mechanisms, capacity development for commercial banks, integrated web-based platforms and challenge funds).
- Promote women's productive use of sustainable energy, particularly in agriculture and micro-enterprises, and reduce their time dedicated to unpaid domestic and care work.

The program will establish a cloud-based platform that will address the data gap by enabling the collection of gender disaggregated data on energy access and entrepreneurship to complement its main function of linking women entrepreneurs with information, finance providers, goods and service suppliers, customers and leads, and markets to advance sustainable energy for all.

9.2 Business

The adoption of the Paris Agreement and the 2030 Agenda for Sustainable Development provides business and investors with enormous opportunities to innovate, realize new market opportunities, and deliver solutions that meet societal challenges, particularly in the energy sector. For instance, from the USD 285.9 billion invested in renewable energy (excluding large hydro-electric projects) in 2015. Both the Paris Agreement and the SDGs showed unprecedented business mobilization in support of these agendas. Today around 2,500 businesses and investors have pledged to cooperate on initiatives set out in Action Agenda or by setting individual targets aligned with a below 2 degree Celsius pathway. Many of these initiatives, featured in the online platform NAZCA, directly relate to advancing the targets outlined under SDG 7.

Particularly, SEforALL's Energy Efficiency Accelerator Platform has driven action and commitments by national and sub-national leaders at the country, city, state, region, or sector level. A key deliverable has been the Integrated Policy and Investment Roadmaps prepared with committed public and private partners. These Roadmaps guide project implementation supported by a global network of experts, institutions and businesses.

Some examples of companies that have committed to implement actions that will help advance SDG 7 delivery include:

- Acciona will invest a minimum of USD 2.5 billion in renewable energy through 2020.
- Avant Garde Innovations aims to power its facilities in the State of Kerala, India by using 100 percent renewable energy by mid-2016.
- Allianz commits to reinvest over EUR 4 billion into wind energy over the next months.
- Vestas's Wind for Prosperity commercially-based business model aims to bring affordable and reliable electricity to rural populations that currently lack it. Wind for Prosperity deploys wind hybrid power systems and aims to reach at least 50 million people.
- Skypower signed a USD 2.2 billion agreement with the Government of Kenya during the 6th annual Global Entrepreneurship Summit to develop 1 GW of solar projects. It will be gifting two million SkyPower Home solar kits to people of Kenya.
- Philips Lighting committed to improve the energy efficiency of its entire product and solutions portfolio by 50 percent in 2015 (compared to 2009) and will advance solar-LED lighting for cities, homes and buildings, through the en.lighten initiative.

- Stategrid promotes the Global Energy Interconnection, which aims to meet global energy demands deploying UHV grids and smart grids of clean energy around the globe.

Related corporate initiatives which help advance SDG 7 and Sustainable Energy for All goals:

- Since the launch of the Caring for Climate Business Leadership Criteria on Carbon Pricing at the Climate Summit 2014, nearly 70 companies have taken on the triple challenge of setting an internal carbon price, reporting publicly and calling for carbon markets. Investors are also calling for a price on carbon. The UN-backed Principles for Responsible Investment, a substantial group of investors holding USD 59 trillion in assets under management, have pledged to invest based on sustainability criteria, consistent with producing shareholder return.
- The Science Based Targets initiative is also creating growing momentum behind ambitious corporate climate action by it's over 150 companies who have committed to set emissions reduction targets in-line with the global effort to keep warming well below 2 degrees Celsius. Such commitments form the foundation of a credible corporate climate action strategy as the world transitions to the low-carbon economy.

9.3 Civil Society

An inclusive multi-stakeholder approach is critical to ensuring universal access to affordable, reliable, sustainable and modern energy by 2030 that leaves no one behind. Meaningful participation of civil society is key to the success of both SDG 7 and the successful implementation of the Sustainable Energy for All initiative.

Civil society organizations (CSOs) and development agencies have proven expertise and experience in delivering energy services for development. They act as trusted intermediaries between governments, the private sector, donors and communities in different national contexts. CSOs are experienced in building stakeholder understanding of energy access issues and in designing and delivering energy services, particularly for poor and vulnerable groups. CSOs can help:

- Improve decision-makers' and energy stakeholders' understanding of the energy needs of the poor.
- Raise awareness of, and stimulate demand for, energy services and products that can improve the lives and livelihoods of the poor, in particular women and vulnerable and excluded groups.
- Build public and political understanding and support for inclusive and renewable energy markets, the reforms needed to support them, and enable informed participation in energy decision-making.
- Work with other stakeholders such as government, private sector, donors and other development partners to design and deliver energy solutions with long-term development impact.

CSOs see national SEforALL processes as potential "readiness platforms" for SDG 7 implementation. Existing processes can be strengthened through the adoption of more inclusive, multi-stakeholder approaches. Where SEforALL processes are not in place, support for other ongoing multi-stakeholder dialogues on SDG 7 implementation is crucial.

