

SUMMARY OF THE THIRD SUSTAINABLE ENERGY FOR ALL FORUM: 3-5 APRIL 2017

The third Sustainable Energy for All (SEforALL) Forum convened from 3-5 April 2017 in New York, US, with over 1,700 registered participants considering ways of “Going further, faster - together.” During the three days, representatives from government, business, civil society and international organizations gathered to broker new partnerships and ideas, spur investment and drive action towards sustainable energy, while sharing stories from across the world of how they are making progress towards realizing Sustainable Development Goal 7 (to secure affordable, reliable, sustainable and modern energy for all by 2030).

Each day started with a Wake-Up Call session, which: welcomed participants to the “marketplace;” discussed the imperative for action, the opportunity that energy productivity provides for growth and development, and the vast potential for renewables in Africa; and challenged participants to regard universal access to energy in the context of sustainability, and the benefits this can provide in terms of development outcomes. This was followed by a Marshalling the Evidence session focusing on: the latest data on energy productivity; the latest data on access to electrification, clean cooking and renewable energy; and practical and inspirational examples that showcase the tangible development benefits that accrue with access to energy.

Each day, a Knowledge into Action session explored how leaders use ambitious policies and incentives to harness the potential of energy efficiency, renewable energy, and access to electricity and clean cooking. Over the three days, in nine Dive Deep sessions, panelists delved into different elements of sustainable energy, including policies, country actions, utilities, connections, clean cooking, doubling energy productivity, leaving no one behind, the new market, and “off grid – on target.”

The remainder of the meeting was spent in 33 Partner Working Sessions, a selection of which is covered in this report. The Global Tracking Framework was launched, containing a dashboard of progress made towards ensuring universal access to modern energy services, doubling the share of renewable energy in the global energy mix, and doubling the rate of improvement in energy efficiency. The Global Futures Report was also launched, containing a summary of the feasibility and challenges of achieving a 100% renewable future. The SHINE initiative, an emerging, independent global campaign dedicated to ending energy poverty and unlocking new opportunities for billions of people, was announced on the last day.



Participants during the closing of the 3rd SEforALL Forum

A BRIEF HISTORY OF SUSTAINABLE ENERGY FOR ALL

In December 2010, the UN General Assembly (UNGA) adopted resolution 65/151, designating 2012 as the International Year of Sustainable Energy for All. The resolution also requested the UN Secretary-General, in consultation with relevant agencies in the UN system and UN-Energy, to organize and coordinate

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activities to be undertaken during the International Year of Sustainable Energy for All. UNGA recognized that access to modern affordable energy services in developing countries was essential for the achievement of internationally agreed development goals, which would help reduce poverty and improve the conditions and standard of living for the majority of the world's population.

In response to this resolution, UN Secretary-General (SG) Ban Ki-Moon launched the "Sustainable Energy for All" initiative to mobilize action from all sectors of society to realize sustainable energy for all by 2030. The SG set three interlinked objectives to be achieved by 2030: providing universal access to modern energy services; doubling the global rate of improvement in energy efficiency; and doubling the share of renewable energy in the global energy mix. In September 2011, to guide the work carried out under the Sustainable Energy for All initiative, Ban Ki-Moon appointed a High-level Group on Sustainable Energy for All, comprising global leaders from around the world.

GLOBAL ACTION AGENDA: This strategic document was developed and endorsed by the High-level Group in April 2012, to provide guidelines for governments, the private sector and civil society to engage with the UN as a convening platform where key stakeholders from both developing and developed countries can mobilize commitments, foster new public-private partnerships and leverage investments needed to make transformative changes to the world's energy systems.

The Global Action Agenda identifies 11 "action areas" that provide a framework for organizing collaborative efforts across all relevant sectors, and these action areas are classified into "sectoral action areas" and "enabling action areas." The sectoral action areas are: modern cooking appliances and fuels; distributed electricity solutions; grid infrastructure and supply efficiency; large-scale renewable power; industrial and agricultural processes; transportation; and buildings and appliances. The enabling action areas are: energy planning and policies; business model and technology innovation; finance and risk management; capacity building; and knowledge sharing.

INTERNATIONAL DECADE ON SUSTAINABLE ENERGY FOR ALL: In December 2012, the UNGA declared 2014-2024 as the Decade of Sustainable Energy for All. Resolution 67/215 called upon Member States to galvanize efforts to make universal access to sustainable modern energy services a priority, and stressed the need to improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services and resources for sustainable development. The UNGA called upon governments and all relevant stakeholders, to combine, as appropriate, the increased use of new and renewable energy resources, more efficient use of energy, greater reliance on advanced energy technologies, including cleaner fossil fuel technologies, and the sustainable use of traditional energy resources, to meet the increasing need for energy services.

FIRST SUSTAINABLE ENERGY FOR ALL FORUM: Held in New York, US, on 4-6 June 2014, this event officially launched the UN Decade of Sustainable Energy for

All 2014-2024, including the initial two-year focus on women, children and health. The Forum assessed progress on sustainable energy since the Rio+20 Conference, showcased successes, shared best practices, presented new commitments, and worked to catalyze action to help shape the global energy debate for the next decade.

SECOND SUSTAINABLE ENERGY FOR ALL FORUM: Held in New York, US, on 18-21 May 2015, under the overarching theme of 'Financing Sustainable Energy for All,' the event included the first-ever Global Energy Ministerial Dialogue at the UN. The Forum featured multi-stakeholder discussions including more than 70 dialogue sessions under eight thematic tracks of finance, energy access, energy efficiency, renewable energy, country action, innovation for impact, global policy agenda and growing the movement. The Ministerial Dialogue concluded with the launch of a new Global Sustainable Energy for All Commitment Platform as an institutional framework for convening the broad partnerships that are needed to accelerate achievement of SEforALL's objectives.

SUMMARY OF THE THIRD SUSTAINABLE ENERGY FOR ALL FORUM

The third SEforALL Forum took place from 3-5 April 2017. On each day of the Forum, discussions were organized into different sessions: the Wake-up Call; Marshalling the Evidence; Knowledge into Action; the Deep Dive; Partner Working Sessions; and "Disruptive Voices." In addition, on Monday, a Global Covenant of Mayors for Climate and Energy session was held. This report summarizes the daily discussions held in the Wake-up Call, Marshalling the Evidence, Knowledge into action, the Deep Dive, Disruptive Voices, the Global Covenant of Mayors, plus a selection of the Partner Working Sessions.

