

UN-Energy

**Activities of Member Organizations and Partners of UN-Energy in support
of “2014-2024 United Nations Decade of Sustainable Energy for All”**

March 2016



**SUSTAINABLE
ENERGY FOR ALL**

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ABBREVIATIONS

APEF	Asian and Pacific Energy Forum
CEB	UN Chief Executives Board
ECA	Economic Commission for Africa
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GTF	Global Tracking Framework
GW	Gigawatt
HIO	High Impact Opportunity
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
kWh	Kilowatt-hour
LDC	Least Developed Countries
MDG	Millennium Development Goals
PM	Particulate Matter
REN21	Renewable Policy Network for the 21 st Century
SE4ALL	Sustainable Energy for All
SDG	Sustainable Development Goals
UNCDF	United Nations Capital Development Fund
UNCTAD	United Nations Conference on Trade and Development

UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children’s Fund
UNIDO	United Nations Industrial Development Organization
UNITAR	United Nations Institute for Training and Research
WBG	World Bank Group
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development

Introduction

The United Nations General Assembly in 2012 unanimously approved a resolution declaring the decade 2014-2024 as the Decade of Sustainable Energy for All (SE4ALL)¹. The resolution builds upon the accomplishments of the SE4ALL initiative and stresses the need for a coherent and integrated approach to energy issues and sustainable development. It remains a declaration that has set the stage for a greater emphasis on long-term energy sustainability. The Decade initiative is indicative of an era when Member States have a rising interest in energy issues and recognize the importance of increasing the use of renewable energy resources, providing modern energy access to all, and improving energy efficiency.

The SE4ALL initiative has promoted synergies across the global energy agenda for sustainable development. It creates a platform for increasing engagement with governments, the private sector, and civil society in activities necessary to reduce poverty, achieve sustainable development, address the challenges of climate change, and achieve national sustainable energy for all by 2030. The Decade is working to create a more coordinated global plan of action. In 2015 SE4ALL has placed emphasis on the clear nexus that exists between energy and other development factors, including water, food security, health, education, gender equity and poverty. Understanding the interactions between energy and such priority areas of development is fundamental to meeting the objectives of SE4ALL.

2015 was also the year that Member States adopted the 2030 Agenda for Sustainable Development, as an outcome of the Rio+20 Conference in 2012 when Member States committed to reinvigorating the global partnership for sustainable development. The 2030 Agenda includes 17 Sustainable Development Goals (SDGs) and 169 targets. Goal 7 is a stand-alone fully dedicated goal on energy. Energy SDG 7 calls to “ensure access to affordable, reliable, sustainable and modern energy for all.” SDG 7 has five targets, two of which are means of implementation. The first 3 targets of Energy SDG 7 match closely the three objectives of the SE4ALL initiative; efforts to achieve SDG 7 will also be in line with achieving the SE4ALL objectives.

The SE4ALL initiative has laid the foundation for helping to achieve the Decade objectives. The initiative uses tools to grow global awareness and institutional capacity. A major accomplishment is the Global Tracking Framework (GTF) which has established baseline energy data and a methodology to monitor progress to improve accountability and transparency. In 2015 the second GTF has begun to measure whether action on sustainable energy is bearing fruit. Through its monitoring and reporting, SE4ALL and the Decade heighten the call for action on energy worldwide.

Record investments are needed to propel innovation, development, and commercialization of environmentally sound energy technologies. GTF 2015 data shows that there have been notable advances in electrification. The annual growth in access to electricity during the SE4ALL tracking period (2010-2012) reached 0.6 percent, approaching the target growth rate of 0.7 percent required to reach universal access by 2030. In terms of energy efficiency, progress in reducing global primary energy intensity has been substantial, though still only two-thirds of the pace needed to reach the SE4ALL objective. Lastly, the growth of renewable energy final consumption

¹ A/RES/67/215

continued to accelerate in recent years, yet the rate of progress will need to increase over 50 percent to reach the objective. To significantly increase contributions to the world's energy systems and to guarantee modern energy services to everyone, ample cooperation between a diverse array of stakeholders, concrete project actions, improved supportive institutional frameworks, and substantially increased flow in finance towards clean energy investments are all actions that are needed.

The SE4ALL Global Action Agenda identifies 11 'Action Areas' to achieve the three objectives. These thematic focal areas provide a framework for identifying High Impact Opportunities (HIOs), a way to organize multi-stakeholder actions across all relevant sectors of the economy, and serve as tangible entry points for stakeholders interested in taking action in specific areas of interest. The Action Areas include seven 'sectoral' areas: (1) modern cooking appliances and fuels; (2) distributed electricity solutions; (3) grid infrastructure and supply efficiency; (4) large-scale renewable power; (5) industrial and agricultural processes; (6) transportation; and (7) buildings and appliances. There are also four 'enabling' Action Areas: (1) energy planning and policies; (2) business model and technology innovation; (3) finance and risk management; and (4) capacity building and knowledge sharing. As a result of the Global Action Agenda, hundreds of leaders from countries, businesses, civil society organizations, and international organizations have also come forward with concrete commitments. Many countries and regions have endorsed Sustainable Energy for All as a priority through explicit declarations and commitments to action.

Due to the many clear linkages between energy, poverty reduction, and sustainable development, UN organizations have taken this opportunity to undergo a number of activities to scale up the efforts to eradicate energy poverty. Several UN organizations that work in the field of energy are members of UN-Energy, which was formed under the auspices of the UN Chief Executives Board (CEB) in direct response to the request by the 2002 World Summit on Sustainable Development (WSSD), to support system-wide interagency coordination on sustainable development. UN-Energy is the principal collaborative mechanism to ensure that UN work on energy is undertaken in a coherent, coordinated and mutually supportive manner.

In May 2015, the Second Annual Sustainable Energy for All Forum was held, the overarching theme of the Forum was "Financing Sustainable Energy for All", including the launch of a new Global Sustainable Energy for All Commitment Platform. In focusing on how to act, the Forum included over 70 solution-oriented multi-stakeholder sessions for SE4ALL partners from all over the world, and from a variety of sectors. The Forum also offered new approaches to track progress towards 2030 based on the 2nd biennial Sustainable Energy for All Global Tracking Framework.

The Sustainable Energy for All Forum is intended to become the meeting place for the extended global energy community. SE4All Forum aims to:

- Report and assess progress on the Sustainable Energy for All initiative;
- Inspire actions and solutions by sharing knowledge, innovation and success stories across the world;
- Present ideas and mechanisms to catalyze finance at the scale required to achieve Sustainable Energy for All;
- Grow the broader movement of global stakeholders to advance the United Nations Decade of Sustainable Energy for All.

UN-Energy Member Contribution to The Decade

The following section of this report summarizes the major ongoing and future activities by UN-Energy member organizations in support of The Decade.

I. Economic Commission for Africa (ECA)

The Economic Commission for Africa (**ECA**), in partnership with the African Union Commission (AUC), the NEPAD Planning and Coordinating Agency (NPCA) and the Institute for Economic Development and Planning (IDEP), is implementing a project which explores and promotes modern biofuels development in Africa, particularly providing policy and regulatory support. It is expected that the project will lead to (a) an establishment of harmonized financial, institutional and policy frameworks for the promotion of biofuels mainly for household and transport end uses in Africa; (b) an enhanced capacity of African countries to formulate and implement gender sensitive policies and programmes on biofuel development; and (c) an improved capacity of African countries, particularly project developers, to package biofuels projects for investment.

This project is implemented to support the United Nations *Sustainable Energy for All* (SE4All) initiative and the AUC *Bioenergy Policy Framework and Guidelines*. The AUC Bioenergy Policy Framework and Guidelines, which was endorsed by the African heads of state and government in January 2013, (a) builds consensus on shared framework that inspires and provides guidance to individual African countries and regions in developing bioenergy policies and regulations; and (b) enhances awareness among African policymakers and civil society on the need for environmentally friendly and socially acceptable bioenergy development policies. This project is also implemented within the framework of IRENA's African Clean Energy Corridor (ACEC) programme, which aims to (a) identify renewable energy development zones to cluster solar, wind, geothermal or biomass projects; (b) facilitate government planning so that renewable energy has a bigger share of the energy mix; (c) foster new financing models and investment frameworks to rapidly get projects on the ground; and (d) build local knowledge base and lead public information campaigns.

The overall objective of the project is to build the capacity in order to promote the production and usage of biofuels, as well as to achieve sustainable development and poverty reduction. The main activities of the project are as follows:

- Case studies on the experience of enabling policies and regulatory reforms that facilitate the adoption of the biofuels technologies.
- Regional capacity building workshops based on case studies to share the lessons learned, and link these lessons to local context and experience.
- Guidelines, training materials and manuals, model agreements and standards for creating a harmonized enabling environment for uptake of biofuels in Africa.
- Regional Training workshops on: (a) policy and regulations (formulation); (b) establishing the national systems of innovation (linking R&D to industrial policy); (c) biofuels standards or standardisation; (d) biofuels project development; and contract negotiation (financing).

ECA also provides specific and demand-driven technical assistance to identified countries on how they can develop and modernise the biofuel sector in order to generate modern electricity, heat energy, and/or transport fuels.

The beneficiaries of this project are all African countries, especially those that have included the development of biofuel in their strategic energy development plan. It has been realized that African best examples of modernizing the biofuels sector are not shared. The project will chronicle lessons learned from the following countries:

- South Africa,
- Mauritius,
- Rwanda,
- Ethiopia,
- Kenya,
- Burkina Faso,
- Cameroon

These examples, which detail the role that biofuels play a role in the producing heat, electricity and transport fuels will spur on the coordinated and harmonized approach across Africa. The countries are benefitting by participating in regional capacity building workshops as well as training workshops that take place in the course of implementation of this project. It is expected that the outcomes and lessons learned will spur country led or regionally conceived biofuels programmes. The countries below have the high potential for biofuels, as but less coherent strategies to harness them:

- Swaziland,
- Burundi,
- Botswana,
- Malawi,
- Tanzania,
- Uganda, and
- Madagascar

They are also countries with least developed biofuels programmes, but highest potential. In 2015, these countries receive technical assistance on how they could develop and modernise this sector, especially with regards to policy and regulatory assistance, and project packaging.

II. United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (**UNFCCC**) has near universal membership with 196 Parties, and is the parent treaty of the 1997 Kyoto Protocol. The Kyoto Protocol has been ratified by 192 of the UNFCCC Parties. The ultimate objective of both treaties is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system.

Under the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), the UNFCCC Parties initiated two workstreams, one aiming to develop an agreement applicable to all Parties

under the Convention, to come into effect and be implemented from 2020 (the 2015 agreement) and the second addressing matters related to pre-2020 ambition. As part of workstream 2, in 2014, Parties decided to accelerate the technical examination process to identify effective pre-2020 climate policy options and opportunities, and facilitate their implementation by Parties and non-State actors. This process covered a series of in-session technical expert meetings (TEMs) held in 2014-2015, and preparation of a series of five technical papers on mitigation benefits of policies, and the Summary for Policymakers as a way to compile and disseminate information emanating from the TEMs.

Delivering the technical examination of policy options with high mitigation potential and adaptation, health and sustainable development co-benefits, the UNFCCC involved a broad range of stakeholders, including international and UN organisations and partnerships, national and subnational authorities, representatives of private sector, NGOs, academia and others. Among such partners, the Sustainable Energy for All and its Energy Efficiency Hub (the Copenhagen Centre on Energy Efficiency (2C2E)) and its Renewable Energy focal organisation – the International Agency for Renewable Energy (IRENA) - are the lead organisations involved in the examination of opportunities to unlock the potential for deployment of renewable energy (RE) and energy efficiency (EE), including in urban environments, and organisation of the technical expert meetings (TEMs) on these topics that were held in March 2014 and June 2015² in Bonn, Germany.

As the result of this collaboration, the SE4All, 2C2E and IRENA together with the UNFCCC facilitated the technical examination process, which demonstrated best practice policy options and enabling practices in the two thematic areas with the significant mitigation potential by 2020. This work can lay the foundation for the effective implementation of post-2020 climate agenda. In addition, this technical process highlighted inspirational and successful examples of best practice policies that present valuable lessons and approaches that may be replicated and scaled up in the context of unique national circumstances across the world. Most of the identified policy options contribute to progressive efforts undertaken across the UN to implement the objectives of the SE4All Global Action Agenda and its Action Areas.

To recognise the efforts undertaken by non-State actors as well as by various international organizations, business companies and others, the UNFCCC launched in 2014 together with the Peruvian Presidency of the Conference of Parties the NAZCA portal. The UNFCCC plays a catalytic role in supporting developing countries deploy the effective policies, overcome implementation barriers and realize mitigation potential before 2020.

The UNFCCC works on enabling developing countries through its constituted bodies such as Technology and Financial Mechanisms, the Clean Development Mechanism (CDM), the Climate Technology Centre and Network (CTCN), the Technology Executive Committee (TEC), the Green Climate Fund (GCF) and the Global Environment Facility (GEF).

The Clean Development Mechanism (CDM) is the only existing instrument capable of delivering cash flow at scale to investments with GHG emissions reduction benefits in developing countries. It is also one of the main UNFCCC mechanisms to (i) incentivize cooperative mitigation activities in developing countries, (ii) catalyze low carbon energy development and (lii) while

² Detailed information on the TEMs held under the ADP in March 2014 and June 2015, including the summaries of the discussions at the meetings, is available at <<http://unfccc.int/bodies/awg/items/8112.php>>, <<http://unfccc.int/bodies/awg/items/8113.php>>, <<http://unfccc.int/bodies/awg/items/8895.php>> and <<http://unfccc.int/bodies/awg/items/8896.php>>.

monitoring/reporting/verifying (MRV) transparently the mitigation outcomes and assisting developing countries in the achievement of their sustainable development goals. This has resulted in significant transformational changes to the energy sectors of many developing countries.

Mitigation actions under the CDM in the energy sector have contributed to improving energy efficiency, increasing the share of the renewable energies and ensuring enhanced energy access since 2008.

CDM has and will continue to enable actions in the seven sectoral areas of SE4ALL Global Action Agenda. It can claim investments in:

- (a) modern cooking appliances and fuels: 40 projects and 50 programmes of activities (PoAs) in 39 countries, having distributed over 2 million cookstoves;
- (b) distributed electricity solutions: over 15 billion USD investment in 14600 MWs (design capacity) in 64 countries;
- (c) grid infrastructure and supply efficiency: 176 projects and 7 PoAs in 32 countries;
- (d) large scale renewable power: over 277 billion USD investment in 207000 MWs (design capacity) in 77 countries;
- (e) industrial and agricultural processes: 948 projects and 8 PoAs in 40 countries;
- (f) transportation: 29 projects and 5 PoAs in 10 countries; and
- (g) buildings and appliances: 85 projects and 39 PoAs in 34 countries.

The CDM also facilitates supplemental public financing that leverages private financing for sustainable energy projects, which enables financial flows to developing countries. It has leveraged private investment 10 times the public funds allocated. For renewable energy projects, a significantly stronger leverage effect of 18 times has been observed.

In addition, and as a part of its mandate of facilitating provision of support for design and implementation of nationally appropriate mitigation action (NAMA), UNFCCC secretariat set up NAMA registry in 2013. The registry aims to facilitate the matching of finance, technology and capacity-building support with NAMAs³.

Currently, the registry contains a total of 101 NAMAs submitted by 27 developing countries. These countries are either seeking international support for design and implementation of their NAMAs or seeking recognition for NAMAs that are being implemented using domestic resources. Twenty-three out of the twenty-seven countries have submitted NAMAs that include elements of renewable energy transition. UNFCCC secretariat is actively working with donor institutions and private investors to ensure provision of support for design and implementation of the renewable energy NAMAs. The secretariat will continue to provide support to developing countries to facilitate their transition into a sustainable energy future.