CSOs at the national and international level have been engaged in SEforALL from the outset. However, a 2014 survey by CAFOD, Hivos, IIED and Practical Action of civil society experience in six countries, highlighted that while a strong demand for CSO participation in SEforALL exists,

opportunities to participate and strengthen the process remain highly constrained in many countries.[41] The report suggested a set of guidelines for stakeholder engagement and in recognition of the need for more inclusive processes, SEforALL subsequently adopted guidelines for multi-stakeholder participation in national processes.[42]

Factors that were identified in the CSO Survey as essential to good practice included:

- Commitment by all actors to multi-stakeholder engagement and a clear lead for the process
- Participatory and inclusive design of the consultation process.
- Timely engagement with stakeholders, and providing them access to meaningful information.
- Gender awareness and proactive outreach to vulnerable and excluded groups.
- Building capacity of stakeholders so they can provide informed inputs.
- Clear action plans and clear division of roles and responsibilities.
- Participation of stakeholders in decision making.
- Participation in implementation and monitoring.

Recent SE4All Action Agendas/ Investment Prospectuses from Senegal, Nepal, Uganda and Tanzania show an increased realization of the benefits of inclusive multi-stakeholder processes, calling for greater engagement with CSOs.

In 2014, civil society groups formed the Alliance of Civil Society Organisations for Clean Energy Access (ACCESS) that aims to advocate for people living in poverty to have access to safe, reliable and affordable energy, and for environmentally sustainable and efficient energy systems globally. ACCESS members work at international, regional and national levels in most energy poor countries in support of SEforALL and SDG 7 implementation, sharing information and best practices.

In future, ACCESS aims to support multi-stakeholder dialogue, for example, through Sustainable Energy Access Forums, working closely with SEforALL's Global Team, national focal points, regional and thematic hubs and other actors to ensure SEforALL activities are based on solid analysis and information and inclusive participation. This will ensure more successful outcomes in terms of delivering SEforALL goals. CSOs are also active within other key SEforALL partners, such as the UN Foundation's Practitioners' Network, the Global Alliance for Clean Cook stoves, and the Alliance for Rural Electrification.

Going forward, to ensure better integration of CSO concerns in SEforALL and SDG 7 processes, CSOs recommend:

- Targeted support is provided for national multi-stakeholder processes to develop SDG 7 implementation, building on existing SEforALL processes where appropriate.
- Support for CSOs at the national level to participate in SEforALL and SGD 7 planning (e.g. consultations at local levels, invitations to events, and provision of timely information).
- Inclusion of CSOs in international discussions around SDG 7 implementation.

[41] Gallagher,M., and Wykes, S., (2014) *Civil Society Participation in the Sustainable Energy for All Initiative: A survey of six countries,* Rugby, UK: Practical Action Publishing http://pubs.iied.org/G03878.html

[42] Guidelines for Multi-stakeholder Consultations in the SEforALL Country Action Process: http://www.SEforALL.org/sites/default/files/l/2014/02/Stakeholder-Guidelines-final-draft.pd

- Support collaboration between CSOs working on SDG 7 and delivery of other SDGs (e.g. health, education) through capacity building and information exchange on nexus issues, gender equality and women's empowerment.

Box 3. Case Studies from Kenya and Indonesia

Kenya - The processes for developing Kenya's SEforALL Action Agenda and Investment Prospectus illustrate the benefits of an inclusive participation by all stakeholders, including CSOs, and the risks of not promoting inclusive participation. Initially, CSOs were given very limited opportunities to input and concerns were raised about limited access to information and participation. Although the Action Agenda recognised an enormous gap around energy access for cooking and gender issues, this was not reflected in the Investment Prospectus, which overlooked the potential benefits of off-grid electricity generation for the majority of the population living in rural areas. Following requests for input from national CSOs and practitioners, with the support of the ACCESS Coalition, the Investment Prospectus developed a greater focus on cooking and decentralized energy. Gender equality, women's empowerment and links with water and agriculture were also strengthened. Feedback processes were formalised through the formation of a Technical Committee made up of CSOs and private sector as well as the Ministry of Energy and Petroleum. Greater inclusion of CSO feedback meant the SEforALL outcome in Kenya is now better tailored to the real energy needs of communities and to national realities. Learning from the lessons of the Kenya SEforALL process could help other countries build more successful outcomes.

Indonesia - In Indonesia, CSOs formed a coalition to work on sustainable energy access for all. They advocate for greater progress towards universal energy access to both electricity and cooking fuel. The Coalition monitors the implementation of Government projects, and influences policy and the regulatory framework. Their rich experiences in delivering energy services at community level, including developing and deploying technology for cleaner cooking, and community empowerment can serve as best practice for scaling up appropriate business models and approaches, and new policies and planning approaches for delivering energy access on the ground. Sumba Iconic Island provides an inspiring example of this, with local and national government, CSOs and companies actively working together in reaching 100 percent access to renewable energy. The Indonesian government has decided to replicate this approach for 100 percent clean energy Bali. CSOs in Indonesia are also providing innovative solutions with limited energy access in East Indonesia, building on the capacity of women led micro and small enterprises to scale up last mile energy service delivery.

Contributions were received from many SEforALL partners, including ACCESS, AfDB, ADB, DESA, ECA, ESCAP, ECLAC, ESCWA, Global Compact, IDB, IRENA, OHRLLS, SEforALL Africa Hub, SEforALL Asia Hub, SEforALL Energy Efficiency Hub, SEforALL Knowledge Hub, SEforALL LAC Hub, UNECE, UNEP, UNDP, UN-NGLS, UN-Women, WHO, and the World Bank.