THE WAKE-UP CALL

On Monday morning, 3 April, Rachel Kyte, CEO, SEforALL and Special Representative of the UN Secretary-General for Sustainable Energy for All, opened the meeting, describing the Forum as a marketplace to share ideas, cement partnerships and drive investments and action. She underscored the Global Tracking Framework (GTF) as a dashboard to measure progress toward the energy sustainable development goal (SDG 7). Kyte emphasized that sustainable energy for all is dignity for all,



(L-R): **Rachel Kyte**, CEO, SEforALL, and Special Representative of the UN Secretary General for Sustainable Energy for All; **Paul Simons**, Deputy Executive Director, IEA; and **Charles Holliday**, Chair, Board of Directors, Royal Dutch Shell

keeping hospitals running, schools warm and lit, and food fresh; generating jobs; and pumping water. She noted that the goals can be achieved cheaper, easier and quicker than many believe.

Paul Simons, Deputy Executive Director, International Energy Agency (IEA), provided an overview of progress in achieving the SEforALL goals. He emphasized that the world is not on track to meet these goals by 2030. On access, he noted good progress on electricity but a tremendous gap in access to clean cooking. Simons said the 2.6% energy efficiency target is far from being reached. He said renewable energy penetration is on track to meet goals in the electricity sector, but not in the heat or transport sectors. Simons emphasized the need to elevate the political stature of the energy agenda, and reiterated the IEA's readiness to provide data, analysis and policy support.

Chad Holliday, Chairman, Board of Directors, Royal Dutch Shell, underscored the need to build momentum and to launch sustainable energy for all in more places. He stressed that the industry needs to be challenged more, and emphasized that the bar needs to be raised three times higher than where the world is now.

On Tuesday, Rachel Kyte opened the Wake-up Call session by reflecting on highlights of the previous day. She noted that to attain SDG 7, much needs to be done in Africa, stressing that there cannot be a repeat of the past.

Zouera Youssoufou, Managing Director and CEO, Dangote Foundation, emphasized that the African perspective is missing, and that much is being done without the express participation of Africans themselves. Noting that the current mindset leads to an uneven approach, she encouraged replacing it with efforts to work together and making a concerted effort to bring Africans to the table. She pointed out that no country has been developed from the outside, and that it is vital that African entrepreneurs and banks are involved.

Youssoufou also identified good governance as a major issue in the African context. She underlined a lack of female representation, noting that women's voices are not sufficiently reflected at the county, city and country levels.



Rachel Kyte, CEO, SEforALL, and Special Representative of the UN Secretary-General for Sustainable Energy for All, and **Zouera Youssoufou**, Managing Director and CEO, Dangote Foundation

Kyte emphasized that creating an integrated energy system everywhere will require peer-to-peer relationships, and said Asia's and Africa's futures will not follow the same path used by the more industrialized world.

On Wednesday, Laura Tuck, Vice President of Sustainable Development, World Bank Group, challenged participants to regard universal access to energy in the context of sustainability, suggesting that achieving all the SDGs will force trade-offs, since they compete for the same limited resources such as extractives, water and land. She emphasized that finding the balance will require creativity in innovation, finding more sustainable sources for new developments, and technological support to governments.

Steve Howard, Co-Chair of We Mean Business, and former Chief Sustainability Officer, IKEA, quizzing panelists on "leveling out a playing field" where "no one is left behind," underscored the need to engage the business community in technology innovation and upscaling promising ventures, and to support these with long-term policies.



(L-R): **Steve Howard**, Co-Chair of We Mean Business, and former Chief Sustainability Officer, IKEA Group; **Laura Tuck**, Vice President, Sustainable Development, World Bank Group; **Thomas Gass**, Assistant Secretary-General for Policy Coordination and Inter-Agency Affairs, UN DESA; and **Martin Shearman**, Ambassador for Development and Human Rights, UK

On the debate about sustainability, Thomas Gass, Assistant Secretary-General for Policy Coordination and Inter-Agency Affairs, UN Department of Economic and Social Affairs, urged engaging all sectors and levels of society, turning around the accountability paradigm to include local leadership and individuals, and bringing the conversation about trade-offs away from just the science and policy spheres and into the local public debate space.

Martin Shearman, Ambassador for Development and Human Rights, UK, reiterated the UK's commitment to a world where prosperity is shared more equitably and poverty alleviation is a priority. He emphasized that the energy goal is crucial for poverty eradication, which is the overarching aim of the SDGs, and is an important area of official development assistance.

MARSHALLING THE EVIDENCE

On Monday, moderator Christoph Frei, Secretary General, World Energy Council, noted a change, even a tipping point, in the energy industry's thinking. He expressed the need to increase energy intensity gains from current 2.1% to 2.6% annually, and to look beyond efficiency in rethinking the energy system. He closed by underscoring decentralization, storage, and market design.

Discussing the transportation sector, Patrick Oliva, Senior Vice President, Michelin Group, stated that despite impressive change over past decades, further needs include decentralization, biofuels and synthetic fuels. He said there is a huge demand and need for electrifying transportation in rural areas.

Paul Simons described challenges in decarbonizing the transportation sector. He highlighted challenges for car electrification and fuel efficiency, such as low fuel prices, integration of solar and wind into a grid with varying demand, and storage. He called for a combination of carbon pricing and regulation to meet the 2C climate goal.

Discussing the power sector, Francesco Starace, CEO and General Manager, ENEL, described his organization's shift in mindset, using more solar and wind sources, and phasing out fossil fuels, thereby decoupling from commodity cycles. Starace observed that grids can manage as much as 50-60% penetration of renewables, with further digitalization taking place in the next 5-10 years. He considered legacy assets to be a particular challenge to new investment, as companies try to gain a few more years of usage from them.

Jules Kortenhorst, CEO, Rocky Mountain Institute, noted room for improvement in industries, though no magic bullet exists. He listed potential solutions such as carbon capture, biomass and increased efficiency. Kortenhorst said carbon pricing is probably the most important lever that exists, as it gives a signal to industry, and agreed with the importance of digitalization in transforming the energy system.

On the building sector, moderator Jennifer Layke, Global Director Energy Program, World Resources Institute (WRI), described how 70% of the world is moving into cities and 50% of the building stock is yet to be refurbished.