III. United Nations Development Programme (UNDP)

The 2014 to 2024 Decade provides the UN system in general and **UNDP** in particular with a platform for increased engagement with governments, the private sector, and civil society in activities that are critical to reducing poverty, achieving sustainable development, and addressing

³ Decision 1/CP.16, paragraph 53.

the challenges of climate change to achieve national SE4ALL goals for 2030. UNDP will work across sectors to identify ‘triple-win’ solutions to simultaneously grow economies, reduce inequalities and poverty, and protect the environment while working with diverse partners in inclusive ways to attain transformational change. UNDP will ensure the Decade’s activities are linked to national development priorities of developing countries in the context of the post-2015 sustainable development agenda, sustainable development goals, follow-up actions of the Rio+20 Conference on Sustainable Development, and the on-going climate change discussions under United Nations Framework Convention on Climate Change (UNFCCC).

UNDP has identified sustainable energy and addressing the challenges of climate changes as priorities in its 2014-2017 Strategic Plan. Its role in the SE4ALL initiative and the Decade is clearly shaped by its mandate within the UN System and its work in sustainable development, poverty reduction, human development, and its universal presence in developing countries. Both the Decade and SE4ALL recognize that universal access to energy services in developing countries would reduce poverty, improve living conditions and standard of living for the majority of the world’s population, and it is essential for sustainable development and to achieve the MDGs.

UNDP will continue to assist countries to integrate energy goals into national development strategies. UNDP will, in collaboration with key partners, provide technical advice to develop specific sustainable energy solutions especially related to ‘bottom up’ decentralized energy options. As an example, UNDP is collaborating with the African Union / New Partnership for Africa’s Development (NEPAD) Planning and Coordinating Agency in partnership with the African Development Bank and others to assist countries in achieving sustainable energy goals. Through this collaboration, UNDP provides technical assistance targeted at scaling up feasible decentralized energy solutions to expand bottom-up approaches to specific demand sectors such as education, health, agriculture, youth employment, small enterprises, and rural and urban housing. The scale-up of energy solutions will be implemented through UNDP’s various energy and climate change programmes, notably GEF-supported climate change projects, UNDP global, regional, and country office sustainable energy programmes, low carbon emission programmes, and the UNDP-implemented GEF Small Grants Programme.

As an implementing agency of the GEF, UNDP has two decades of experience in designing and implementing market transformation initiatives for sustainable energy and climate change mitigation activities. This experience will provide a robust basis to support achieving SE4ALL targets. Under the work of the UNDP-GEF, UNDP will support the Decade by implementing three signature programmes:

- *Clean Energy: Promoting Access to Clean and Affordable Energy Systems and Services.* The urgent need to achieve greater access to clean energy for the poor is addressed while enhancing the quality, security, and affordability of energy services. In this programme, UNDP promotes distributed clean energy systems, focusing mainly on sustainable use of biomass and other renewable energies, delivering on-grid and off-grid electricity solutions, providing clean fuel for heating and cooking, promoting greater efficiency, and the productive use of energy.
- *Urban Infrastructure: Promoting low emission and climate resilient urban and transport infrastructure.* UNDP promotes low emission urban and transport infrastructure and systems by integrating energy efficiency in buildings, clean energy production, waste

management, synergies in select industries, in particular those using ozone depleting substances, and promoting sustainable, climate resilient urban and transport system planning and design.

- *Access to New Finance Mechanisms:* UNDP-GEF is managing the MDG Carbon Programme to develop Clean Development Mechanism (CDM) projects with high development benefits in under-represented countries. The focus is shifting towards economy of scale approaches, such as Nationally Appropriate Mitigation Actions with a focus on rural electrification to increase the access to energy for rural communities.

Projects and programmes supported by UNDP going forward will assist governments and their development partners to: scale up off-grid, mini-grid, and decentralized grid-connected energy solutions; establish optimal policy, regulatory, and financial frameworks for energy service provision; strengthen energy supply chains via capacity development, standardization, and training for users and technical providers; create income generation and entrepreneur opportunities in the energy sector; apply innovative financial approaches such as microfinance to energy services; and develop national and local capacities to implement and monitor results of energy access policies and programmes.

Support for the Decade will broadly include the establishment of national targets and policy frameworks for renewable energy and energy efficiency, and developing regulatory frameworks that provide technical regulations and conditions for the installation of renewable energy generation plants and their connection to the grid. Other areas of support include generating methodologies for calculating costs for renewables-based electricity, standardised contract modalities (e.g., power purchase agreements) for buying back electricity from renewable energy generation, and establishing energy efficiency standards and labels for buildings and appliances. UNDP will design and implement financial mechanisms and incentive schemes to lower risks of clean energy investment, especially at the community level, which may include setting up enabling mechanisms such as feed-in tariffs, supporting local microfinance organizations, or establishing dedicated national clean energy climate funds. UNDP seeks to develop local manufacturing, engineering, operation, and maintenance capabilities along the energy supply chain, and strengthen capacity of national and local governments to implement, coordinate, and monitor the results of clean energy policies.

Through its UN Resident Coordinators (RC) system, UNDP will play a key role in mobilizing key constituencies at the country level through the UN RC system in support of the Decade. This is critical for success to create enthusiasm and support at the country level. UNDP will ensure that UN Country Teams have a clear and thorough understanding of SE4ALL and Decade objectives, e.g., while in dialogue with national authorities. UNDP will leverage its capacities at the global level as chair of the UN Development Group and at the country level as host of the UN RC system to ensure: coordinated engagement from the UN System and close collaboration with other development partners under the leadership of the government; the range of stakeholders needed to build momentum for scaled-up action goes well beyond the energy sector; and that the Decade activities promote initiatives that remain inclusive in supporting poor and disadvantaged groups.

IV. World Bank Group

World Bank Group engagement in the energy sector is designed to help client countries secure the affordable, reliable, and sustainable energy supply needed to end extreme poverty and promote shared prosperity. The Bank Group pursues a portfolio approach, which includes support for investments in power generation that are least-cost and sustainable, strengthen and expand transmission and distribution power networks, and that improve efficiency through technical assistance and advisory services. These activities can help countries improve the performance of electricity utilities, bring greater rigor to governance, and offer guidance on policy and regulatory frameworks to attract and increase the impact of public and private sector investments. The World Bank Group aligns its work on energy with Sustainable Energy for All (SE4All), an initiative co-led and chaired by UN Secretary-General Ban Ki-moon and World Bank Group President Jim Yong Kim. SE4All aims to achieve three goals by 2030: universal energy access; doubling the rate of improvement in energy efficiency; and doubling the share of renewable energy in the global energy mix. The three targets were recently adopted as one of the UN's Sustainable Development Goals.

The World Bank Group is maintaining support for a wide range of energy projects. World Bank Group energy financing, including IBRD, IDA, IFC and MIGA guarantees totaled \$6.5 billion in FY15. Of that amount, about \$2.4 billion was for renewable energy and energy efficiency projects and programs. Since 2010, the World Bank Group has provided more than \$21 billion for renewable energy and energy efficiency projects and programs, which is just over 40% of all energy financing of more than \$49 billion (or nearly \$50 billion) over the same period. These projects include financing by the International Finance Corporation (IFC).

World Bank Group-supported programs include:

- World Bank Group-financed and largest private sector-led solar initiative in the Middle East and North Africa region – a solar park in Jordan that will generate sustainable power for a region where demand for electricity is rising rapidly every year.
- World Bank-financed electrification project in Bangladesh to promote off-grid electricity in rural communities. In 2015, the project became the first renewable energy program in Bangladesh to be issued carbon credits for lowering greenhouse gas emissions. This is one of the fastest growing renewable energy programs in the world – to date, more than 3.5 million solar home systems have been installed in rural Bangladesh, creating 70,000 direct jobs.
- National Electrification Plan in Myanmar with support from the Bank's Energy Sector Management Assistance Program (ESMAP) will create 7.2 million new household connections over the next 15 years, requiring a doubling of the current rate of grid extension and a total of \$6 billion in investments.
- 'Lighting Africa' program which, since implementing its first pilot projects in Ghana and Kenya in 2007, has already enabled more than 35 million people across Africa to access clean, affordable, safer lighting and energy. It aims to reach 250 million more people by 2030 and is currently operational in 11 countries: Burkina Faso, the Democratic Republic of Congo, Ethiopia, Kenya, Liberia, Mali, Nigeria, Senegal, South Sudan, Tanzania, and Uganda, with plans to continue to extend activities across the continent.

The Bank Group is also supporting SE4ALL through an SE4ALL Knowledge Hub, which includes the second edition of The Global Tracking Framework. While the first edition, released in 2013, measured progress between 1990 and 2010, this next edition focuses on 2010 to 2012. The report measures how the world is progressing toward Sustainable Energy for All, tracking country-level indicators for energy access, renewable energy and energy efficiency. It shows that while the world is moving in the right direction, we have to accelerate efforts to reach sustainable energy goals by 2030. This report will be generated every two years until 2030 and enable tracking SE4ALL progress towards 2030 targets. The report also provides data-driven guidance on where to focus efforts to achieve the SE4ALL objectives by identifying high-impact countries that offer the most potential to make rapid progress. In the two-year period, the number of people without access to electricity declined from 1.2 billion to 1.1 billion, a rate of progress much faster than the 1990-2010 period. In total, 222 million people gained access to electricity during this period, higher than the population increase of 138 million people. These gains were concentrated in South Asia and Sub-Saharan Africa, and mainly in urban areas. The global electrification rate increased from 83 percent in 2010 to 85 percent in 2012. Another World Bank Group project, *Readiness for Investment in Sustainable Energy* (RISE), provides indicators that compare the investment climate of countries across the three focus areas of the Sustainable Energy for All (SE4ALL) initiative: energy access, energy efficiency and renewable energy.

The World Bank has launched a number of initiatives in partnership with the Energy Sector Management Assistance Program (ESMAP). The **Global Geothermal Development Plan** (GGDP) is an ambitious initiative by ESMAP and other multilateral and bilateral development partners to scale up the use of geothermal power in developing countries. Different from other efforts, GGDP focuses on the cost and risk of exploratory drilling—the primary obstacle to geothermal expansion—by mobilizing substantial new concessional financing for the risky and capital intensive upstream phases of geothermal development in low- and middle-income countries. As of March 2015, the GGDP has raised US\$235 million for the Clean Technology Fund and \$7.5 million for ESMAP; deployed technical assistance to 11 countries; and identified 8 investment prospects.

In 2012, ESMAP launched a major global initiative to support renewable energy resource assessment, mapping, and geospatial planning, including the collection of ground-based data where this does not currently exist. The **Renewable Energy Resource Mapping** initiative covers biomass, small hydropower, solar, and wind, with funding approved for 12 country-specific projects. ESMAP has partnered with the International Renewable Energy Agency (IRENA) to enable the visual mapping outputs from each country project to be accessible through the IRENA Global Atlas, with the measurement data published on the World Bank's Energy & Extractives Open Data Platform.

In October 2014, ESMAP launched the Energy Subsidy Reform Technical Assistance and Delivery Facility—a \$20 million facility, made possible in part by funding from the European Commission—designed to help countries reform their energy subsidies and establish social protection measures to help the poor during the transition.

As part of the World Bank Group's commitment to SE4ALL, ESMAP has launched the **SE4ALL Technical Assistance Program** to help countries achieve the goal of universal energy access. The initial US\$15 million phase of the program, which began in 2013, extends support to 10 countries: Burundi, Guatemala, Guinea, Honduras, Liberia, Mozambique, Myanmar, Nepal, Nicaragua, and Senegal, as well as technical and financing studies to help strengthen regional power pools in Sub-

Saharan Africa.

Also, in 2014, a new **Efficient, Clean Cooking and Heating Partnership**, proposed and managed by ESMAP, will use the comparative advantages of the World Bank Group and its partners to foster public and private partnerships to scale up access to cleaner and more efficient cooking and heating solutions. Initially focusing activities in 10 countries where a foundation for cleaner and more efficient cooking and heating has already been established, the program will build toward achieving health benefits, pinpointing approaches and technologies that reduce exposure to cooking and heating-related pollutants.

Additionally, ESMAP hosts the **SE4All Knowledge Hub**, a joint effort of ESMAP and the World Bank's Energy and Extractives Global Practice, implementing four specific, but complementary initiatives: the Global Tracking Framework (GTF) for SE4ALL; the Multi-tier Framework for Measuring Energy Access; Readiness for Investment in Sustainable Energy (RISE); and the global State of the Energy Access Report.

Other new initiatives include:

- ESMAP's City Energy Efficiency Transformation Initiative (CEETI)—a three-year technical assistance program with an initial budget of US\$10 million—has been assisting municipalities with diagnostics of their energy efficiency opportunities and development of investment programs since its inception in 2013.
- In April 2015 UN Secretary-General Ban Ki-moon and World Bank President Jim Yong Kim launched a global initiative to end the wasteful flaring of associated gas at oil production sites around the world. The "Zero Routine Flaring by 2030" Initiative commits countries and oil companies to not flare gas in new oil field developments and to end existing (legacy) routine gas flaring by 2030.

V. United Nations Environment Programme (UNEP)

Energy is at the heart of sustainable development. **UNEP's** work on energy aims at transforming the way we produce and use energy, mainly by bringing a 'sustainability' dimension into energy sector decision-making and investment. Policy and investment decisions on energy production and use over the coming decade will determine whether the future that we will have will live up to our hopes for the future we want.

The UNEP Medium Term Strategy 2014-2017, through dedicated programmes and projects on renewable energy, energy efficiency, decentralized energy solutions, transport, buildings, cities Short-Lived Climate Pollutants, sustainability criteria, networks and partnerships, and energy and climate finance, directly responds to the call of the Secretary-General for UNEP to remain committed and engaged in the Initiative throughout its lifespan. UNEP will support the Decade by continuing to raise political will and leadership. At UNEP's highest level, the Executive Director of UNEP is a member of the SE4ALL Advisory Board and co-chairs the SE4ALL Energy Efficiency Committee.

The UNEP energy programme and projects support countries' low emission and resource efficient development pathways and provide tools that comprise and combine the areas of policy, technology, and finance to improve energy efficiency in key sectors and increase renewable energy

in the energy mix. Through its efforts, UNEP privileges an integrated approach rather than solely focusing on one objective, to harness multiple benefits and synergistic opportunities, thereby actively contributing to the attainment of sustainable development objectives through a transition to an inclusive Green Economy.

Sustainable energy production and use that aim at minimizing environmental impacts on water, land, air, people, and ecosystems, can become the norm through systematic use of science by decision-makers, whereby trade-offs between policy objectives and business models internalize external costs. Sustainability criteria will be critical to allow informed and insightful decision-making on the energy mix in a given country context, and possible safeguards that need to be put into place, whilst addressing fossil fuel subsidies, latter as recommended in the Rio+20 outcome document. UNEP, as the mandated UN environmental entity and as UN-Energy member, will continue to contribute to multilateral processes on energy in the context of the Sustainable Development Goals and the post-2015 development agenda.

The various activities planned by UNEP include:

(i) Outreach - Targeted outreach activities and multi-media campaigns (such as the ‘We have the power’ which was launched November 2014 in New York) building on the photo essays and photo exhibitions of UNEP sustainable energy projects in several countries, a new energy website, the biannual International Renewable Energy Conference facilitated by REN21 and enhanced coordination with the SE4ALL Global Facilitation Team on communication and events.

(ii) HIOs and Partnerships - UNEP is engaged in multistakeholder partnerships, acting as co-lead on HIOs on lighting and appliance efficiency, on vehicle fuel economy under the framework of the Global Fuel Economy Initiative and on Sustainable Energy Investment (through the Renewable Energy Performance Platform), as well as a partner on Energy Efficiency in Buildings (in association with the UNEP Sustainable Buildings and Climate Initiative and the UNEP Finance Initiative), and the Water – Energy – Food Nexus.

(iii) Energy Efficiency Hub - SE4All’s thematic Hub for Energy Efficiency, initiated and supported by the Government of Denmark, is being operationalized as a satellite to the UNEP Risø Centre. It will be the Champion of EE objective, and will focus on tracking of progress and identifying gaps, knowledge management, particularly analysis of policies and practices and sharing of good practices.

(iv) Knowledge sharing - UNEP was actively involved in the development of the SE4ALL Global Tracking Framework (GTF) Report (2013) and will remain engaged in future editions, planned to be published on a biannual basis. UNEP contributes through publications (Global Environment Outlook, Global Environment Alert Service bulletins, Global Trends in Sustainable Energy Investment with Bloomberg New Energy Finance and Frankfurt School Collaborating Centre, REN21 Renewables Global Status Report, the Clean Energy Voyage report (2013), the clean energy postcard series initiated in 2012 and planned to be an annual feature); and through Networks (regional networks of climate change officers, the Climate Technology Centers and Network).

(v) Science for Policy – The International Resource Panel, whose secretariat is hosted and staffed by UNEP, is publishing an upcoming series on greenhouse gas mitigation technologies to inform decision makers about the impacts of key energy supply and demand technologies. UNEP will also pilot the GBEP voluntary science-based sustainability indicators for bioenergy in two countries.

(vi) Collaborative Action - UNEP will collaborate with other institutions on cross-cutting issues such the Climate and Clean Air Coalition on short-lived climate pollutants; the UNFCCC Climate Technology Centers and Network on pollution reduction, climate mitigation, and clean technology transfer; or the clearinghouse of the 10-Year Framework Programme of Action (10YFP) on Sustainable Consumption and Production that can contribute to networking and information exchange through its online energy efficiency community.

VI. World Health Organization (WHO)

WHO is the directing and coordinating authority for health within the UN system, and is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, providing technical support, and monitoring and assessing health trends. WHO considers the SE4All initiative a landmark opportunity to reduce the enormous disease and death burden associated with the lack of access to clean, modern energy solutions, and inefficient energy use.

Nearly 3 billion people rely upon rudimentary and inefficient coal and biomass stoves for cooking and heating, causing about 4.3 million premature deaths a year from indoor smoke, including over half of all deaths to childhood pneumonia, around 1/3 of all chronic obstructive lung disease deaths, over 1/5 of all deaths to stroke and close to 1/5 of all deaths to ischemic heart disease and lung cancer.

In countries of Sub-Saharan Africa, a recent analysis of nationally representative surveys revealed that 26% of health care facilities lack access to electricity, and fewer than 1/3 of facilities have reliable access, which impedes the use of even the most basic diagnostic and treatment equipment required for obstetric care, preservation of vaccine cold chain, sterilization, and water pumping.

Ambient (outdoor) air pollution from energy inefficiencies in households, building design, transport systems, and power generation, also have considerable health impacts in developed and developing countries. WHO estimates that in 2012, 3.7 million deaths were attributed to such air pollution.

Products of incomplete combustion from biomass or fossil fuels are emitted by inefficient vehicles, cooking, lighting and building heating, and electricity production, as well as from waste incineration and industry. These include very small (<PM10) and fine particles (<PM2.5) that can penetrate deep into the lungs and enter the blood stream.

In recognition of the public health importance of air pollution, in May 2015, the first-ever resolution on air pollution and health was unanimously passed by the World Health Assembly. This resolution

calls on WHO Member States and Secretariat to strengthen multisector cooperation and the dissemination of evidence-based best practices to encourage and promote measures that will lead to meaningful reductions of air pollution including through the use of clean and efficient energy.

Significant health co-benefits can be derived from transitions to clean and efficient energy sources in the workplace, the community, and the home, making health an indicator of progress towards all SE4All goals. Renewable energy sources also generate health co-benefits in cities, homes, work places, and health facilities. For example, small PV solar systems can provide better illumination in small workplaces of the informal sector, reducing indoor exposures to kerosene fumes, injury risks and improving productivity.

Modern, on-site low-carbon energy solutions such as solar or wind power coupled with energy efficiency measures offer significant potential to lower the health sector's carbon footprint, particularly in larger hospitals and health care facilities. Where electricity access is limited, non-existent, heavily reliant upon diesel generators, or in the case of emergencies when local energy grids are damaged or not operational, such solutions can also improve the quality and reliability of energy services. In this way, scaling up access to modern energy services and enhancing energy efficiency in health care will enhance access to essential health services and ensure resilience.

WHO has contributed the following in support of the SE4All initiative main goals via: producing documented evidence about health benefits of clean household fuels and technologies; completion of 'WHO Indoor Air Quality Guidelines: Household Fuel Combustion' and the current development of clean household energy policy planning tool which provide health based guidance for policy-makers and implementers to facilitate the adoption of clean fuels and technologies used in the home; coordinating efforts to enhance and harmonize national household surveys and censuses to tracking energy access in the home; monitoring of energy access as part of the SE4All Global Tracking Framework for universal energy access; updated the WHO database on energy access in health care facilities to include more recent surveys in Sub-Saharan Africa; and the WHO 'Global Ambient Air Pollution in Cities Database' collates ambient air pollutant concentration measurements from 1,600 cities. WHO's 'Global Platform on Air Quality and Health' uses ground-level monitoring, advanced satellite imagery and chemical transport models to monitor air pollution exposure globally. This platform can be used to identify reductions in exposure to health damaging pollutants associated with improvements in energy efficiency. The WHO's new Urban Health Project aims to strengthen the capacity to use health evidence to advocate for and implement plans to improve energy access and energy efficiency in large urban areas of developing countries that lead to the reduction of air pollution.

WHO continues to co-lead the SE4ALL High-Impact Opportunity focused on energy for women's and children's health together with the United Nations Foundation and UN Women. Through this collective effort, WHO will provide leadership on the measurement and monitoring of energy access in health care facilities, including in collaboration with the GTF and related efforts supported by the World Bank; documenting the evidence of impacts of health care facility electrification on health services delivery outcomes and through that on health and well-being; and conducting advocacy and awareness raising, particularly within the health sector, to raise the profile of and demand for sustainable energy solutions for the health sector.

VII. World Meteorological Organization (WMO)

The **WMO**, in its support of developing science-based climate and environmental information, provides the authoritative voice on the Earth's atmosphere for the UN, including its interaction with the oceans, the climate it produces, and the resultant distribution of water resources. Weather, climate, and water affect all areas of human activity, and this information is critical for major decisions concerning, for example, new water supply reservoirs, plans and infrastructure for expanding settlements, and economic policy targeting climate-sensitive industries such as tourism, renewable energy, and aquaculture. Although the concept of climate as a resource seems straightforward enough, its optimal management may demand intensive scientific and multidisciplinary approaches, which can be an additional challenge to the scientific community, development practitioners and stakeholders. Furthermore, climate information is critical for the safety and basic operations of hydropower and other energy sources such as fossil fuels, wind, solar, and fuel wood.

WMO's programmes such as the World Climate Programme (WCP), including the World Climate Research Programme (WCRP) and co-sponsored bodies like Intergovernmental Panel on Climate Change (IPCC), mobilize the scientific community to contribute to climate change studies and assessments and improves the understanding of policy makers (e.g., on long term trends of climate-dependent energy demands). Furthermore, WMO's Commission for Climatology (CCI) provides leadership in promoting expertise and international cooperation in climatology. WMO significantly improved the global networks of solar radiation stations, hosted by National Meteorological and Hydrological Services (NMHS).

The Global Framework for Climate Services (GFCS) will provide an opportunity for WMO and partner UN agencies to address issues related to user requirements for climate information and energy, and identify and address observational, research, and forecast production needs to improve climate services to the energy sector. The first priorities for GFCS implementation will be for agriculture and food security, health, water, and disaster risk reduction, and energy is inherent in many of these priority areas. Recognizing that with increased climate variability and change, the sensitivity of the energy sector to weather and climate will increase, and thus the demand for climate services for energy, the Seventeenth Session of the World Meteorological Congress (Cg-17), held in June 2015, adopted Energy as an additional priority area of the GFCS. The GFCS will promote the use of climate information for sustainable development and environmental stewardship. WMO is partnering with the International Renewable Energy Agency (IRENA) to develop the Global Solar and Wind Atlas. This work is intended to create a high-quality internet-based platform that will raise awareness of technology opportunities to limit the financial risk of countries and of investors. It will also provide essential information resources to support planning, policy development, and investment. IRENA has contributed to the development of the Energy Exemplar, which contains a set of priority activities and mechanisms that will result in enhanced production and access to climate services by the energy sector. IRENA has accepted the invitation to become member of the

GFCS Partner Advisory Committee of the GFCS. The process to finalize this engagement is underway.

Renewable energy sources have a large potential to displace emissions of greenhouse gases from the combustion of fossil fuels and thereby to mitigate climate change. If implemented properly, renewable energy sources can contribute to social and economic development, an increase in energy access, a secure and sustainable energy supply, and a reduction of negative impacts of energy provision on the environment and human health. Intensive applied research in this sector is underway and it is highly dependent on contribution of the climate science. In terms of energy efficiency, climate has a direct effect on energy issues. Buildings with inappropriate materials and designs require a large amount of energy for cooling or heating depending on the climate and may cause severe power cuts or shortages. Energy-inefficient buildings and cities may impact negatively on the health of the dwellers. With proper climate information and services, the designs, safety and comfort of buildings and cities can be greatly improved. Oil price on the world market is dependent on demand which itself is a function of the expected climate. Noting that half of the world's population currently lives in urban areas, and that by 2050 this number is projected to rise to 70 per cent, and that urban areas are vulnerable to weather extremes including heatwaves, flooding, droughts, storm surge for coastal areas, air pollution and impacts brought about by climate change, which will have impact on energy demand and supply, Cg-17 established a WMO cross-cutting urban focus. This will contribute to the development of integrated urban services for decision-makers, stakeholders and the general public, and to deploy the latest communication technologies in service delivery.

One potential area for future WMO contribution to the Decade scope of work is to implement and sustain the land-based, marine-based, and space-based observing programmes that will inform decision-makers on energy potential at various sites, and therefore on appropriate sites for installation of the expensive renewable energy technologies. Facilitating consistent and reliable access to analysed or modeled data, and climate information based on observed data is also an area for potential collaboration. Further, multidisciplinary international collaboration is required to ensure the appropriate access to and use of reliable climate information in energy planning and decision-making to support sound climate risk management and sustainable development in the energy sector.

VIII. Food and Agriculture Organization (FAO)

Energy, food, and water are inextricably linked with the food production and supply chain responsible for around 30% of total global energy demand and water for energy currently about 8% of global water withdrawals. Food production is the largest user of water at the global level, responsible for 80-90% of blue water use, and by 2050, it is expected that there will be a 60% increase in agricultural demand for food and a 50% increase in energy demand unless waste, losses, and consumption patterns are addressed. **FAO** has shown that around one third of the food we produce is lost or wasted, and with it about 38% of the energy

consumed in the agrifood chain. In developing countries, food losses are often due to lack of access to energy for adequate storage, processing, transportation and distribution.

With regard to food security and nutrition, energy is critical in four ways: (i) energy is needed for production, storage, distribution, preparation, and cooking (so, at every stage of the agrifood chain) 5; (ii) energy prices influence the price of agricultural inputs and therefore food prices and farmers' income; (iii) biofuel development can influence food prices, food security, and nutrition in a positive or negative way depending on local circumstances; and (iv) reducing time spent by women in particular on household tasks, which frees up alternative uses of their time. When considering the link between water, energy, and food, a nexus approach is therefore needed to address the current and future interconnected water-energy-food security needs in an integrated way.

In addition to the agrifood sector producing over 20% of global greenhouse gas emissions, another concern is that the 60% projected increase in food demand by 2050 will primarily result from yield increase, hence more fossil fuel dependence if the modernization of agrifood systems follows the conventional pathway; which have grown reliant on fossil fuel. Future increases in productivity may be constrained by the limited future availability of cheap fossil fuel supplies, and the need to limit their use for climate change management purposes. With higher and increasingly volatile fossil fuel prices foreseen in the future, these consequences are likely to become even worse, given the close links between fossil fuel and food prices. In green economies, new development paths are sought that put agriculture and economic equity at the centre. The agrifood chain, the supply chain from field to the plate, can be part of the solution. Agrifood systems have a unique link with energy in that they can both consume and produce energy. This allows for the challenges of the 'food-energy-water-climate change nexus' to be addressed from both energy-used and energy-produced by agrifood systems. FAO's multipartner programme, 'Energy Smart Food for People and Climate' (ESF), represents its commitment to the implementation of the SE4ALL initiative. The food-energy-water or climate-land-energy-water-development nexus is an important element to consider in achieving food security and sustainable development. The ESF seeks to address these challenges by working towards the SE4ALL goals at all stages of the agrifood chain.

Energy Smart Food Systems promote improved energy efficiency, diverse energy sources with gradual increase in the use of renewable energy, and improve modern energy access in agrifood chains. Examples of ESF activities that will continue into the Decade include: supporting countries in the assessment water-energy-food nexus situations (context and/or interventions) in the context of climate change; improving energy efficiency and increasing the use of renewable energy; an improving access to affordable modern energy services at different stages of the agrifood chain in particular to reduce food losses with an emphasis on post-harvest stages; improving the sustainability of production and use of energy in emergency / rehabilitation situations ; and supporting the promotion of sustainable bioenergy through the availability of FAO's Sustainable Bioenergy Support Package, and its significant role as Secretariat and active Partner of the Global Bioenergy Partnership (GBEP). Further, FAO has prominent roles in two HIOs of the SE4ALL Global Action Agenda: co-chairing (with RSB) of the HIO on Sustainable Bioenergy; co-chairing (with Germany) the HIO on "Water-Energy-Food Nexus", and follow up on the implementation of post-2015 targets and indicators related to the linkages between SE4ALL objectives and food security.

IX. United Nations Industrial Development Organization (UNIDO)

UNIDO believes that the Decade offers a unique opportunity for the launch of new partnerships, programs, and initiatives to implement the SE4ALL objectives, which will be a crucial window of opportunity to drive transformational change. UNIDO is therefore committed to fulfilling its unique role in the context of the energy and climate change agenda of the Sustainable Development Goals, as a catalyst for scaling up investments in clean energy solutions, strengthening policy frameworks to create an enabling environment, and to secure funding for increased market penetration of renewable energy, energy efficient and low-carbon technologies that promote sustainable industrial growth.

In fulfilling its mandate as a specialized agency of the UN, UNIDO has continued to promote sustainable energy solutions for Inclusive and Sustainable Industrial Development (ISID) of partner countries through delivery of technical assistance. In 2015, UNIDO's Sustainable Energy Portfolio totaled at US \$275 million in grant funding, with US \$1.5 billion in planned co-financing, encompassing a wide coverage of more than 90 renewable energy, energy efficiency, and low-carbon technology programmes and projects. UNIDO's technical cooperation portfolio centers on three strategic pillars, namely:

- **Renewable energy for productive uses:** for enhancing greater use of renewable sources of energy by industry and facilitating access to affordable and sustainable energy by the communities in rural areas to support productive activities as sources of income and employment opportunities and further contributing to the mitigation of climate change in developing countries and countries with economies in transition.
- **Industrial energy efficiency:** for promoting the efficient use of energy by industry and the dissemination of industrial energy efficiency best operating practices and technologies in order to accelerate economic growth and enhance competitiveness and job creation, while addressing climate change.
- **Climate policy and networks:** responds to increasing demand for innovative partnerships, multi-level and integrated solutions to address the energy, climate and development challenges simultaneously.

Building on its strong expertise and experience in technical cooperation, UNIDO has also received requests from stakeholders for capacity building and policy advice in support of access by developing countries to clean and efficient energy for productive uses. In addition, UNIDO recognizes the leveraging power of partnerships, and been championing the Global Network of Regional Network of Regional Sustainable Energy Centres (GN-SEC), a world-wide network of knowledge management institutions that build capacities, design and implements energy projects with a regional approach that seeks to provide sustainable energy solutions at the country level. GN-SEC is a powerful global south-south, multi-stakeholder partnership that is coordinated by UNIDO together with various regional economic communities and organizations. Energy partnerships with regional development players allow an opportunity to incorporate value added chains, knowledge management and capacity building in national and regional wealth-creation systems, as well as for promoting their energy security and climate resilient industries, and offers a powerful platform to promote Sustainable Energy For All and Climate Resilience.