(L-R): **Christoph Frei**, Secretary General, World Energy Council; **Paul Simons**, Deputy Executive Director, IEA; and **Patrick Oliva**, Senior Vice President, External Relations, Sustainable Mobility and Energy Transition, Michelin Group

Josué Tanaka, Managing Director for Energy Efficiency and Climate Change, European Bank for Reconstruction and Development, noted that financing for energy efficiency and fragmentation of the sector are particular challenges. He identified responses as: creating a market for energy efficient buildings, using codes and standards; delivering targeted capacity building for each government; examining programmes after implementation; providing financing instruments; and working with municipalities and small banks at the ground level.

On Tuesday, after watching a short animation on progress and closing the access gap, Vivien Foster, Global Lead for Energy Economics, Markets & Institutions, Energy and Extractives Global Practice, World Bank Group, moderated the session on what needs to be done with regards to access to electrification and clean cooking for high-impact countries, in order to meet the objective of universal access by 2030.

Boston Nyer, Co-Founder and General Manager, Burn Manufacturing, noted the cookstove sector needs to shift away from purely focusing on health, and to highlight the positive impacts on the environment, gender and poverty alleviation. He encouraged progressing from "piecemeal" sales towards building markets and demand, and advocated for leveraging the networks and access to finance from the solar sector to ease entry for other products in the sustainable energy space.

On potential ways of accelerating technical progress, Thomas Dubeau, Head of Business Development Mobisol, stressed that often the systems are in place, but what is missing are the inexpensive and energy efficient appliances that cost less than US\$500.

Lais Lona, Business Development Africa, SunFunder, discussed commercial financial innovation initiatives to expand the solar energy sector. He highlighted upfront costs as the main constraint for solar, emphasizing the need for access to credit to enable down-payments. Lona said timing, scale and adaptation are key, with different stages of the business process requiring different approaches, while new innovations develop constantly.



(L-R): **Vivien Foster**, World Bank Group; **Thomas Duveau**, Mobisol; **Lais Lona**, SunFunder Africa; **Mafalda Duarte**, Climate Investment Funds; **Boston Nyer**, Co-Founder and General Manager, Burn Manufacturing; and **David Lecoque**, ARE

On major policy barriers to off-grid electrification, David Lecoque, Policy and Business Development Manager, Alliance for Rural Electrification, identified two entry points, including developing the entire business environment to ease operation at the tax and VAT levels, and improving the climate at the business level through clear policy commitments.

On concessional financial instruments, Mafalda Duarte, Head, Climate Investment Funds (CIF), noted the CIF's experience over eight years in 72 developing countries. She said the CIF plays an important role in establishing a regulatory environment through laws and regulations. She emphasized the role of creating markets by providing direct support to private sector companies through access to debt or equity, or support to financial institutions that empower entrepreneurs.

On Wednesday, moderator Riccardo Puliti, Senior Director, Energy and Extractives, World Bank Group, emphasized this panel's focus on inspirational but practical examples, showing tangible benefits for energy access. He emphasized the many ways that energy enables access to services, and stated the importance of doing things on the ground.

Princess Abze Djigma, Founder and CEO AbzeSola, noted the importance of women's empowerment and focusing on energy access for those at the bottom of the pyramid. She emphasized that creativity arises in the face of difficulties. Djigma pointed out the informal sector's role, and the involvement of local people. She noted the need for a mix of solutions that are both on and off the grid, using a bottom-up approach.

Aaron Leopold, Global Energy Representative, Practical Action, called for decision-makers to take a leap forward, not seeing innovative finance as an obstacle, and use current tools. Leopold noted the role of trust, with partnerships successful when they are independent and led by local trusted professionals in energy. He concluded saying that technology is necessary, "but is so much more about people" and relationships.

Martin Kariongi Ole Sanago, Community Leader, Terrat Village, Tanzania, described his experiences supplying power to Maasai villages, to power a radio and more. He saw energy as a way to bring people into harmony with modernity, while also

preserving traditions. Kariongi explained how energy led to the creation of opportunities for Maasai. He stated that the power helped reduce poverty, calling energy provision a fantastic and unimaginable driving force.

Anish Thakkar, Co-founder, Greenlight Planet, described his organization's work in making a low-cost decentralized lighting product that now reaches 6 million households in 50 countries. He highlighted the value of partnering with microcredit organizations to provide financing for purchase of solar products, noting that scale remains an obstacle. Thakkar explained the need to understand the local context, saying this is in part achieved by partnering with organizations on the ground that have distribution, finance and balance sheet capability. He urged using models that consider this a global problem, not just a one-country problem.

Niru Shrestha, ENERGIA's Women Entrepreneur 2017 from Nepal, described her work in cookstove promotion that helps women save time, as they currently spend around 7 hours per day collecting fuel and cooking. She noted that even though women have been supported informally, they are under-recognized, and should be given access to support, information, and finance.



Aaron Leopold, Global Energy Representative, Practical Action



(L-R): **Naoko Ishii**, CEO and Chairperson, the GEF; **Nawal Al-Hosany**, Executive Director, Masdar, and Director of the Zayed Future Energy Prize; **Pierre Arcand**, Minister of Energy and Natural Resources, Quebec; **Rachel Kyte**, CEO, SEforALL; **Tanya Müller García**, Secretary of Environment, Mexico City; **Philip Lowe**, Executive Chair, World Energy Trilemma, World Energy Council; and **James Wilde**, Managing Director, Innovation and Policy and Markets, Carbon Trust

KNOWLEDGE INTO ACTION

In the Monday session on using ambitious policies and incentives to harness the potential of energy efficiency, moderator Rachel Kyte challenged participants on: the reasons some countries and cities prioritize energy efficiency; the lessons learned in raising the level of energy efficiency; and how to spur governments and cities towards making greater progress.

Nawal Al-Hosany, Director, Sustainability, Masdar, and Director, Zayed Future Energy Prize, said increasing energy efficiency is generally the lowest hanging fruit of the UAE's solutions, and thus the best place to start investing in sustainable energy both on the demand and supply sides.

Naoko Ishii, CEO and Chairperson, the Global Environment Facility (GEF), highlighted that developing sustainable energy solutions cannot be done in isolation, but require partnerships and implementation across all sectors, such as by: city mayors improving building codes; financial partners reducing investment risks and providing finance; and increasing the scale of implementation across the world.