In direct support of Sustainable Energy for All goals, UNIDO, in cooperation with the Institute for Industrial Productivity (IIP) and The Energy and Resources Institute (TERI), has launched a new

platform for global action on industrial energy efficiency as part of the SE4all energy efficiency accelerators platform in April 2015. The platform brings together a number of key partners with specialized knowledge and expertise on industrial energy efficiency in support of the sustainable development goal 7, particularly, doubling the rate of energy efficiency in the industrial sector through promoting targeted implementation of energy management systems in energy intensive industries accounting for 50 per cent of industrial energy use. The accelerator will serve as a knowledge platform for developing and sharing best practices and information on energy management in the industrial sector, including policies, tools and instruments. Further, it would provide analytical support at the regional, national and sub-national levels to evaluate the efficacy of various policy options.

Another flagship initiative of UNIDO is the Vienna Energy Forum, successfully held for the fourth time on 18 to 20 June 2015, at the Hofburg Palace in Vienna. The Vienna Energy Forum (VEF) 2015 clearly demonstrated once more that sustainable energy is a key foundation for inclusive and sustainable industrial development and is inextricably linked with achieving the Sustainable Development Goals and combating climate change. VEF 2015 was attended by over sixteen hundred participants, including Ministers, Vice-Ministers, high-level government officials, and Permanent Mission representatives, Chairs of the regional groups, donors, as well as representatives of the European Union (EU), the private sector and development finance institutions. The event was organized by the UNIDO, the Federal Ministry for Europe, Integration and Foreign Affairs of Austria, the International Institute for Applied Systems Analysis (IIASA), the Austrian Development Agency (ADA), and the United Nations Secretary-General's Sustainable Energy for All (SE4All) Initiative. The VEF 2015 generated concrete inputs, in the form of 8 key messages, for the anchoring of sustainable energy for inclusive development in the Post 2015 Development Agenda and for the successful conclusion of a comprehensive and effective climate agreement.

UNIDO is also leading clean technology innovation and transfer through three of its flagship programmes:

- **The Global Cleantech Innovation Programme (GCIP) for SMEs** was launched with the financial support from the Global Environment Facility (GEF) with an aim for promoting clean energy technologies innovation and entrepreneurship in SMEs. For channeling innovative clean energy solutions and for greening SMEs, business, government and academia have to be brought together to enhance and strengthen the policy framework, research, and finances as well as overall entrepreneurial environment. Therefore, a multi-tiered trans-sectoral and inter-disciplinary approach is necessary to build a sustainable innovation ecosystem that can facilitate and foster innovative energy solutions across the SME sector. The programme is built on some strong pillars - Supporting Innovation Ecosystem; Development of strong entrepreneurship; Enhancing access to venture capitalists, angel investors and grant funding; Mentoring and Training of clean energy technology start-ups; and Bankable start-ups for scaling up operations. The project is currently completing the second cycle of the Cleantech Competition and Accelerator Programme. In 2015, GCIP-SA supported 28 semi-finalists, from 120 qualified applicants, with mentoring, training and networking events. In addition to receiving prize money, the National Winner attended the Cleantech Open Global Forum in Silicon Valley to meet with investors and venture capitalists and promote their innovation to the international market.

In particular, the project will expand its activities to the SADC region, starting from 2016 by inviting innovators from SADC countries to apply in the 2016 CT accelerator programme.

- **The Climate Technology Centre and Network (CTCN)** is the operational arm of the UNFCCC Technology Mechanism and it is hosted and managed by UNEP in collaboration with UNIDO and with the support of 11 Centres of Excellence located in developing and developed countries. Facilitating the development and transfer of low-carbon, climate-resilient technologies contribute to addressing both climate mitigation and adaptation, which in turn impact poverty, socio-economic development, health. Technology issues cut across all aspects of sustainable development. CTCN facilitates the accelerated transfer and scaled-up deployment of adaptation and mitigation technologies in developing countries to support action on climate mitigation and adaptation.
- Low Carbon Low Emission Clean Energy Technology Transfer Programme (LCET) aims to promote the successful transfer of technologies to developing countries and countries with economies in transition, and is implemented as a collaborative global programme jointly with the Ministry of Economy, Trade and Industry (METI) of Japan, on the deployment and dissemination of new low carbon low emission clean energy technologies, products, systems and services. In its first phase, the programme focuses on LCETs such as micro hydropower, solar energy, and waste-to-energy technologies in Kenya and Ethiopia. In these countries, two pilot projects focusing on ultra-low head micro hydropower (ULH-MHP) technology have been implemented under this programme. ULH-MHP systems are easy to maintain and can be installed on existing open canals without the need for extensive civil works. Related training exercises were undertaken to build local capacities for maintenance and manufacturing of the ULH-MHP technologies. The implementation of these pilot projects will contribute to local industrial and social development, while also fulfilling local demand for energy access.

In recent years, UNIDO has been strengthening its capacity for environmental and social safeguards of its energy portfolio, and in particular has focused on fostering women's empowerment through gender mainstreaming all sustainable energy initiatives. UNIDO is dedicated to achieving the mutually reinforcing benefits of sustainable energy for productive uses and women's empowerment, and therefore is building internal capacity for systematic gender mainstreaming of all projects and programmes, establishment of best practice models, and is leading the international discussion on energy-gender in the industrial context.

UNIDO stands ready to support the implementation of the Decade by focusing on tangible actions and concrete initiatives enabling the global transition to a 'greener' model of industrialization and economic growth and transformation to a path for sustainable industrial development. This is particularly imperative in light of world industrial energy demand projections that indicate growth of 1.5% per year through 2035. Furthermore, industry accounts for approximately one-third of final energy consumption globally and industrial production is expected to expand by a factor of 4 between now and 2050. To reach a fundamental transformation of global energy and industrial systems by 2030 to meet the SE4All objectives, enabling policy frameworks for capturing green growth opportunities must emerge as a path to sustainable industrial development. UNIDO sees its role in aligning the transformational agenda of the energy sector with the opportunities for

realizing higher-value low carbon growth and business opportunities in the industrial manufacturing sectors, driven by clean, efficient and sustainable energy technologies and systems.

X. United Nations Conference on Trade and Development (UNCTAD)

The goal of the **UNCTAD** is to assist developing countries with raising living standards through trade, investment, finance, and technology, helping developing countries benefit from the globalized economy, and contributing to the international debate on emerging issues related to developing countries and the world economy. UNCTAD emphasizes the role of sustainable energy as a tool for economic growth in developing countries. In this context, UNCTAD implements a work programme on energy, trade, and development based on three pillars of work: (i) policy oriented research and analysis, (ii) consensus building, and (iii) technical cooperation. The scope of these programs will be expanded during the decade 2014-2024 so as to further contribute towards the SE4ALL initiative.

Primary goals for UNCTAD are to help developing countries increase information capacity, improve exploitation agreements, manage price volatility, move towards fuel efficiency and optimal freight logistic systems, promote international debate on harmonization of bioenergy sustainability standards, as well as increase the usage and trade of low-carbon energy sources, including renewables. Sustainable energy is largely dependent on conditions governing national and international energy markets, pricing, access to finance, and procurement practices. Recent changes in the energy markets include shifts in trade flows, the emergence of shale gas, growing liquid natural gas markets, biofuels growth, concerns over global warming and environmental degradation and emergence of non-traditional high energy consumers such as China and India.

UNCTAD programmes and activities pertinent to the Decade generally fall under the categories of energy commodity development and greening international trade. The energy commodity development programme focuses on reducing information asymmetry for increased energy access and efficiency, promoting natural gas in the global energy mix, increasing local participation for reducing energy poverty, contract negotiation for balanced accrual of returns and improved access to energy services, mitigating the impact of energy price volatility for universal access to energy, and trade, competition and investment policy for energy development.

One specific initiative is the current collaboration with the Economic Commission for Africa, which supports the region in realizing opportunities for creating economic linkages to increase outsourcing in the energy value chain to help countries pilot models for increasing energy supply and network creation. It also helps establish strategies for energy pricing and risk management such as stocks building, price predictability mechanisms, government guarantees, and hedging, and mainstreams the nexus between energy development and regional integration, mobilizing private capital to deploy climate mitigation technologies. UNCTAD also launched the Natural Resources Information Exchange (NRIE), an initiative to assist natural resources-rich developing countries to capture untapped value from reliable data on the mineral value chain with a view to optimizing natural resource development and management. Eight African countries are engaged in NRIE pilot projects. Decade-related objectives for NRIE include helping governments attract investment,

contributing to energy efficiency, and developing regionally integrated energy supply systems and increased affordable energy services.

Also within Green Commodity management is the UNCTAD Biofuels Initiative, which since 2006 provides countries with access to sound economic, legal and trade policy analysis, capacity building activities and consensus building tools. UNCTAD Biofuels Initiative works with other intergovernmental organizations, civil society, academia and the private sector. UNCTAD participates in the activities carried out by UN-Energy, including its bioenergy high-impact group; on the Nairobi Framework of Activities; on the Global Bio-Energy Partnership (GBEP); and on the Roundtable on Sustainable Biofuels (RSB). The Initiative is committed to be flexible and based on specific national circumstances and needs. It attempts to share lessons from successful cases, as well as to illustrate problems encountered by developed and developing countries alike in dealing with the technical, policy and economic aspects of biofuels. It provides policy guidance, ideas and examples on how to address possible shortcomings that countries might face when engaging in this new market. It has recently focused on biofuel production based on non-food sources such as agricultural residues and energy crops, including for the production and trade of cellulosic ethanol. A number of countries including developing countries have already deployed or are considering deploying biofuels as an alternative means of producing energy. Activities on biofuels are implemented through the three pillars of UNCTAD works.

A second UNCTAD focus area is Green International Trade, which refers to the decarbonization of clean energy commodity supply chains. It considers CO₂ in international trade and carbon footprint goods transportation and requires global standards that go beyond greenhouse gas emission accounting. For example, agrifood standards should integrate computation of the 'environmental footprint' from 'farm to fork'. Two activities in this focus area include fuel efficiency and sustainability principles of freight transport, which reduces emissions and optimizes supply chain networks, and the Biofuel Initiative. The Biofuel Initiative promotes the use of second generation biofuels produced from sustainable feedstock including agricultural residues, nonfood crops or inedible waste products that do not divert food away from animal or human food chains. The Biofuel Initiative supports countries by providing access to sound economic, legal and trade policy analysis, capacity building activities, and consensus-building tools.

UNCTAD work in trade and investment policy will continue towards mainstreaming the nexus between energy development and regional integration, as well as private capital mobilization to deploy climate mitigation technologies. Private capital is critical to fill funding gaps in energy development. For example, between 2001 and 2011, new investments in renewable energy averaged USD 135 billion. 85% of global investments that drove change in renewable energy came from private capital. Issues to be addressed to attract finance include: border energy tariffs, subsidies, the effect of government intervention on energy efficiency and prices; creating a level playing field between high-carbon and low-carbon investment alternatives; regional integration through grid interconnection for energy security; market-grid access for low-carbon technologies; regional cooperation in the area of infrastructure investment and operations and management (O&M); and transparent international rules governing energy trade and investment, including rules providing incentives for universal access to energy.

With regards to competition policy, UNCTAD advises developing countries to design and implement competition laws in public utilities. Implementation of competition laws aiming at lowering entry

barriers and collusion in pricing contributes to preventing excessive prices and hence to universal access to energy. In addition, innovative financial mechanisms could also assist in reducing entry barriers to local companies and entrepreneurs in energy distribution services.

XI. United Nations Educational, Scientific and Cultural Organization (UNESCO)

Responding to the challenges of achieving sustainable energy for all requires increased use of locally available renewable energy sources, building a knowledge base, disseminating relevant technical and scientific knowledge, and promoting appropriate energy policies and choices as a foundation for increased use and application of environmentally sound energy technologies. **UNESCO** plays a catalytic role in this process as it is essential to promote comprehensive, holistic approaches to energy, climate change, and sustainable development.

In addressing the “2014-2024 United Nations Decade of Sustainable Energy for All”, UNESCO’s strategy builds on its achievements in renewable energy for: (i) education and capacity building; (ii) sharing best practices in related science, technology and innovation; and (iii) promoting related energy policies and strategies. UNESCO also emphasizes promoting initiatives as hands-on experiences and its contributions often serve as a catalyst to projects with a multiplier effect that can leverage additional funding.

Addressing access to sustainable energy will require enhanced national capacities to harness the locally available renewable energies and identify the relevant energy choices and technologies. These are objectives of UNESCO’s activities implemented under the Global Renewable Energy Education and Training (GREET) Programme. Concurrently, exchange of know-how is necessary for the adaptation, application, research and development of suitable energy technologies. Under the GREET Programme, regional expert summer schools are organised on an annual base for Africa and South East Asia regions. Training activities on renewable energy and related learning/teaching materials are organised as well.

Furthermore, in its contribution to the “2014-2024 United Nations Decade of Sustainable Energy for All”, UNESCO launched a project that concerns the Solar Electrification of seventy-five rural schools in Benin, Madagascar, Mauritania, Niger and Togo. The project aims at improving both electricity access as well as deriving quality teaching and learning. The project also includes an ICT component that benefits approximately 600 teachers and 24,658 school children at the primary and/or secondary level. To ensure the sustainability of the project and its extension, a series of national Forums on the role of renewable energy for global sustainability as well as national training seminars addressing local technicians, project managers, and engineers were organized in the five concerned countries. At the community level, seventy-five trainings were organized that benefitted end users and ensured maintenance of the installed solar systems and ICT equipment.

UNESCO action also involves affiliated science institutes and centers such as the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy, (Category 1) as well as centers under UNESCO auspices (Category 2) such as the Regional Centre for Renewable Energy and Energy Efficiency (ADEREE) in Marrakech and the International Sustainable Energy Development Center (ISED) in Moscow. ISED is providing annual fellowships to representatives from developing

countries and countries in transition for a one-month training course on alternative and renewable energy. Likewise, ADEREE is developing a training programme on renewable energy and energy efficiency for representatives from developing countries.

XII. United Nations Department of Economic and Social Affairs (UNDESA)

UNDESA will continue playing a key role in the coordination of activities of UN-Energy and will support the coordination and implementation of planned activities for the Decade. As the UN-Energy Secretariat, UNDESA coordinated in 2015 the participation of member organizations in the post-2015 consultations on energy. In particular, UNDESA provided key support during the inter-governmental negotiations on the definition of Sustainable Development Goals (SDGs), targets and indicators on energy for the 2030 Agenda for Sustainable Development. UNDESA, through its Statistics Division (UNSD) and the Division for Sustainable Development (DSD), is also supporting the Sustainable Energy for All Global Tracking Framework effort.

UNDESA's DSD coordinated and planned two regional capacity development workshops "Mainstreaming Energy SDG's, Targets and Indicators into National Statistical Programmes". These took place in Panama City, Panama with the cooperation of UNDP, and in Incheon, Republic of Korea with the United Nations Office for Sustainable Development (UNOSD) as part of the 2015 Sustainable Development Transition Forum. The participants and beneficiaries of the workshops were country representatives of national statistical programs and offices. Upon completion of the capacity development workshops in Panama City and Incheon, the participants gained: 1) knowledge of global efforts on the definition of energy statistics, indicators, targets and goals; 2) an enhanced understanding of the challenges posed by adapting and implementing energy SDGs, targets and indicators to the national circumstances and priorities; 2) awareness of the needs to modify current programmes to incorporate the new set of SDGs, targets and indicators into national statistical programmes; and 3) insight on the formulation of plans of implementation supporting the new sets of SDGs, targets and indicators into national statistical programmes. In 2016 the DSD will coordinate the same type of capacity development workshop for mainstreaming the energy SDG, targets and indicators in African countries.

In 2015 UNDESA published a special report on voluntary multi-stakeholder partnerships and commitments for sustainable development "Sustainable Development in Action". The report includes a section on SE4All initiatives, highlighting the progress made thus far and indicating 2015 as a year filled with decisive milestones in the field of energy.

UNDESA's technical support will continue to be directed towards the objective of securing universal access to modern energy services. In relation to this objective, UNDESA is leading a public-private partnership on "Minimum Electricity Access" that promotes electrification in rural isolated communities with stand-alone renewable energy systems. The partnership has already electrified three pilot schools in isolated rural areas in Bolivia using solar PV (photovoltaic), and solar thermal technologies. Furthermore, it has provided the schools with clean cookstoves and given the local communities support on capacity building and entrepreneurship development on energy for sustainable development. In a final phase from 2024 through 2030, DESA and other organizations will continue to scale up international cooperation on rural electrification, in order to achieve full

and universal access to electricity worldwide by 2030, which is also the main goal of the Secretary-General's SE4All initiative.

In 2015, UNDESA premiered a new partnership programme, titled "Powering the Future We Want - Recognizing Leadership and Innovative Practices in Energy for Sustainable Development", offering a grant in the amount of one million US dollars to fund future capacity development activities in energy for sustainable development. The Grant is awarded to an individual, institution or partnership based on past and current achievements, with the objective of promoting leadership and innovative practices in meeting the global energy challenge. The 2015 winner was We Care Solar, a non-profit organization that provides a reliable and portable solar suitcase solution that saves lives in childbirth. The compact, efficient, environmentally friendly, and sustainable Solar Suitcases have made solar power simple, accessible and affordable. The technology enables clinicians to treat childbirth complications and avoid needless deaths in more than 20 countries, in Africa and South Asia. The 2015 grant programme has promoted capacity development for the nexus of energy and health.

The grant programme is being implemented for an initial period of 5 years, from 2014 until 2019. A Secretariat to support the implementation of the grant programme has been established within UNDESA. The grant programme is funded exclusively through extra-budgetary contributions, with the initial contributions provided by the China Energy Fund Committee. Given the focus on energy for sustainable development, the grant programme is a concrete follow-up and contribution from UNDESA to the Decade of Sustainable Energy for All.

In addition, UNDESA will foment and promote cooperation among UN agencies for the implementation of programmes supporting the Decade that address the energy nexus with other development factors including water, health, food security, agriculture, gender equity and education. In particular, UNDESA is developing comprehensive national sustainable energy assessments designed to take into consideration in an integrated manner major development factors and allow the empowerment of poor communities based on an energy nexus approach.

In 2016 UNDESA DSD plans to coordinate three regional Expert Group Meetings that will correlate with targets 7.1, 7.2 and 7.3 of Energy SDG 7 of the 2030 Agenda for Sustainable Development. This effort will result in separate meetings to focus on the implementation of the 2030 Agenda within the topic areas of energy access, energy efficiency, and renewable energy. These meetings will be the first of their kind to follow-up on the implementation of Energy SDG 7 of the 2030 Agenda for Sustainable Development.

Also in 2016, the UN-Energy Secretariat maintained within UNDESA, will compile a UN-Energy Member Activities Report "Activities of Member Organizations and Partners of UN-Energy in Support of Sustainable Development Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all". This report will be the first comprehensive review of UN-Energy Member activities and future plans in contribution to the achievement of Energy SDG 7.

XIII. United Nations Human Settlements Programme (UN-Habitat)

UN-Habitat emphasises that cities today are home to more than half of the world's population, consume 60 to 80 percent of the World's energy resources and produce over 70 percent of the world's Carbon emissions. The global urban population will grow from the 3.3 billion people in 2008 to almost 5 billion by the year 2030. Almost all of the growth will occur in unplanned and underserved city slums of developing countries. The pace of urbanization far exceeds the rate at which basic infrastructure and services including modern energy could be provided. Today, there are more than 1 billion people in cities living on less than 2 \$US per day. These people are also affected in particular by energy poverty. This figure is likely to double until 2030, shifting the centre of gravity from rural to urban energy poverty. Substantial intervention with a focus on cities, towns and human settlements are becoming increasingly necessary in the course of the 21st century.

This understanding translates into an important strategic compliment and added values that UN-Habitat is contributing under the frame of the *United Nations Decade of Sustainable Energy for All*.

Cities represent places of opportunity in terms of social, cultural and economic development. This is the case since the beginning of human settlements as such. Cities are pivotal in achieving sustainable development and sustainable consumption. Well-planned and managed cities minimise energy consumption and enable all citizens to consume resources more efficiently. The benefits of improving Access to Modern Energy Services in poor urban and peri-urban areas are transformational: Lighting for productive activities, increased security, energy *for* basic service provision, including water and sanitation, cleaner indoor air, faster food-processing/cooking, more income-generating opportunities, industrial development and so on. Energy is one essential factor to unlock the productive potential of cities. Solutions include for instance slum electrification programmes, where the poor are given special treatments to get connected to electricity; biogas systems to address sanitation systems, improved cook stoves for sustainable use of and firewood; solar home systems and solar charging stations, and solar water heaters, to mention but a few.

In its Medium Term Strategic and Institutional Plan, UN-Habitat underlines that the challenges for achieving sustainable urban energy systems are: Increasing energy access, achieving energy sufficiency, improving energy conservation and energy efficiency, optimising energy demand management and promoting the deployment of renewable energy systems and appropriate technologies. Developing green cities and green economies will need supportive policies, capacity building, knowledge transfer, financial support mechanisms, market stimulation and sensitizing the population, at the regional, national and local level.

In order to tackle the energy challenges in human settlements, UN-Habitat's strategic approach in line with the *United Nations Decade of Sustainable Energy for All* focuses on four main areas of intervention:

- Urban energy planning, municipal energy policy and legislation, and urban energy finance,
- Energy access for the urban poor, with special emphasis on women and youth,
- Energy and resource efficiency in the built environment,
- Renewable energy technologies in the urban energy mix.

Urban energy planning, municipal energy policy and legislation and urban energy finance

The ensemble of energy planning, policy and legislation and finance is necessary for the systematic transfer of political ideas and agendas into urban reality. Without these three elements (in conjunction) no policy implementation and no sustainable development will be possible in cities. UN-Habitat facilitates key policy interventions in sectors like the transport sector, the commercial sector, the industrial sector, the residential sector, but also on municipal operations and a city's energy supply. The ultimate objective is to increase access to energy, while reducing emissions and the investment. All sectors are important, as they interlink on a city scale. Relevant legislative instruments promoted by UN-Habitat on the city level include for instance energy efficiency building codes and regulations on sustainable building practice. Financial instruments and mechanisms include green mortgages, green urban tax reforms and feed-in tariffs.

Urban development corridors are of special importance: City extension planning in response to rapid urbanisation and urban energy planning need to go hand-in-hand. Corridors linking several cities represent huge opportunities for cities extension through proper urban planning and opportunities for green industrial development. If properly organised, this can generate job opportunity for the youth and decongest overcrowded urban areas.

UN-Habitat's initiatives in line with the *United Nations Decade of Sustainable Energy for All* include:

- Developing municipal energy strategies/policies to coordinate and guide the implementation of low-carbon action plans,
- Formulating and adopting energy and resources efficiency codes for buildings,
- Setting up appropriate financial instruments and mechanism for the implementation of energy efficiency measures in the built environment,
- Providing technical assistance with regards to feed-in tariff design.

Energy access for the urban poor, with special emphasis on women and youth

Expanding access to affordable and clean energy in human settlements is critical for achieving international development goals. Improving urban energy services is a requirement to economic development, livelihood creation and improved living conditions, as it encourages lighting for schools, functioning health clinics, water pumps and sanitation, cleaner indoor air, faster food-processing and more income-generating opportunities, among others.

Nearly 40% of urban residents in the rapidly growing cities in Africa and Asia do not have access to modern energy services such as electricity and LPG. UN-Habitat will promote energy access for the urban poor through normative interventions, such as advocacy, knowledge sharing, awareness creation and capacity building. The agency helps public utility companies in slum electrification as well as in mapping energy access in human settlements. Multifunctional Clean Energy Centres (MCECs), i.e. service centres built mainly in urban slums, provide access to modern energy services, but also to other urban basic services, including water, sanitation, and community services. Technologies deployed in MCECs include solar lantern charging stations, biogas systems, solar photovoltaic systems, solar water heating, wind power generation and wind pumping.

UN-Habitat's initiatives in line with the *United Nations Decade of Sustainable Energy for All* include:

- Developing Multi-Functional Clean Energy Centres (MCEC), i.e. service centres for urban basic services, including energy, water and sanitation.
- Strengthening of the Global Energy Network for Urban Settlements (GENUS).
- Developing urban energy corridors, an approach linking energy access and urban development alongside regional development axes.
- Organising hands-on trainings on energy efficiency and renewable energy for youth empowerment in different regions to increase uptake of renewable energy.

Energy and resource efficiency in the built environment

Energy and resource efficiency does not mean that we should reduce or sacrifice any standards of living. In the contrary, improved energy efficiency allows to reduce energy consumption and to minimize energy wastage, while maintaining or improving standards of living at the same time. Energy and resource efficiency in human settlements is a prerequisite for achieving energy access. Especially in the urban context energy wastage and lack of energy access often coincide.

UN-Habitat helps to reduce urban energy wastage by increasing energy efficiency in buildings and other sectors. This means nothing less but to change the way cities are built, building-by-building, but also to link urban planning and neighbourhood development with energy planning and management. Environmental considerations, local climate and local culture are all integrated in the design of the new building. Energy and resource efficiency needs to be embedded as a principle in urban planning development.

UN-Habitat's initiatives in line with the *United Nations Decade of Sustainable Energy for All* include:

- Promoting of green building design and awareness raising.
- Energy efficiency data collection and benchmarking in the building sector.
- Capacity building of practitioners and other stakeholders in energy efficiency and best practices in the building sector.
- Developing tools for designing sustainable buildings that are climate friendly;
- Assisting local authorities to develop roadmaps towards low-carbon cities.

Renewable energy technologies in the urban energy mix

Renewable energy is the future. In the course of the 21st century renewable energies are an inevitable reality in overcoming both, the imminent threat of climate change and the existing energy crisis. Cities need an uninterrupted supply of energy to fuel their activities, and this is currently being met predominantly by fossil fuels. Renewable energy in the 21st century will and must play an increasingly important role. Cities can move from being mere energy consumers to also being energy producers. A lot of "un-lifted treasures" and opportunities exist, including waste to energy. UN-Habitat will promote the recovery of energy from waste, the use of solar energy technologies, and the utilization of renewable source of energy that in many developing countries are available in abundance. A key role will play taking a city-wide approach, i.e. to assume a 75-100 km boundary around the city for especially producing power from renewable energy sources, and

in doing so develop a district energy system. The agency will also encourage national governments to develop feed-in tariffs.

UN-Habitat's initiatives in line with the *United Nations Decade of Sustainable Energy for All* include:

- Designing and implementing pilot renewable energy projects to enhance pro-poor access to water and sanitation.
- Promoting biogas in public institutions such as schools, prisons, hospitals, public spaces etc.
- Developing of Multi-functional Clean Energy Centres, including a multitude of renewable energy technologies.
- Producing best-practice casebooks and technology roadmaps for renewable energy use in human settlements.
- Designing sustainable municipal solid waste management system with emphasis on producing energy from waste.

The contribution of UN-Habitat in line with the *United Nations Decade of Sustainable Energy for All* will be consistent with the **new urban paradigm**, as promoted by the agency. Five principles are especially relevant in this regard:

- 1) Adequate space for streets and public space,
- 2) Mixed land use,
- 3) Social mix,
- 4) Adequate density and compact city,
- 5) Limited land use specialisation.

These principles are from our point of view to be observed and very relevant in the context of sustainable urban development. In this wider context, cities that are energy and resource efficient are also more resilient against impacts of climate change. UN-Habitat's activities as part of *United Nations Decade of Sustainable Energy for All* will also make an important impact on the creation of employment in towns and cities, in particularly in a newly established urban green economy. This will contribute to youth empowerment, as well as the empowerment of women.

Our intervention will rely on normative and operational activities include:

- Advocacy, networking and publication of good and best practices, as well as the participation in international dialogues on urban energy and human settlement development,
- Developing policies and institutional frameworks to promote access to clean energy, energy efficiency and renewable energy technologies,
- Strengthening institutional efficiency and effectiveness in the provision of urban energy services,
- Enhancing consumers' demand for efficient and environmentally sound basic services,
- Designing and implementing pilot/demonstration projects, and on
- Providing technical assistance and capacity building.

XIV. United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

In 2014, **ESCAP**, at its 70th Commission session adopted Resolution 70/9, endorsing the outcomes of the Asian and Pacific Energy Forum (APEF) 2013, the Ministerial Declaration and the Regional Plan of Action. Supported areas of action include 15 areas that contributed directly to the efforts to achieve goals of SE4ALL in Asia and the Pacific. ESCAP has been supporting the implementation of the Plan of Action through 1) developing an annual regional trends report on energy for sustainable development in Asia and the Pacific, to provide analysis and suggestions of ensuring access to affordable, reliable, sustainable and modern energy for all; 2) developing an Asia Pacific energy Portal, an information platform for up-to-date statistical data and policy initiatives in the region; 3) hosting annual high-level policy dialogue, focusing on identifying solutions to key challenges and potential establishment of working-level groups to support implementation of policy solutions. A mid-term review of the implementation of the Ministerial Declaration and the Regional Plan of Action will be conducted in 2016. The second APEF will take place in 2018 in the Kingdom of Tonga.

In May 2015, ESCAP officially launched the Asia Pacific Energy Portal⁴, as a direct response to ESCAP Resolution 70/9 on implementation of the outcome of the first APEF. The Portal is an online interactive platform that provides data visualization capabilities and draws a comprehensive energy picture from a number of sources. It also has a unique policy-tracking component that enables users to spot policy development over time. To date, over 2000 policy measures have been made available through the Portal. The information is delivered in a user-friendly format, allowing a broad range of users. The combination of data and policy in one application is unique, and will help improve analysis of the energy situation, policies and their development impact.

Since 2015, ESCAP publishes an annual regional trends report on energy development, focusing on emerging issues within the 15 areas of action. The first Regional Trends Report was launched in May 2015, emphasizing on integrating variable renewable energy in electricity systems and promoting high-efficiency, low emissions coal technologies in electricity generation. The new edition for 2016 researches on energy access and energy connectivity including current status, policies, institutional frameworks and financing arrangements, with the aim of identifying successful cases, drawing lessons, formulating policy recommendations, and identifying areas for enhancing regional cooperation.

Annual Policy Dialogue focuses on identifying solutions to key challenges, as well as the potential establishment of working-level groups to support the implementation of policy solutions on sustainable energy. It is attended by policymakers, experts and stakeholders such as research institutions, private sector and civil society as well as international organizations. The dialogue has been structured around the draft regional trends report containing trends and analysis of a few selected topics by the member States.

The portal and the regional trends report will facilitate the deliberations during the Policy Dialogue

⁴ Available: www.asiapacificenergy.org

to identify a few concrete areas and solutions to address common challenges through regional cooperation. In addition, ESCAP communicates with experts and APEF focal points in Member States to collect feedbacks, comments, data and policy information, and case studies.

During the 71st session of ESCAP, a resolution was adopted to restructure the conference structure of the Commission to be fit for the evolving 2030 Agenda for Sustainable Development, which requires creating a Committee on Energy. The new Committee will focus on developing strategies towards attaining internationally agreed development goals concerning energy, such as Goal 7 of SDGs. It will be an important intergovernmental platform for member States to share good practices and mobilize consensus to better implement the energy related SDGs.