Sir Philip Lowe, Executive Chair, World Energy Trilemma, World Energy Council, urging decision makers to firstly think as consumers, noted that saving on energy has become a world phenomenon which provides opportunities to implement policies collectively, including through designing better buildings and improving transport performance. He suggested developing frameworks for building owners to limit risks while offering opportunities for refurbishing, noting that greater decentralization increases ownership and accountability.

Tanya Müller García, Secretary of Environment, Mexico City, spoke of the city's drive to make energy efficiency a priority. She highlighted key actions required, including unlocking public and private resources, getting the political mandate and political will from the mayor, improving implementation through regulation and monitoring, and setting the example at the public level so that other sectors will turn to voluntary implementation.

On the success factors driving Quebec's green economy, Pierre Arcand, Minister of Energy and Natural Resources, Quebec, identified: agreement among political parties on addressing climate change; and the need to improve the province's energy efficiency. He emphasized the role of conveying a simple message such as: the sound economic principles of introducing energy-saving cars instead of importing more energy; and the provision of tax benefits for building renovation.

James Wilde, Managing Director, Innovation & Policy and Markets, Carbon Trust, identified the main barriers to progress in energy efficiency as limited investments and lack of understanding of opportunities. He said policy instruments are key to managing competitiveness and enabling industry to overcome these barriers by designing a system that will unlock the market and create demand.

On Tuesday, the session was moderated by Pete Ogden, Vice President, Energy, Climate and Environment, UN Foundation, and had a special focus on Latin America and the Caribbean (LAC).

Issa Kort, President, Energy Commission of the Latin-American Parliament and Congressman, Chile, underscored the potential for growth in the region. He emphasized the need for integration and interconnection, as well as for informing politicians and decision makers about technical energy issues.

Jules Kortenhorst said Caribbean countries have become front-runners in implementing solutions for climate change, particularly as renewable energy provides a better solution than historical diesel generation. He emphasized that well-designed tenders can achieve cost effective renewables in islands at prices comparable to larger countries, and stressed the need to design the tenders to ensure delivery. He also underscored the role of digitalization in managing demand.

Ethan Zindler, Head of Americas, Bloomberg New Energy Finance, emphasized that LAC is a very heterogeneous region. He said LAC is viewed as a growth market with outstanding



(L-R): **Pete Ogden**, Vice President, Energy, Climate and Environment, UN Foundation; **Issa Kort**, President, Energy Commission of the Latin-American Parliament; **Manish Bapna**, Executive Vice President and Managing Director, WRI; **Christine Lins**, Executive Secretary, REN21; **Jules Kortenhorst**, CEO, Rocky Mountain Institute; and **Ethan Zindler**, Bloomberg New Energy Finance

resources and at the leading edge of reduced renewable energy prices. He cautioned, however, that it remains to be seen how many low-cost renewable energy projects will actually be developed. Zindler noted that while distributed solar is not currently a market in LAC, it is bound to develop due to decreasing costs.

Manish Bapna, Executive Vice President and Managing Director, WRI, emphasized the role of the demand side from the private sector. He highlighted that more than 90 iconic large corporations have committed to 100% renewable procurement. Bapna underscored the Renewable Energy Buyer's Alliance, which has helped large US companies sign over 750MW renewable energy contracts over the last two years.

Christine Lins, Executive Secretary, REN21, said the Global Futures report outlines the obstacles and challenges for a 100% renewable future. She underscored that 100% renewables by mid-century is not only feasible, but also realistic. She noted that it is important to create awareness about this fact. Lins emphasized that the energy transition also implies a greater democratization of energy supply.

On Wednesday, Roberto Ridolfi, Director, Sustainable Growth and Development, European Commission, underscored that energy access is not only about electricity, but also hope. He emphasized the effects of digitalization, and the need to open energy to other sectors.

Chitalu Chilufya, Minister of Health, Zambia, said energy is a key determinant for health. He emphasized the need for electricity in maternity wards and refrigeration for vaccines and blood banks. Chilufya underscored that lack of electricity means lives are lost. Noting that health facilities and centers carry social capital, he identified health center electrification as potential seeds for community electrification.

Ana Hajduka, Founder and CEO, Africa GreenCo, underscored the need for structural changes and new business models to create markets. She called for intermediary buyers and sellers of electricity, focusing on delivering energy to power pools as a way to increase liquidity in the energy sector. She emphasized the need for partnering with utilities.



(L-R): **Roberto Ridolfi**, Director, European Commission for Sustainable Growth and Development; **Chitalu Chilufya**, Minister of Health, Zambia; **Ana Hajduka**, CEO, Africa GreenCo; **Philippe Scholtès**, Managing Director, Programme Development and Technical Cooperation, UNIDO; **Nicola Armacost**, Managing Director, Arc Finance, Ltd.; and **Saadia Madsbjerg**, Managing Director, The Rockefeller Foundation



(L-R): **Michael Bloomberg**, Founder of Bloomberg LP and Bloomberg Philanthropies, and 108th Mayor of New York City; **David Westin**, Co-Ancor, Bloomberg Daybreak Americas, Bloomberg Television; **Christiana Figueres**, former UNFCCC Executive Secretary, and Convener, Mission 2020; and **Maroš Šefčovič**, Vice-President, Energy Union, EC

Philippe Scholtès Managing Director, Programme Development and Technical Cooperation, UN Industrial Development Organization (UNIDO), highlighted the importance of energy efficiency in industrial applications. Noting the need for collaboration and partnerships, he underscored the industrial energy efficiency accelerator, bringing together private organizations, development institutions, governments and civil society to make things happen on the ground. Scholtès emphasized UNIDO's focus on energy-intensive medium and small enterprises.

Nicola Armacost, Managing Director Arc Finance, stressed business models for off-grid consumer financing. She identified organizational issues as significant barriers to energy access. She added that women are central to the off-grid space and underscored the disproportionate effect on women from using traditional cooking fuels.

Saadia Madsbjerg, Managing Director, The Rockefeller Foundation, said energy access requires building new markets that do not exist today, which in turn requires investment. She underscored the need for institutions willing to invest and take that extra risk, such as the Rockefeller Foundation.

GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY

This session took place on Monday and was moderated by David Westin, Co-anchor, Bloomberg Daybreak Americas, Bloomberg Television. Michael Bloomberg, Founder of Bloomberg LP & Bloomberg Philanthropies, and 108th Mayor of New York City, emphasized the need to focus on the environment instead of climate change. Noting that cities are where most of humanity lives, he said climate problems and solutions are in

the cities. He said private sector and local governments have done much and that the US is a leader in reducing global carbon footprint.

Asked about the Trump administration, Bloomberg said climate action is being driven by corporate America, administrations and individuals. He said the administration's promise to bring coal jobs back is a hollow one, noting that most of New York City's emissions are from buildings erected for mass transit, and that a shift from oil to gas and photovoltaic (PV) is being driven by economics. He expressed optimism that the city will increase renewable energy sources and reduce coal reliance.

Maroš Šefčovič, Vice-President, Energy Union, European Commission, underscored the role of the Global Covenant for Mayors as a group of cities with more ambitious climate goals than their national governments, trying to capitalize on the next industrial revolution. He identified air pollution as an increasing problem, and sustainable transport modalities as a top priority for cities. He noted, for example, the role of the Covenant in combined public procurement of clean transport fleets.

Christiana Figueres, former Executive Secretary of the UN Framework Convention on Climate Change (UNFCCC), and Convener, Mission 2020, emphasized the role of cities in providing support for the Paris Agreement, noting that cities' support will be key in gaining climate traction over the next three years. Pointing out coal's cost and impacts on health and disasters, Figueres said more coal equals more poverty, less coal equals less poverty. She emphasized that the number of jobs in the renewable energy sector in the US is ten times that of coal, and four times that of natural gas. She said young people prefer to work in new technologies, and underscored that governments have an obligation to facilitate education and training in the new economy.



(L-R): **Sheila Watson**, Deputy Director and Director of Environment and Research, FIA Foundation; **Karen Douglas**, Commissioner, California Energy Commission; **Maroš Šefčovič**, Vice-President, Energy Union, EC; **Drew Kodjak**, Executive Director, ICCT; **Irene Cañas**, Vice Minister for Energy, Costa Rica; and **Patrick Oliva**, Senior Vice-President, External Relations, Sustainable Mobility and Energy Transition, Michelin Group

THE DEEP DIVE

GOOD UTILITY: On the role utilities can play in the energy sector to support their customers' energy efficient consumption, moderator Kate Steel, Energy Director Power Africa, US Agency for International Development (USAID), urged introducing suitable policies, and regulatory and market conditions.

António Mexia, CEO, Energias de Portugal, highlighted his country's development initiatives in 14 countries, mainly through wind energy projects, and stressed the importance of finding the balance between having access to energy and improving energy efficiency. He urged better regulation in the renewable energy sector, and said achieving SDG 7 by 2030 will require an investment of US\$49 billion per year for 10 years.

Ragna Árnadóttir, Deputy CEO, Landsvirkjun, National Power Company of Iceland, highlighted the strides in geothermal and hydro-resources made by her country over the last century, emphasizing the original thinking that having abundance ignores the need for efficiency. Warning that renewables also require minimizing environmental impacts, she lamented the difficulty of entering the market due to complicated licensing bureaucracy, and the years of dedicated funding required for research and development in the energy sector.

James Spalding, General Director, Itaipu Binacional, Paraguay, described the successful 73-year treaty between Paraguay and Brazil in managing the common water resources and hydro energy generation scheme, and said, unlike most governments, the scheme contributes to their governments' resources through royalties that are ploughed into social programmes.

Panelists discussed the market distortion caused by subsidies, the need to incentivize quality rather than quantity of energy generation, introducing regulation on distribution based on quality, and creating the right incentives that will lead to smarter and cheaper energy solutions. Mexia emphasized the role of electric cars in reducing energy demand, and urged standardization in chargers and power outlets, and simplicity such as simplified payment systems. He stressed that the biggest challenge for people who have electricity, is to value its use properly.

SMART POLICY: The session was moderated by Drew Kodjak, Executive Director, International Council on Clean Transportation. Sheila Watson, Deputy Director and Director of Environment and Research, FIA Foundation, described her foundation as an incubator bringing energy and transport together. She emphasized the importance of building capacity in countries. She noted vehicle fleets are projected to grow massively worldwide in an unsustainable way. She underscored the importance of thinking globally, while focusing on high impact countries.

Karen Douglas, Commissioner, California Energy Commission, noted that transportation fuels represent 37% of California's greenhouse gas emissions and 80% of smog causing pollutants. She emphasized California's electric vehicles goals, as well as its zero emission vehicle mandates which require carmakers to ensure a proportion of sales is from zero emission vehicles. Douglas stressed the role of infrastructure, noting 11,000 electric vehicle charging stations in California and plans for 800 fuel cell charging stations. She said zero emission cars are popular and consumers want to buy them.

Maroš Šefčovič said the recent scandal on diesel emissions has brought much attention to car emissions. He noted that many cities are restricting polluting cars and seeking clean mobility options. He highlighted the importance of infrastructure and technological neutrality. Šefčovič underscored the importance of digitalization for clean transport.

Irene Cañas, Vice Minister of Energy, Costa Rica, said her country has done a good job on electricity but still has much to do on clean transport. She stressed the need for awareness, citing an example in Costa Rica where the capital's three main hospitals are next to the main bus hub, with the most polluted air in the city. She noted new technology standards and CO₂-emissions labelling for cars enacted in Costa Rica. Cañas highlighted the difficulties in getting manufacturers and distributors to deliver clean vehicles to small markets.

Patrick Oliva provided policy prescriptions for clean energy deployment. He highlighted, among others: providing rural areas with low-carbon electricity; ensuring high efficiency in electric vehicles; developing storage supply chains for batteries and hydrogen in countries; establishing a carbon price; providing sustainable biomass solutions for traditional biomass users; and electrifying and redesigning freight supply chains.

TOWARDS THE BOTTOM LINE - THE BUSINESS CASE FOR DOUBLING ENERGY PRODUCTIVITY:

Moderator Josué Tanaka opened the session by emphasizing the need to work across sectors, be they industrial, municipal, or otherwise. Clay Nesler, Vice President, Global Energy and Sustainability, Johnson Controls, noted that the topic of energy productivity received little focus in previous years. He explained that his company is the first to join the EP100 initiative, dedicated to doubling energy efficiency productivity by 2030. He said efficiency is built into Johnson Controls' manufacturing and operating systems, with a focus on energy investments that will lead to payback in two to three years. Nesler noted an ongoing issue for the field is utility rate design, while the lead factor driving investment is that an organization makes its goals public and declares efficiency as important.

Elliott Harris, UN Assistant Secretary-General and UN Environment Director, spoke of energy's importance as the one resource that every producer uses. He considered energy efficiency a "win-win situation" for users and the environment. He listed obstacles such as lack of awareness, availability of technology, and financing. Harris called for decoupling energy and economic growth, and noted that companies that disclose their environmental footprint perform better.

Lasse Wallquist, Swiss Re, said sustainability serves as one consideration in their products and risk intelligence, among a broader set of priorities for portfolio managers, and that the organization may also look at insurance products that support energy efficiency. Wallquist emphasized that messaging on energy efficiency is best when simple and clear, such as the EP100 initiative.

Harry Verhaar, Head of Global, Public and Government Affairs, Philips Lighting, recognized movement in the right direction on energy efficiency, but warned that it is not occurring fast enough. He noted that half of the reduction in carbon emissions must be based on efficiency. Verhaar stated that half of electricity use in cities is for lighting, though improvements mean it accounts for 15% of global electricity as compared to 19% only years ago. He highlighted positive externalities of lighting such as more productive work environments and urban safety. He observed that there are huge savings through energy productivity, in part as lighting and other technologies become digital, and are scaled up to the city level.

COUNTRY ACTION: This session was moderated by Andy Herscowitz, Coordinator, Power Africa, USAID. Christian Zinglensen, Head of Secretariat, Clean Energy Ministerial (CEM), remarked on the stark differences between the European and Chinese contexts, saying that while both prioritized a concerted introduction of renewables, this impacted their economies differently and flexibility was key. He urged translating political will into an integrated system approach.

Cristian Gutierrez, Vice Minister, Ministry of Environment, Chile, shared his country's experiences in evolving from mainly "dirty" sources of energy in 2013, to developing a renewable



(L-R): **Harry Verhaar**, Head of Global Public and Government Affairs, Philips Lighting; **Lasse Wallquist**, Senior Environmental Management Specialist, Swiss Re; **Elliott Harris**, UN Assistant Secretary-General and Director, New York Office, UN Environment; **Clay Nesler**, Vice President, Global Energy and Sustainability, Johnson Controls; and **Josué Tanaka**, Managing Director, Operational Strategy and Planning, Energy Efficiency and Climate Change, EBRD



(L-R): **Yongping Zhai**, ADB; **Eang Sophalleth**, Under Secretary of State Ministry of Environment, Cambodia; **Arbind Kumar Mishra**, National Planning Commission, Nepal; **Munawar Moin**, Managing Director, Rahimafrooz Renewable Energy Ltd., Bangladesh; **Xavier Helgesen**, CEO and Co-founder, Off Grid Electric; and **Suki Atwal**, GGGI

energy strategy to enable achieving a 70% renewables goal by 2030. Saying the original perception in the country was that renewables are expensive, he noted that once regulation was introduced and companies were forced to consider transitioning to cleaner sources of energy, they discovered this to be erroneous. He identified clear rules for investment, and a clear evaluation system to monitor environmental impacts based on scientific guidelines as elements that will foster investment.

Nawal Al-Hosany stressed that having commitment from political leaders, combined with robust policy frameworks allowing strong private-public partnerships, have allowed her country to reduce the price of renewable energy to 3c per kWh. She said strong leadership that supported renewables that are profitable and commercially viable, underpins the commitment and policy framework.

Roberto Ridolfi said while ownership and political will are important, the political environment has to be appropriate, since 80% of the time, the question is not that of finance, but about the right solutions and balancing renewables with other power sources. On the critical aspects for a country to attract investment in renewables, he emphasized the role of political stability, good tariffs that compensate the work and investment, and a respect for the rule of law.

On improving the diversity in the energy mix, Valentin Rybakov, Deputy Minister of Foreign Affairs, Republic of Belarus, said his country is not famous for its “sunny days” and that the government has focused on developing a strategy to

increase energy sources since the country is currently entirely dependent on its neighbors for energy. He emphasized the role of the SEforALL Forum as an important influence to change his country’s energy paradigm, in connecting different actors to accelerate the pace towards achieving SDG 7, and in learning from different sectors and countries.

MAKING CONNECTIONS: The session was moderated by Suki Atwal, Global Green Growth Initiative. He stressed the importance of integrated country actions, enabling environments and the role of utilities in connecting centralized and decentralized generation.

Xavier Helgesen, CEO and Co-founder, Off Grid Electric, noted that his company serves half a million people in East Africa with distributed solar on a completely commercial basis. Noting that 50W systems cost what 5W systems cost four years ago, he said distributed solar will be much bigger in the near future. Helgesen said the cheapest electrons in Africa today are a solar panel on the roof, and noted that reliability markets are drivers for solar deployment. He said stranded assets are not currently an issue with DC systems because they serve critical loads.

Munawar Moin, Managing Director, Rahimafrooz Renewable Energy, said his company serves 900,000 households in over 48,000 villages in Bangladesh. He identified keys to success for solar home systems, including robust storage technologies, customer ownership and access to banking.

Yongping Zhai, Technical Advisor, Sustainable Development and Climate Change Department, Asian Development Bank (ADB), said that both centralized and decentralized systems have a role to play in providing access to 500 million people in Asia. Zhai underlined the need for international finance institutions not to distort local finance ecosystems as the only way to ensure sustainable scaling up. He identified three factors for commercially viable systems, including anchor loads, business models, and community engagement.

Eang Sophalleth, Under Secretary of State, Ministry of Environment, Cambodia, explained the government's policy to promote sustainable ecotourism. He said renewable energy, particularly solar PV and microhydro, is key to maintaining pristine forest areas.

Arbind Kumar Mishra, Honorable Member, National Planning Commission Nepal, identified challenges and opportunities for rural electrification in Nepal, including transmission issues and widespread availability of hydro resources. He said the key factor for success of mini hydro is community involvement. Noting that the private sector is not interested in developing rural electrification, he said the private sector can successfully be involved through partnerships to ensure operation and maintenance.

NOW WE'RE COOKING: Moderator Rachel Kyte lamented that one in every 2.5 people on the planet lack access to clean cooking. She explained this has a disproportionate impact on women and children.