Greater international connectivity of energy infrastructures provides the physical means to support more diversified opportunities for countries to achieve energy security by accessing necessary energy resources. Energy connectivity, which has potential for optimizing the use of all energy resources, including renewable energy resources, gas and other sources, has been well recognized in the region. ESCAP is working with member States, relevant institutes, and development agencies on promoting energy connectivity and transboundary power trade to enhance energy security, integrating large scale renewable energy generation and regional economic integration.

As the largest and most inclusive intergovernmental platform for the region, ESCAP Commission has mandate to engage Member States in the emerging architecture for new corridors of prosperity; and fosters consensus and legal agreements for regional connectivity. In moving forward, the emphasis will be to encourage a move from “segmented” to holistic, integrated and sustainable approach to ensure contiguous and seamless networks. The Asian Energy Highway, which has been adopted by the Member States, needs to be transformed recognize the need to integrate alternate sources of energy including renewable energy in energy corridors and deployment of smart grid technologies, which could bridge subregional power interconnections.

With funding support from International Fund for Agricultural Development (IFAD) and the UN Development Account, ESCAP is implementing a multi-year project to widen access to modern energy services for rural communities through the programme, Pro Poor Public Private Partnership (5P) for sustainable rural development. 5P develops national and local capacities to attract private sector investment in rural energy access with the locally available renewable energy resources. Pilot projects are in the development in Nepal and Lao PDR to demonstrate innovate models to leverage the strengths of government, the technical and financial advantages of the private sector, and the cooperative competencies of rural communities. ESCAP also engaged the government of China on south-south cooperation for rural energy development.

ESCAP has jointly established with the Asian Development Bank (ADB) and UNDP the Regional Hub on SE4ALL with the mission of accelerating and facilitating the achievement of the SE4All objectives in Asia and the Pacific region. ESCAP contributed to the new publication that was released in October 2015 by ADB: Sustainable Energy for All: Tracking progress in Asia and the Pacific: A summary report. ESCAP works with relevant UN agencies and other Regional Commissions to develop coherent strategy to assist member States on the implementation of SDGs.

XV. United Nations Economic Commission for Europe (UNECE)

The **UNECE** brings together 56 countries to facilitate greater economic integration and cooperation among its member countries and promote sustainable development and economic prosperity. These objectives are realized through policy dialogue, negotiation of international legal instruments, development of regulations and norms, exchange and application of best practices and economic and technical expertise, and technical cooperation. UNECE is playing an active role in supporting the Decade through the regional and global implementation of projects and activities that achieve these objectives by securing affordable and sustainable energy. UNECE initiatives promote dialogue and knowledge-sharing, and facilitate expert networking on sustainable energy to enhance intraregional and interregional cooperation and thus show pathways to sustainable energy that fall within the context of UN-Energy. Work explores the sustainability challenges of the energy sector and how UNECE can contribute to sustainable development and achieving a low carbon economy.

The UNECE sub-programme on Sustainable Energy, through its Committee on Sustainable Energy (CSE) and subsidiary bodies carry out a programme of work in the field of sustainable energy to provide affordable and clean energy in line with SE4ALL objectives, and help reduce greenhouse gas emissions and the carbon footprint of the energy sector. UNECE work on sustainable energy is performed through concrete and results-oriented activities on issues in these core areas: cleaner electricity production from fossil fuels, coal mine methane, energy efficiency, natural gas, renewable energy and resource classification.

In the field of energy efficiency, UNECE areas of work cover regulatory and policy dialogue, addressing financial, technical, and policy barriers to improve energy efficiency implementation, and the sharing of experiences and best practices, including at the institutional level, in order to address market failure. Recent publication *Best Policy Practices for Promoting Energy Efficiency* provides a structured framework of best practices in policies to promote energy efficiency for climate change mitigation and sustainable development.

In support of cleaner electricity production from fossil fuels, UNECE focuses on activities that significantly reduce greenhouse gas emissions from electricity production from fossil fuels, including carbon capture and storage, enhanced oil recovery with CO₂, and advanced fossil fuel technologies for power generation. Regulatory and policy dialogue and sharing best practices are primary tools used to significantly increase the uptake of both energy efficiency and renewable energy. Currently, UNECE is advancing the development, dissemination, and maintenance of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources (UNFC), a global classification system for energy and mineral reserves and resources. In particular, priority is being given to the development of a common assessment methodology for renewable energy resources based on UNFC. A common methodology will provide a measure of comparability and reduce subjectivity in resource estimates and valuations; offer a basis to estimate the scale and potential of each renewable resource; provide more reliable estimates based on standards that consider widely-adopted technological advances; and provide the foundation to calculate a range of metrics, such as profitability, operating costs, or net income per equivalent energy unit.

The UNECE Group of Experts on Renewable Energy is mandated to work on regulatory and policy dialogue and sharing of information, best practices and lessons learned on renewable energy with a

view to increasing the share of renewables in the global energy mix⁵. The Group of Experts prepared a Renewable Energy Status Report (the Status Report) for selected UNECE countries in close collaboration with the Renewable Energy Policy Network for the 21st Century (REN21) and the International Energy Agency (IEA). The Status Report closes existing data and information gaps for a baseline of renewable energy status in the ECE region. It allows monitoring and reporting on key renewable energy production and consumption variables and patterns in all economic sectors to support long-term planning for national energy options to increase the share of renewables in the global energy mix and to provide access to affordable and clean energy to all. Furthermore, the Status Report – launched at COP21 will contribute in tracking progress to attain the Sustainable Development Goal on energy and respond to the climate change mitigation commitments through renewable energy deployment.

UNECE was also a lead agency in implementing the successfully completed UN Development Account project, Promoting Energy Efficiency Investments for Climate Change Mitigation and Sustainable Development, jointly with other UN Regional Commissions. The objectives of this joint effort are to develop energy efficiency investment projects and providing capacity building, improving the regulatory and institutional framework for promoting new financing for energy efficiency projects, attracting investment, and providing case studies on the experience of policy reforms.

UNECE led other UN Regional Commissions and other partners in organizing the 5th and 6th International Forums on Energy for Sustainable Development in Hammamet in 2014 and in Yerevan in 2015 respectively. The Hammamet Declaration - a joint statement of the Executive Secretaries of the UN Regional Commission to the 5th Forum - is a roadmap for achieving the objectives of the Sustainable Energy for All (SE4All) Initiative of the UN Secretary-General and for greening the energy sector and the economy as a whole. The Yerevan Statement of Common Action is intended to make the Hammamet Declaration operational and includes specific recommended actions and measures.

XVI. Economic and Social Commission for Western Asia (ESCWA)

ESCWA promotes economic and social development through regional and sub-regional cooperation and integration and serves as the main general economic and social development forum for 17 Arab countries in Western Asia. Accordingly, through its sub-programme on sustainable development and productivity, ESCWA continues to play an active role in promoting sustainable energy that comes in line with the context of the United Nations Decade of Sustainable Energy for all.

The energy sector landscape in the Arab countries is riddled with emerging as well as older enduring challenges that can potentially have negative impacts on the development course in the region. UN ESCWA has been coordinating with the relevant ministries and authorities of member states in addressing and responding to these challenges by advocating better regional energy integration for added energy supply security, enhanced understanding of the influence of falling oil prices on sustainable development in the region, improved energy access in rural areas for more equitable growth, targeted policies and appropriate regulatory frameworks as well as innovative

⁵ Available: <http://www.unece.org/energy/se/gere.html>

financing mechanisms in support of energy sustainability through energy efficiency measures and renewable energy adoption, and providing energy solutions to countries in conflict to strengthen their resilience.

- ESCWA launched the SE4All Decade for the Arab Region in Amman on 24 March 2015. The Arab launch reflects on the regional roadmap proposed by the Executive Secretaries of the five UN Regional Commissions to accelerate the pace of achieving the SE4All objectives: (1) **Ensuring universal access to modern energy services**; (2) Doubling the global rate of improvement in energy efficiency; (3) **Doubling the share of renewable energy in the global energy mix**. The launch aimed to highlight the importance of achieving by 2030 the three pillars of the SE4All initiative for the Arab region, as well as the adoption of more sustainable energy systems for its economic and social development goals. In light of the above and in order to measure the World progress toward Sustainable Energy for All, ESCWA, in cooperation with the other UN Regional Commissions, will also be involved in the next phase of the Global Tracking Framework that was initiated to track country and regional level indicators to measure advancement in the implementation rates of the three SE4ALL pillars (access to energy services, EE and RE). The Global Tracking framework is being coordinated by the World Bank/Energy Sector Management Assistance Program (ESMAP) and the International Energy Agency (IEA), in collaboration with 13 other agencies.
- Energy, water and food are vital resources for maintaining sustainable development at the national and regional levels. Endowed with large oil and gas reserves that have become the main drivers for economic development in a mostly arid region, the complex interplay between these three natural resources has compelled a new approach to sustainably managing these resources. At its eleventh session held in the League of Arab States headquarters in Cairo, Egypt, the Arab Ministerial Council of Electricity (AMCE) has entrusted the Council Secretariat to coordinate with ESCWA and the Technical Secretariat of the Arab Ministerial Council of Water in implementing a regional initiative on water-energy-food nexus.
- Aiming at enhancing the sustainability of the electrical grid, ESCWA in collaboration with the Arab Union of Electricity (AUE) and the National Electricity Company NEPCO in Jordan organized a training workshop on "Integration of Renewable Energy Resources in the Transmission and Distribution Networks in the Arab Region" to strengthen the technical capacity of the Ministries and Utilities of Electricity in Arab countries to integrate renewable energy production systems in the electrical grid.
- Given the importance of the building sector's share of the total energy consumption in the Arab region, ESCWA, in collaboration with the League of Arab States and several other regional institutions and projects, organized a one week training course on "Setting up National and regional agendas for developing EE strategies and policies targeting the building sector". The training targeted government officials and national energy efficiency experts. In addition, ESCWA, in cooperation with UNEP, convened an expert meeting to provide a platform for dialogue to explore the opportunity for launching a regional initiative aimed at promoting the implementation of large-scale energy efficiency programs in the existing buildings sector in the Arab region. The meeting reviewed related experiences and studies, and discussed a concept note prepared by ESCWA in this regard.

- Past energy strategies and policies in the region lead to a serious deterioration of energy productivity. This situation resulted in the accumulation of a largely untapped, enormous potential of energy resources that can be released through energy efficiency programmes and measures in the region. ESCWA initiated with the King Abdullah Petroleum Studies and Research Center (KAPSARC) a joint project in February 2015 to explore energy productivity in the Arab region, with an initial focus on the six countries of the Gulf Cooperation Council (GCC). This joint project aims to elaborate on energy productivity indicators as tools for evaluating, monitoring, and helping to improve the performance of various sectors in the national economy and to explore the social and economic benefits that are associated with enhanced investment in energy productivity in the region.
- ESCWA started, in collaboration with UNECE, implementing a UNDA project on “Promoting Renewable Energy Investments for Climate Change Mitigation and Sustainable Development”. The project aims to promote investments in RE through strengthening national capacities in attracting private investments in the RE area and specifically in developing economically, environmentally, socially and financially viable projects. Through a close cooperation with the countries concerned and in the framework of a desirable investment framework, a series of interactive events and the use of local experts, the work focuses on facilitating the increased mobilization of financial resources for renewable energy investments. Specifically, it intends to: (a) develop the skills of the public and private sectors at the national level to identify, develop and implement RE investment projects; (b) provide assistance to authorities to introduce regulatory and institutional reforms needed to support these investment projects; and (c) enhance financing of renewable energy projects in the region. The project was launched in Yerevan at the "6th International Forum on Energy for Sustainable Development" as part of the five UN Regional Commissions' global forums. A regional training workshop was conducted and benefitted government officials, national financial institutions, national energy experts, and project developers (including SMEs), which are involved in RE. The workshop's impact was improving participants' capacity to prepare Bankable Proposals and attract investments in RE Projects in the private and public sectors. Detailed practical step-by-step guidelines will be developed and shared with the project developers to help them in the process of drafting their project documents. Future activities will also include case studies on the experience of policy reforms, another regional training, workshops and seminars focusing on policy reforms and investment projects development.
- ESCWA is implementing a UNDA project on “Building Capacities in Developing Appropriate Green Technologies for Improving the Livelihood of Rural Communities in the ESCWA Region” which aims to promote sustainable rural access to modern energy services using a methodology that follows an approach prioritizing the productive use of appropriate renewable energy technologies. Using sound business analysis, this approach identifies existing rural income generating activities that hold reasonable market growth potential at the rural level; the production processes of these rural businesses are examined to evaluate whether the adoption of tools requiring energy input holds opportunities for increased productivity, followed by an energy needs assessment to estimate the return on investing in renewable energy technologies. This project reviews the productive renewable energy technologies appropriate to the rural conditions in the Arab region, and presents various policy and regulatory options as well as financial mechanisms which can be set in place to encourage private investments in renewable energy technologies in rural areas.

XVII. International Fund for Agricultural Development (IFAD)

IFAD focuses on rural poverty reduction, working with poor rural populations in developing countries to eliminate poverty, hunger, and malnutrition, raising productivity and incomes, and improving the quality of their lives. Given its strong link with microfinance institutions and expertise as a financial institution, IFAD is well-placed to contribute to Decade financial initiatives. There is also potential for IFAD to enhance its participation in the rural energy sector without having to re-orient its strategic framework. IFAD recommends the emphasis of income generation to increase at scale the demand for clean energy products by linking access to energy to agriculture-related activities. Additional value is gained by strengthening entrepreneurial and business skills and the promotion of private investment by providing better access to finance for rural people.

IFAD has developed country and technology-specific pilot approaches for such diverse technologies as micro hydropower in Nepal and jatropha biofuel in Mali that demonstrate the aforementioned connection between linking access to energy to income generation and agriculture. A solar powered drip irrigation system project in Northern Benin is also a notable example of successful IFAD programmes where energy and water are two critical factors for food security yet they often compete with one another for available water to keep systems running.

XVIII. United Nations Capital Development Fund (UNCDF) CleanStart

CleanStart is an innovative approach to scaling up access to sustainable, low-cost clean energy for low income households, implemented by **UNCDF** and in close cooperation with the Global Environment Facility (GEF). CleanStart supports households and micro-entrepreneurs through microfinance service providers with the goal of enabling over 2.5 million people to benefit from cleaner, more efficient energy by 2017. Currently, the programme collaborates with 18 financial service providers in Asia and Africa to work towards building a sustainable supply chain for energy technologies and services. Over the life of the programme, a total of USD 60 million will have been distributed through lending, with the potential to reduce over 300,000 tonnes of CO₂.

The CleanStart programme is delivered through four mutually reinforcing components: (i) finance for clean energy to strengthen capabilities of financial service providers to offer microfinance for clean energy with a technology-neutral approach; (ii) technical assistance to remove barriers to successful technology and financial service deployment; (iii) awareness raising and capacity building of the potential for microfinance to scale up clean energy; and (iv) advocacy and building partnerships to create an enabling policy and business environment to expand microfinance for clean energy. The long-term vision of the Programme is to dramatically scale up energy financing for the poor beyond the initial six least developed countries (LDCs) and also other developing countries with high levels of energy poverty. Its definition of clean energy refers to renewable energy solutions, low greenhouse gas emitting fossil fuels like liquid petroleum gas, and traditional fossil fuels that produce less CO₂ emissions through the use of improved technologies like improved cookstoves. CleanStart will identify high to medium potential technologies or services that could be supported through microfinance via initial market research. Ultimately, partner financial institutions will select the clean energy solutions to finance based on their own market research for financial product development.

CleanStart supports partner financial service providers, stakeholders along the supply chain, and end-users to develop scalable business models. Technical assistance is provided, for example, in the form of market research, brokering partnerships, financial product development and roll-out, strengthening supplier capability to market and reliably deliver, install, and maintain technologies and services, and end-user awareness. Financial support can also be provided to partially cover incremental costs involved with clean energy lending to the poor, and aims to leverage an initial investment of USD \$26 million with refinancing, energy value chain development, and carbon financing that total USD \$49.5 million. Risk mitigation instruments that are offered include pre-investment advisory assistance, risk capital grants, and concessional loans. Research grants and capacity building will be offered to develop training curricula, improve practices going forward, and assess impacts such as on client living standards, poverty reduction, business prospects, and national policies and regulations that promote adoption of clean energy among the poor.