Alex Evans, President and Chairman, Operating Committee, the Global LPG Partnership, described progress of liquefied petroleum gas (LPG) provision to households over the past decades. He emphasized the need for adequate political will and

support from populations. Evans noted the challenge and solution for countries is to prioritize LPG and organize with the private sector to create large-scale solutions. He described three key impact metrics for cleaner cooking: lives saved, trees protected, and economic development and livelihood. He also noted it is easier to measure access but much harder to measure usage, though this is really important.

Boston Nyer categorized needs as technology, cost barriers for customers, and business models in terms of how organizations interact with consumers. He noted complexities of cooking and decisions at the household level as a barrier for industry, governments, and investors, as compared to solar which has fewer options and is easier to understand.

Hari Natarajan, CEO, Clean Energy Access Network, noted a need for greater attention to cooking and stated that with the great focus on cookstove connections, there must be more focus on adoption and usage rather than the number of units distributed. He also called for further measurement, since testing of a stove in a lab is different from someone's home.

Radha Muthiah, CEO, Global Alliance for Clean Cookstoves, explained that clean cooking has more attention now, but that the need for measurement and data still remains. She listed challenges to progress in clean cooking such as: clean cooking does not fit into a specific government or donor area of focus; financing is not accessible for the smaller amounts that are needed; and the investment environment in each country is unpredictable with an uneven playing field due to lack of incentives or tariffs on clean cooking parts and stoves. Muthiah added that at the Paris Agreement, 54 countries included clean cooking in their plans. She called for governments to do something different over the next years, trying a bottom-up rather than a top-down approach.



(L-R): **Alex Evans**, Chairman, Operating Committee, The Global LPG Partnership; **Boston Nyer**, Co-Founder and General Manager Burn Manufacturing; **Hari Natarajan**, CEO, CLEAN; **Radha Muthiah**, CEO, Global Alliance for Clean Cookstoves; and **Rachel Kyte**, CEO, SEforALL, and Special Representative of the UN Secretary-General for Sustainable Energy for All



(L-R): **Rachel Kyte**, CEO, SEforALL, and Special Representative of the UN Secretary-General for Sustainable Energy for All; **Clare Shakya**, Director, IIED; **Mary Robinson**, President, Mary Robinson Foundation; **Ilmi Granoff**, Director, Sustainable Finance ClimateWorks Foundation; and **Sheila Oparaocha**, ENERGIA

LEAVING NO ONE BEHIND: Mary Robinson, President, Mary Robinson Foundation and Climate Justice, said universal access will not be achieved without first reaching the most vulnerable. She emphasized the need to devise innovative and targeted strategies for the poor to access energy services in a sustainable manner. Robinson stressed that energy access should be considered a public good for communities that will not be reached by commercial expansion.

Ilmi Granoff, Director, Sustainable Finance, ClimateWorks Foundation, identified raising capital as a major barrier for grid expansion, particularly in reaching communities with low aggregate demand. Granoff noted that, given low demand, in the end, energy access has little to do with mitigation, and this is an obstacle for climate financing.

Clare Shakya, Director Climate Change, International Institute for Environment and Development (IIED), described IIED's experience with clean cookstoves and solar lanterns in Malawi. She said interventions to reach the very poor need to clearly determine at which point to withdraw, so as not to distort the market and allow entrepreneurs to take over.

Rachel Kyte said the expectations on how the billions of dollars in international development will reach energy access projects on the ground are the development equivalent of trickle-down economics theory. She said philanthropy money should focus on bridging the gap for energy access finance. Kyte stressed interest in providing sustainable energy access in refugee camps.

Sheila Oparaocha, International Coordinator and Programme Manager, ENERGIA, highlighted her organization's activities in Asia, noting that the "low-hanging fruit" has already been picked. She underscored the importance of changing the narrative on gender and energy, and recognized the comparative advantage of working with women for energy. Oparaocha said policies are important, noting that 80% of energy action agendas in Africa include gender.

In the ensuing discussion with the public, participants addressed issues including the role of philanthropy versus development institutions, scaling up investment, translating high-level financial flows into actual finance at the project level, and reaching the poorest communities.

THE NEW MARKET: This session was moderated by Nawal Al-Hosany, who urged panelists to debate ways of engaging with the "bottom of the pyramid" where a vast amount of value-conscious but untapped consumers and creative entrepreneurs allows for greater development gains through economic empowerment in the renewable energy sector.

Mayank Bhargava, President, NextGen Solar, noting that off-grid renewable energy currently provides electricity access to about 10% of the off-grid population in Africa, said it provided a very attractive business case for engaging the private sector. He said it is crucial for entrepreneurs to be financially prepared for long time frames before the commercial phase takes off, and urged investing in a diversity of products to survive the "lean years." He emphasized the importance of involving local communities from the initial stages, as customers provide their own insights and better know their needs.

John Holmes, Project Co-Leader, Smart Villages, lamented the skepticism in the banking sector towards renewables, and low-quality counterfeit solar products, which undermine confidence in the market in general. He said the data on mini grids needs to be expanded considerably to allow for better business cases, and said the role of the Forum is to improve awareness globally.

Neha Misra, Chief Collaboration Officer and Co-founder, Solar Sister, describing the organization's experiences in solar power provision in rural Tanzania, said it is important to move away from seeing solar power as a sub-standard source of energy and to stop talking about renewable products in a condescending fashion. She emphasized the value of engaging with communities and determining their needs, and said, while women in Africa are the

primary users of the products, there are barriers to accessing them directly, including social codes and safety. She lamented the lack of product maintenance when philanthropic initiatives provide solar products, a gap which can be filled by local entrepreneurs and the private sector.

Paul Needham, Chairman, Simpa Networks, said the financial sector worked within simple frameworks based on profit history and financial statements, while a new market requires complex adaptive approaches to establish itself. On the challenges of accessing domestic capital abroad and innovations required to obtain finance locally, he shared his company's experience of a bank that provided loans directly to the customer after they were able to demonstrate the customer's history in the sector.

Hugh Whalan, Founder and CEO, PEG Africa, noted that while attracting people with not-for-profit products makes sense when introducing a new product, it is more financially viable and sustainable to consider for-profit over the longer term, regardless of the large initial debt. He said only for-profit products can realize the untapped potential of the rural markets and make a substantial impact.