XIX. United Nations Foundation (UN Foundation)

The United Nations Foundation links the UN's work with others around the world, mobilizing the energy and expertise of businesses and NGOs to help the UN tackle issues such as climate change, global health, peace and security, women's empowerment, poverty eradication, and energy access. The UN Foundation leads several initiatives that support the three objectives of Sustainable Energy for All – most notably the Energy Access Practitioner Network, the *Energy for Women's and Children's Health* project, and the Global Alliance for Clean Cookstoves.

In support of the Sustainable Energy for All initiative, the UN Foundation founded the global **Energy Access Practitioner Network** in 2011 to help catalyze efforts to scale energy access, and to mobilize and leverage the emergence of lower-cost and innovative decentralized renewable energy solutions for off-grid electrification. Although several technology-specific and regional networks already existed, it was the first and remains the leading entity facilitating global interaction between the public and private sectors, helping to provide a global platform for practitioners to share knowledge, drive new partnerships and promote accelerated action to address the challenge of energy access. The Practitioner Network today serves as a technology-agnostic “network of networks” to help foster greater global action towards the achievement of universal energy access, and to shine a light on the energy needs of communities that have typically been overlooked by large-scale electrical grid development that either doesn't reach them, or is out of reach due to affordability.

From its inception in 2011, the Practitioner Network's membership has grown dramatically, crossing the 2,000-member milestone in early 2015 and continuing to grow. Its membership is drawn from more than 170 countries and includes entrepreneurs, companies, social enterprises and NGOs as well as financing institutions and funds. The Practitioner Network supports primarily market-led decentralized energy applications focusing on rural electrification and catalyzes energy service delivery that can leverage improvements in education, health, livelihoods, the environment, and gender equity. It promotes new technologies and innovative financial and business models to help meet the needs of low-income consumers. It facilitates investment and funding opportunities by connecting energy service providers with private investors as well as public-sector financing, grants and competitions. It fosters new partnerships and facilitates the development and adoption

of quality standards and approaches. It also serves as a valued global and country-level platform for convening policy makers and practitioners within the Sustainable Energy for All initiative, as well as through two country affiliates, Sustainable Energy Network Ghana (SENG) and Clean Energy Access Network India (CLEAN), helping to integrate the voice of practitioners into country action planning activities.

The UN Foundation considers improving women’s and children’s health a top priority and has initiated recent programmes to support women and children, including delivering life-saving vaccines and anti-malaria nets to children, promoting clean cooking solutions, enabling access to family planning, and improving public health through mobile technologies. As part of the Sustainable Energy for All initiative, the UN Foundation is leading an effort with WHO and UN Women to increase access to, and encourage the effective and sustained use of, energy-dependent health services, with a particular emphasis on women in low- and middle-income countries. This multidisciplinary ***Energy for Women’s and Children’s Health*** project is bringing together partners from the energy and health sectors, government, business, and civil society to develop and deliver decentralized, sustainable energy solutions for health care in remote areas. Health facilities in Malawi, Uganda and Ghana have been surveyed for detailed energy needs assessments to inform a resource mobilization effort to support deployment of appropriate electrification solutions. The next phase of the initiative will demonstrate best practices to provide modern energy services to health facilities in a systematic and sustainable way and promote new ways for the health sector to evaluate access to energy as a determinant of health service quality and outcomes at country level.

The **Global Alliance for Clean Cookstoves** is a public-private partnership hosted by the United Nations Foundation that seeks to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean and efficient household cooking solutions. Today, nearly three billion people rely on open fires and simple stoves that burn solid fuels to cook their food. The smoke from inefficient cooking leads to 4.3 million premature deaths every year, as well as up to 25% of global black carbon emissions. Women and children spend many hours gathering fuel – up to 5 hours per day – or spend a significant portion of household income to purchase fuel.

The Alliance’s “100 by ‘20” goal calls for 100 million households to adopt clean and efficient cookstoves and fuels by 2020. The Alliance is working with its public, private, and non-profit partners to accelerate the production, deployment, and use of clean and efficient cookstoves and fuels in developing countries.

Serving as a connector, catalyst and facilitator, the Alliance has helped build a solid foundation for transformative change by working with our partners to spur innovation, develop standards, advocate for enabling policies, and expand the base of evidence on the benefits of clean and efficient cookstoves and fuels. The Alliance is also working to enhance demand by encouraging behavior change. There is also growing interest in the Alliance’s effective intermediary model and integrating clean cooking into broader development and environmental interventions.

By the Numbers

The Alliance’s Achievements So Far

- 30 million households reached with clean and efficient cookstoves by the end of 2014 and 43 million households projected by the end of 2015
- Alliance partner base grown from 19 to 1,300+ partners
- 200 enterprises strengthened by the Alliance; 28 have collectively increased cookstoves production by over 300% and doubled fuel production
- \$400 million grant and investment pledges mobilized
- \$265 million in carbon finance attracted to the sector

Projected Impacts of the Alliance’s Work by 2020

- 640,000 lives saved, including 170,000 children
- 2.1 million jobs created
- 1.9 billion trees saved
- 1.6 billion metric tons of CO2e saved
- 61% reduction in spending on fuel per household
- 6.2% of household income saved
- 102 hours saved annually per household collecting fuel

The Alliance is driving investment into the sector, supporting capacity building for entrepreneurs and increasing financing through mechanisms such as the Spark, Pilot Innovation, Women’s Empowerment Fund, and the Catalytic Small Grants Program, which, in turn have helped drive tens of millions of investment dollars directly to enterprises and businesses in the sector. The Alliance has also invested millions to enable investigators to produce the critical research necessary to build a case for global action on clean cooking. In addition, the Alliance has provided support to 16 global testing and knowledge centers and engaged in new health, environment, gender, and adoption research in dozens of countries where national policies are identifying clean cooking solutions as integral to achieving improvements in energy access, women and children’s health, and the environment. These efforts are most evident in the Alliance’s focus countries of Bangladesh, China, Ghana, Guatemala, India, Kenya, Nigeria, and Uganda. The Alliance’s market-based approach is helping build a more cohesive sector, strengthening existing actors and attracting new ones to eliminate fragmentation and establish a sustainable, healthy market capable of enabling 100 million households to adopt clean and efficient cookstoves and fuels by 2020.

XX. United Nations Institute for Training and Research (UNITAR)

The United Nations Institute for Training and Research (**UNITAR**) is a principal training arm of the UN system working to develop the knowledge, skills and awareness of beneficiaries in developing countries in a range of thematic areas. These include: Peace, Security and Diplomacy, Environment and Climate Change, Governance, and Humanitarian Assistance. UNITAR’s strength derives from its from its expertise in how best to design and deliver training so that new knowledge is captured and retained, and then applied in practice. Our main focus is on the delivery of adult training and professional learning.

UNITAR is playing a lead role in the roll out of the Sustainable Development Goals through the provision of trainings, awareness raising and materials for developing country diplomats, as well as key officials across all branches of government. This, for example, includes related trainings and support on SDG 7 on ensuring access to affordable, reliable, sustainable and modern energy for all.

UNITAR is a key partner in the One UN Partnership for Action on Green Economy (PAGE) which is helping countries to put sustainability at the heart of economic policy and practice. PAGE is a direct response to the Rio+20 Declaration – The Future We Want – which calls upon the UN system and all countries to design and implement green policies and strategies.

In the area of climate change UNITAR has a well-established programme helping countries to implement systematic and recurrent trainings for climate responsive planning and budgeting processes. Within the energy sector this helps countries to consider the costs and benefits of alternative measures in greenhouse gas reductions. Training is made available both through distance based (e-learning) and face to face events.

XXI. Renewable Policy Network for the 21st Century (REN21)

REN21 is the global renewable energy policy multi-stakeholder network that connects a wide range of key actors. REN21's goal is to facilitate knowledge exchange, policy development, and joint action towards a rapid global transition to renewable energy. The REN21 Secretariat is based at UNEP in Paris/France.

REN21 brings together governments, nongovernmental organisations, research and academic institutions, international organisations, and industry to learn from one another and build on successes that advance renewable energy. To assist policy decision making, REN21 provides high-quality information, catalyses discussion and debate, and supports the development of thematic networks. REN21's activities support the 2014-2024 United Nations Decade of Sustainable Energy for All.

This year's *Renewables 2015 Global Status Report* (GSR 2015) marks 10 years of REN21 reporting. Over the past decade the GSR has expanded in scope and depth with its thematic and regional coverage and the refinement of data collection. The GSR is the product of systematic data collection resulting in thousands of data points, the use of hundreds of documents, and personal communication with experts from around the world. It benefits from a multi-stakeholder community of over 500 experts. Ten years on, the GSR has established itself as the world's most frequently-referenced report on the global renewable energy market, industry and policy landscape.

In addition to the GSR 2015, REN21 produced two regional reports in 2015. The *SADC Renewable Energy and Energy Efficiency Status Report* and the *UNECE Renewable Status Report* both documented the current status of renewables in the respective regions and provided a comprehensive overview of the status of renewable energy and energy efficiency markets, industry, policy and regulatory frameworks, and investment activities. Produced with UNIDO and the UNECE respectively, these reports serve as baselines for renewable energy development in the regions.

The South African International Renewable Energy Conference (SAIREC), held in Cape Town 4 – 7 October, attracted 3,600 delegates from 82 countries and offered extensive opportunities for delegates to discuss, learn and network. SAIREC provided a platform to address energy security and access in the sub-Saharan Africa context. Under the theme of RE-Energising Africa, SAIREC demonstrated why Africa is the business destination for the renewables energy sector. It also provided Africa with a unique opportunity to showcase its nascent yet promising renewable energy industry and gain experience from best practices as adopted in countries at the forefront of renewable energy deployment.

In 2015 REN21's revamped its Renewables Interactive Map allowing improved user access to the large quantity of data collected for the *Renewables Global Status Report* as well as the different Regional Status Reports. The addition of region-specific "dashboards" allows users to examine in-depth the renewable energy developments of a particular region. As part of its ongoing data collaboration with other data providers the REN21 the Renewables Interactive map is now accessible from IRENA's Resource portal.

Over the course of 2015, REN21 also continued to expand its cooperation with other organisations including UNIDO, UNEP, SE4All, World Bank, IEA and IRENA.

REN21 will contribute to the UN Decade by continuing its tradition of convening stakeholder group; in 2016 REN21 will host its 2nd Renewables Academy, in autumn 2016 in Bonn/Germany, bringing network contributors together from around the world. In parallel, REN21 will advance its work with IEA, IRENA, SE4All, UNIDO and other partners to strengthen synergies and to convey coordinated key messages to foster global renewable energy uptake.

REN21 will continue to develop its regional report series with the launching of the *EAC Renewable Energy and Energy Efficiency Status Report* and begin work on a similar status report for Small Island Developing States (SIDS). A Global Futures Report looking at the question of a 100% renewable energy future is also envisaged. In its continuing efforts to improve the *Renewables Global Status Report*, REN21 will work to enhance its data collection efforts on distributed renewables so as to provide better information on this renewable energy market segment. Data collection on the renewable energy heating and cooling and for the transport sectors as well as on energy efficiency will also be bolstered.

In anticipation of IREC 2017 in Latin America, preparations will begin on formalising the relationship between REN21 and the host country to ensure that conference structure and content support SE4All objectives.

XXII. International Renewable Energy Agency (IRENA)

SDG 7 and the SE4ALL Renewable Energy Hub

IRENA, the Renewable Energy hub within the UN Secretary-General's SE4ALL Initiative, has contributed to the consolidation of the SE4All vision and its targets on access, efficiency and renewables as Sustainable Development Goal 7 of the 2030 Agenda. As the only global intergovernmental organization dedicated solely to renewable energy, and approaching universal

membership, IRENA remains engaged in the efforts to translate the ambition of the SDG7 into concrete, measurable steps that will help attain this goal by 2030. IRENA is in a unique position to support these efforts as its mandate is fully consistent with the SE4ALL objectives. As such, all of its activities contribute to the overall agenda of the SE4ALL Decade.

IRENA, as RE Hub, has worked closely with other hubs, most notably on access, regional hubs led by the African Development Bank and the Inter-American Development Bank, as well as energy efficiency hub to ensure complementarity of effort. It also contributed to specific aspects of the initiative, including through participation in the Advisory Board, support to SE4All Forum, contributions to the Global Tracking Framework (led by the World Bank and the International Energy Agency), and collaboration with the World Bank in the Readiness for Investment in Sustainable Energy (RISE).

REMAP 2030

IRENA launched its REMAP 2030 during the first SE4ALL Forum in May 2014. REmap 2030 is a roadmap that identifies technology options, policy needs, and opportunities for international cooperation to double the global share of renewable energy by 2030. REmap analysis examines the costs, benefits and actions needed for decision-makers in 26 countries, accounting for 75% of global energy consumption, to achieve a doubling of renewable energy deployment by 2030. It confirms that, coupled with energy efficiency, the goal is achievable and even cost-effective when externalities taken into account.

After issuing the first global REmap analysis in 2014, IRENA focused on translating results into action through detailed analysis of some 40 countries. Working closely with its network of over 100 national and country experts, REmap country reports have been released for China, Germany, India (early 2016), Mexico, the United Arab Emirates and the United States of America (USA), as well as working papers for Poland and the Ukraine. REmap country-level work is ongoing with Argentina, Belgium, Colombia, the Dominican Republic, Egypt, Ethiopia, Iran, Kazakhstan, Kenya, Sweden and Uruguay. IRENA has also released a regional REmap report for Africa. Through this work, IRENA is offering new perspectives to countries that can help raise their renewable energy ambitions.

The impact of REmap work is emerging in different parts of the world. Various REmap countries have utilised REmap country report recommendations when considering their energy strategies. It is also feeding into the G20 process and the climate debate on the role of renewables in the Ad-Hoc Durban Platform and other meetings of the United Nations Framework Convention on Climate Change (UNFCCC).

IRENA Knowledge products and advisory services

IRENA continues to provide a wide range of knowledge products and advisory services to inform the energy debate and to support countries as they consider their sustainable development and energy future. Some examples of this work are listed below:

- The release of the Renewable Power Generation Costs in 2014 in January 2015 contains the most up-to-date analysis of renewable power generation costs and has received widespread

media and industry coverage. Cost publications are a vital component of IRENA's activities and compile in one source, critical and up-to-date information on renewable energy technologies, their costs and cost-reduction potential.

- IRENA's costing publications are designed to present the true costs and performance of renewables and help reduce the barrier that the absence of this information creates to the accelerated deployment of renewables.

- The second edition of *Renewable Energy and Jobs – Annual Review 2015* was launched in May 2015 in New York during the SE4ALL Forum. The review estimated that renewable energy, excluding large-hydro power, employs 7.7 million people worldwide. Furthermore, according to the first global estimate carried out by IRENA for the industry, large hydropower employs an additional 1.5 million jobs.

- Since 2011, IRENA has supported the Renewables Readiness Assessments (RRA) process in 26 countries. RRA process is a holistic assessment of conditions for renewable energy deployment in a country, and the actions necessary to further improve these conditions. RRAs have been completed for Djibouti, Fiji, Gambia, Ghana, Grenada, Kiribati, Mauritania, Mongolia, Mozambique, Nicaragua, Niger, Oman, the Philippines, Peru, Republic of Marshall Islands, Senegal, Swaziland, Vanuatu, and Zambia. The process is progressing in Antigua and Barbuda, Bahamas, Egypt, Pakistan, Tanzania, Tunisia, and Zimbabwe.

- IRENA's Global Atlas remains the world's largest database on renewable energy potentials. The Global Atlas facilitates a first screening of areas of opportunity where further assessments can be of particular relevance. It enables the user to overlay information listed in a catalog of more than 1,000 datasets, and to identify areas of interest for further prospection. Currently, the initiative includes maps on solar, wind, geothermal and bioenergy resources along with one marine energy map. The initiative will eventually encompass all renewable energy resources, providing global coverage through the first-ever Global Atlas for Renewable Energy.

- To support the development of bankable project proposals, IRENA launched the Project Navigator in 2014. The Navigator helps develop and implement renewable energy projects through on-line technical guidelines. Project Navigator workshops have been held in Cabo Verde, Malaysia, Mauritania and Mongolia. These events highlighted local challenges and opportunities, and trained project developers on the use and functionality of the Project Navigator to help improve the bankability of renewable energy projects.

- IRENA has developed in-depth analysis on the water-energy-food nexus that can inform decision making towards meeting sustainable development objectives. IRENA launched the *Renewable Energy in the Water, Energy and Food Nexus* report in January 2015. Building on the report, IRENA has developed comprehensive analysis on specific renewable energy applications, solar pumping for irrigation and solar water heating.

- Technology briefs are complementing REmap work through increased understanding of the characteristics of renewable technologies. Eleven technologies briefs have been issued in 2014-15, including a package of technology briefs on: ocean energy; wind power; hydropower; biomass for heat and power; renewable energy grid integration; solar heat and cooling for buildings and for industry; and renewable energy solutions for shipping. Sectors specific roadmaps in areas such as industry and transportation are also fulfilling an information need.

- IRENA's Knowledge Gateway platform, REsource, was launched at IRENA's 5th Assembly in January 2015. REsource enables free public access to all IRENA renewable energy information and data through an intelligent search engine.

- Since its release in September 2014, IRENA's flagship series, *REthinking Energy*, has received international recognition as a source of authoritative, accurate and impartial knowledge on

renewable energy. The second edition on Renewable Energy and Climate Change was released in November 2015 in preparation for the COP21.

- Renewable energy statistics: To improve availability of data and information about trends and developments in renewable energy, IRENA continues to improve the collection of statistical data from countries and through statistical capacity building with national, regional and global institutions. Combined with secondary data collected, an updated time series for generation capacity covering 170 countries and territories for the period from 2000-2014 was released in June 2015. Technical support was provided to the African Energy Commission (AFREC), the Asia-Pacific Economic Cooperation (APEC), the Secretariat of the Pacific Community (SPC) and United Nations Economic Commission for Africa (UNECA) and IRENA's renewable energy data has been shared with IEA and REN21. A glossary of renewable energy terms and definitions was produced in November 2015 to facilitate the collection of consistent and globally comparable renewable energy statistics. Through this stream of work, IRENA is also actively contributing to the UN Inter-Agency Expert Group on SDGs, tasked with developing the SDGs indicator framework.

- Renewable Energy and cities: Faced with growing populations, cities are increasingly in need of sustainable solutions to meet energy needs. In this regard, IRENA has focused on assisting municipalities with viable business models featuring mutually beneficial public-private partnerships. IRENA developed *A Practitioners' Guide to Wind Energy*, released early in 2015 to increase knowledge of the various approaches to the deployment of wind energy. IRENA is also geared towards supporting the Habitat III process that will culminate in Quito in October 2016.

IRENA as a platform for cooperation

IRENA's Assembly and biennial council meetings gather decision makers who, through the governing processes, set the global agenda on renewable energy. IRENA Assembly gathers over 1000 participants annually, including country policy makers as well as private sector, international organization and civil society actors. IRENA also provides a platform for cooperation through a range of expert and thematic activities, networks and events, such as:

- IOREC, the International Off-Grid Renewable Energy Conference Platform. IRENA works to increase access to renewable energy through its International Off-Grid Renewable Energy Conference (IOREC), work on mini-grid and off-grid applications, and capacity building. Off-grid renewable energy systems are now the most cost-effective solution for electrification in most rural areas. Tapping into this vast potential requires enabling effective policy and regulatory frameworks, tailored business and financing models and technologies adapted to the rural context. IOREC convened sector stakeholders to collectively identify pathways to scale-up off-grid renewable energy deployment. IOREC 2014, a joint effort by IRENA, the Asian Development Bank and the Alliance for Rural Electrification, was held in June 2014 in the Philippines. Findings of the conference have been widely disseminated across global and regional fora. As a follow-up to the conference and the outcome paper, IRENA is analyzing policies and regulatory frameworks to enable private sector involvement in mini-grid development. Relatedly, in partnership with ECREEE, a scoping of capacity needs assessment was conducted for the ECOWAS region to enable the deployment of renewable energy mini-grids for off-grid electrification. To facilitate cross-regional information exchange, IRENA initiated a knowledge transfer programme between South Asia and Sub-Saharan Africa to support entrepreneurs in providing energy access through decentralised renewable energy technologies.

- IRENA is also supporting the Global Geothermal Alliance (GGA), a coalition for action to increase the share of geothermal energy in the global energy mix. A platform for dialogue and knowledge sharing, the GGA currently has 33 partners. The Alliance met for the first time in Nairobi in June 2015 where 70 high-level representatives discussed its activities and plans for the future. Participants of the meeting included representatives from African Union Commission; Eastern Africa Power Pool; ENEL Green Power; European Investment Bank; Geothermal Energy Association; International Geothermal Association; International Finance Cooperation, JICA, New Partnership for Africa's Development; Regional Electricity Regulators Association of Southern Africa; Reykjavik Geothermal; Secretariat of the Pacific Community and UNEP. The GGA was formally launched during the COP21 in Paris.
- Bridging the gap between the scientific modelling community and government energy planners, IRENA held three workshops to gather input on the modelling of renewables for policy making. Attended by over 150 experts from around the world, the workshops' output formed the basis for an assessment of current long-term planning methodologies for the integration of renewable energy into national and regional power systems called *Addressing Variable Renewables in Long-term Energy Planning (AVRIL)*. Following the development of AVRIL, IRENA hosted the 34th International Energy Workshop (IEW) in June 2015 in Abu Dhabi, a conference for the international energy modelling community. The IEW gathered over 200 experts to compare quantitative energy projections, to understand diverging views of future energy developments, and to observe new trends in global energy production and consumption.

IRENA's regional action agenda

In January 2014, IRENA was called upon to take the lead on catalyzing action on renewable energy in the context of the UN Secretary-General's Climate Summit that took place in September 2014. In preparation for the Summit, IRENA focused on mobilizing action in two of its programmatic activities, namely the Africa Clean Energy Corridor (ACEC) and the new SIDS-focused initiative, the Lighthouses. Both initiatives gained a significant momentum, culminating at the Climate Summit where Heads of State and Government, CEOs and financing institutions voiced their strong support and commitment to realizing the ambition of these initiatives.

- During the Renewable Energy Forum that took place in the sidelines of the Third International Conference on the SIDS in Samoa on 30 August 2014, leaders and experts highlighted the importance of renewable energy for supporting the sustainable development of SIDS and highlighted the key areas that need to be addressed in order to advance renewable energy in SIDS. Against this background, IRENA developed the SIDS Lighthouses Initiative to support the strategic deployment of renewable energy in SIDS, to bring clarity to policy makers regarding the required steps, and to enable targeted action. As a joint effort of SIDS and development partners, this framework for action assists in transforming SIDS energy systems through the establishment of the enabling conditions for a renewable energy-based future, by moving away from developing projects in isolation to a holistic approach that considers all relevant elements spanning from policy and market frameworks, through technology options to capacity building.

The SIDS Lighthouses Initiative has been growing rapidly, in size and scope, leading up to COP21, with membership consisting of 27 SIDS and 19 other partners as of October 2015. As a first step in the Initiative, IRENA is working with partners to develop a comprehensive overview of knowledge and information on the SIDS power sector, best practices on renewable energy development and deployment, and energy sector transformation issues. This overview has started to bridge the gap between studies and concrete action to accelerate deployment. A number of SIDS have made specific requests for technical and other support and IRENA - enabled by voluntary contributions from Germany, New Zealand and Norway - has been able to respond to these requests. IRENA is also working with a number of other partners to advance the initiative. The first SIDS Lighthouses Event was held in Martinique in June 2015 with the support of the Government of France, where a number of priority action points were identified among SIDS, private sector and development partner participants. A number of Lighthouses partners, in cooperation with IRENA, organized additional events to address key issues for the deployment of renewable energy in SIDS. This includes workshops in Honolulu with the support of the Government of the United States, and in Kuala Lumpur with the support of the Government of Japan in August 2015, and Cape Town with the support of the Government of Germany in October 2015.

- The Africa Clean Energy Corridor (ACEC) promotes a regional approach to the development and deployment of renewable energy on the African continent, beginning with countries that make up the Eastern Africa Power Pool (EAPP) and Southern African Power Pool (SAPP). At the 4th IRENA Assembly in January 2014, an action agenda on the implementation of Africa Clean Energy Corridor was endorsed through a Ministerial Communiqué. Power Pool and regional regulator engagement in Eastern and Southern Africa was further strengthened in the ACEC through a coordination meeting held in Abu Dhabi in June 2015. The ACEC Communiqué calls for action in five key areas, namely: 1) zoning and resource assessment, 2) country and regional planning, 3) enabling frameworks for investment, 4) capacity building, and 5) public information. IRENA completed the *Analysis of Infrastructure for Renewable Power in Eastern and Southern Africa*, which outlined the state of the electricity sector and existing infrastructure and gaps to be addressed. IRENA held a Renewable Energy Training Week (RETW) designed to support regulatory decision-making for the development and integration of renewable generation resources into national and regional power systems. IRENA continues to work, upon request, with individual countries in support of the ACEC development. To facilitate regular information sharing, engagement and collaboration, the first meeting of the ACEC Consultative Forum was organized in the margins of SAIREC in October 2015. In response to growing interest from the rest of Africa, IRENA has initiated preparatory work to expand the ACEC initiative to West Africa.
- IRENA and the Central American Integration System (SICA) are developing the Central America Clean Energy Corridor initiative. The initiative aims to integrate more renewables into the existing Central American Electrical Interconnection System, which stretches from Guatemala to Panama. In 2014, IRENA conducted a technical consultation mission followed by stakeholder workshops in 2015 to identify areas for renewable energy deployment in collaboration with national and regional stakeholders, including the Central America Regional Grid Operator (EOR), the Regional Regulator (CRIE) and the national operators and regulators among others. The consultations led to the identification of targeted activities for

a Clean Energy Corridor for Central America, composed of five pillars to support the systemic transition of the region's electricity system.

The IRENA/Abu Dhabi Fund for Development (ADFD)

IRENA's mission to scale up renewable energy globally is actively supported through the IRENA/Abu Dhabi Fund for Development (ADFD) Project Facility. Through this facility, USD \$350 million in concessional loans will be allocated by ADFD to projects in developing countries as recommended by IRENA. These funds are disbursed over seven cycles, leveraging the equivalent or more from other sources. The Facility's focus is on innovative projects with transformative results that enhance learning, are easily replicated or scaled up and advance deployment of energy and sustainable development. Following the first cycle, which resulted in the allocation of USD \$41 million and an additional USD \$42 million leveraged in January 2014, the second cycle allocated USD \$57 million in concessional loans to five projects in January 2015, leveraging an additional USD \$86 million. The second cycle will see a combined total capacity of 35 MW installed and bring reliable and sustainable power to more than 280,000 people in rural communities that currently lack access to modern energy services.

XXIII. United Nations Children's Fund (UNICEF)

Children, mothers, energy, climate change and equity are inextricably linked. In fact, energy plays a key role in children and mothers' development and well-being. For example, children need energy at home to do homework after dark, at health centers to get proper treatment, including at night time, and for transportation to school. Mothers need energy for maternal health care, for cooking meals and boiling water, and also for income-generating activities. In many places, children and mothers' energy needs are simply not met, or they depend on unsustainable energy resulting in for example household air pollution from which 534,000 children under five die annually.

UNICEF is stepping up its involvement to ensure climate change will not further infringe on children's rights. As part of that, it is expected that promoting innovative sustainable energy solutions for children will become one of the priority areas. Already, UNICEF is increasingly applying sustainable energy solutions in its Country Office Programmes of Cooperation, and is in the process of exploring possibilities to scale up its involvement and investments in this area.

Some examples of UNICEF's current work on sustainable energy are the following:

- **Improved cook stoves in Bangladesh:** This carbon offset initiative started in early 2014 and is a joint initiative of the UK Committee for UNICEF and the UNICEF Bangladesh Country Office (CO), with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH as the main implementing partner. Set up for a period of ten years, the initiative brings together businesses and the international development sector, through the purchasing of carbon credits, with Marks & Spencer (M&S) as the first major company participating in this new "financing for development" scheme.

Over the course of its lifespan, the initiative will provide 40,000 low-income households in Bangladesh with improved cookstoves that are technologically similar to and which uses the same fuel as the traditional ones used in the country, but which are much more efficient. These improved stoves need only half the amount of fuel as traditional stoves and have chimneys. As a result, they produce one ton less of carbon per year than a traditional stove, and reduce the amount of toxic smoke and particulates in homes. Community entrepreneurs are being trained in how to make the stoves from locally available materials, and then sell them at a subsidized affordable rate, and provide maintenance and user support. Cooperation with local and international universities is being established to bring forward the research on indoor air pollution in Bangladesh and the effectiveness of improved stoves, respectively.

- **Project Lumière in Burundi:** Project Lumière started in mid-2013. Through collaboration between stakeholders including UNICEF, the private sector partner Nuru Energy, the local NGO FVS, community volunteers, the University of Brussels and local academic institutions, the project aims at strengthening services for children at the community level and help deliver sustainable energy solutions.

Over the course of the pilot phase, 16 community groups from three different provinces with varied geographic and economic profiles will participate in the project. These community groups purchase a PowerCycle (pedal-powered generator) and rechargeable LED lights to be sold within their communities. Each group, comprised of up to 45 members, makes an initial payment towards the purchase of the generator, and pays down the balance over a fixed period of time through revenue generated from the sale and recharge of the LED lights. In parallel, UNICEF works closely with the local NGO, which serves as micro-finance partner, to support the development of a community-owned social enterprise to oversee management, procurement and distribution of additional lights and other affordable off-grid energy solutions.

- **‘Youth Kiosks’ and ‘MobiStations’ in Uganda:** UNICEF Uganda’s Innovation Lab has developed two key products which run on sustainable energy together with local experts.

Youth Kiosks are robust computers, powered through solar energy, usually consisting of a set of three low-energy laptops which are mounted in a metal housing to a wall. They are loaded with a great variety of educational material, including Uganda’s national school curriculum in video format. Currently, 37 of these mobile school labs are placed in youth centres in poor rural and urban settings. Installing the Youth Kiosks in public spaces is particularly important in providing access to information and education to those children that have dropped out or never attended school in the first place. In addition to the educational information children receive through operating the Kiosks, they acquire basic computer literacy as a practical skill that can be of great advantage in their future work-life.

MobiStations are the digital version of the ‘school-in-a-box’ that has been provided by UNICEF as a hallmark disaster response for the last twenty years. These portable technology platforms can be powered through solar energy, generator, or grid. They include a laptop, micro projector, multiple camera devices, speakers, and batteries. MobiStations feature multiple USB ports, extended battery life, optional solar panels, and can function as content servers and wireless hotspots. They are pre-loaded with free quality educational content and can be used for a variety of contexts such as education and trainings in schools, universities, the health sector, and also in emergency settings. In the latter, MobiStations are usually combined with UNICEF’s Rapid Family Tracing and Reunification (RapidFTR) software with the objective to support reuniting disconnected families in these settings.

In 2015, UNICEF launched a paper on “Why sustainable energy matters to children: The critical importance of sustainable energy for children and future generations”⁶ The paper aims to inform governments and development partners on children and mothers’ distinct energy needs and the state of the art in meeting these sustainably. It identifies specific barriers that hamper children and mothers’ access to sustainable energy and provides targeted policy recommendations.

⁶ Available: http://www.unicef.org/environment/files/UNICEF_Sustainable_Energy_for_Children_2015.pdf