Ali Ozair Alshafar, Permanent Representative of the UAE to the International Renewable Energy Agency (IRENA), lamented a disconnect between government priorities, consumer aspirations and the burden on the private sector to support and establish financially viable businesses. He said overcoming this challenge is only possible through constant engagement with the customer base and local government, to be informed about needs and constraints.

OFF-GRID – ON TARGET: Sarah Best, Senior Researcher, Shaping Sustainable Markets, IIED, moderated the panel and called for a focus on how energy producers examine models for provision of decentralized energy, in addition to understanding perspectives on needs at the local level.

Gareth Martin, Head of Sustainable Energy, Climate and Environment Department, UK Department for International Development (DFID), noted that productive uses of power are crucial for country development, and tied to ways out of poverty. He listed barriers that need to be overcome, such as: government recognition that mini grids are a valuable source of power; private sector knowledge of government grid plans; and the ability to charge a cost-effective tariff so a return on investment can be achieved.

Allison Archambault, President, Earthspark International, categorized the main risks for getting energy to the people as being technological, legal, and related to processes and regulatory frameworks. She declared that there are 'no silver bullets here', and that electricity by itself is useless, and that it is what the energy is used for that provides value.

Vijay Modi, Director, Quadracci Sustainable Engineering Lab, Columbia University, outlined findings from his research showing the importance of understanding local communities, and that improving incomes is an important lens. He noted that in some cases, water and seeds, rather than energy, serve as a bottleneck. Modi stated that it is best to consider need, then business models that work, and finally technological gaps, rather than the other way around. He also called for spreading the message that public resources are finite, requiring judicious use in order to attain the fullest possible impact.

Noting the link between energy and income-generating activities, Faris Hasan, Director of Corporate Planning & Economic Services, Organization of the Petroleum Exporting Countries (OPEC) Fund for International Development (OFID), cautioned that energy poverty is a vicious cycle when people who have no money cannot pay for energy, and people who lack energy cannot make money. He stated that his organization's mandate is to work with the poorest of the poor, and described a



(L-R): **Fletcher Harper**, Executive Director, GreenFaith; **Faris Hasan**, Director of Strategic Planning and Economic Services, OFID; **Vijay Modi**, Director, Quadracci Sustainable Engineering Lab, Columbia University; **Allison Archambault**, President, Earthspark International; **Gareth Martin**, Head of Sustainable Energy, Climate and Environment, DFID; and **Sarah Best**, Senior Researcher, Shaping Sustainable Markets, IIED

number of successful programmes for lamps and stoves, as well as rural electrification, while mentioning that there are struggles due to regulations.

Reverend Fletcher Harper, Executive Director, GreenFaith, emphasized relational risk, which can be considered in terms of building trust, articulating a vision, and achieving cultural momentum. He noted that religious communities are preeminent social networks for people. Harper stated the desire to build bridges between faith groups and experts in the field, adding relational to the technological and political considerations.

PARTNER WORKING SESSIONS

WHAT ROLE CAN ENERGY PLAY IN DECARBONIZING THE TRANSPORT SYSTEM?

Moderator Cornie Huizenga, Secretary General at the Partnership on Sustainable Low Carbon Transport, introduced the panel, noting opportunities and challenges in the interrelationship between energy and transportation.

Patrick Oliva emphasized commitment to a net zero economy in the Paris Agreement, including the transportation sector. He noted the need to align the efforts of business and government, and design a transport-energy nexus. Oliva called for implementation of the recent roadmap of the Paris Process on Mobility and Climate, detailing priorities in decarbonizing transport.

Sheila Watson described her organization's global fuel economy initiative and accelerator. She said that money is being thrown away, with calculations that existing technology for fuel economy could save US\$8 trillion by 2050. Watson urged that

the world cannot rest on its laurels, but "must continue to put pressure on this unsexy but incredibly important issue." She noted energy security and air quality are two drivers for efficiency improvements. Watson emphasized the need to "keep energy and transport talking."

Christine Lins, Executive Director, REN21, noted progress in the renewable sector, though huge challenges remain. She said REN21 is launching a new report, with a section on transport, and that the experts interviewed believe there will be more renewables used in the sector, together with the use of electricity and biofuels. Lins emphasized that the Paris Agreement means nothing short of a total decarbonization of the transport sector.

Hans Olav Ibrekk, Policy Director, Norway's Ministry of Foreign Affairs, described his country's progress, with nearly 100% of electricity from hydro and 69.5% of primary energy from renewables. He said half of new cars in Norway are electric or hybrid, and attributed much success to correct incentives, including tax exemptions and waivers from tolls and parking. Ibrekk said by and large, the policy of the government has been extremely effective, and described the introduction of the first electric car ferry.

Anuar Allauddin, Deputy Director General, Malaysia's Economic Planning Unit, discussed perceptions on usability of palm oil as a biofuel. He stated that the transportation sector is a large user which attempts to mitigate environmental pressures through: private-public partnerships for electricity-based transport in urban areas; greater use of electric vehicles (EVs); and higher fuel standards. He called for increased public awareness on shifting to EVs.



(L-R): **Allauddin Anuar**, Deputy Director General, Malaysia's Economic Planning Unit; **Hans Olav Ibrekk**, Norwegian Ministry of Foreign Affairs; **Sheila Watson**, Deputy Director and Director of Environment and Research, FIA Foundation; **Christine Lins**, Executive Secretary, REN21; **Patrick Oliva**, Senior Vice President, External Relations, Sustainable Mobility and Energy Transition, Michelin Group; and **Cornie Huizenga**, Secretary General, Partnership on Sustainable, Low Carbon Transport



(L-R): **Ruben Walker**, Director, ACE; **Gareth Martin**, Head of Sustainable Energy, Climate and Environment, DFID; **Léonide Michael Sinsin**, Director, ARESS Solar Distribution Company; **Marcel Raats**, Co-manager, Program, RVO; and **Tom Derksen**, Managing Director, SNV

THE ROLE OF RESULTS-BASED FINANCING (RBF) IN REALIZING SUSTAINABLE ENERGY FOR ALL:

Moderator Tom Derksen, Managing Director, the Netherlands Development Organisation (SNV), described RBF as an innovative tool to promote energy access in developing countries, by offering incentive payments to businesses for results achieved that deliver pre-specified outputs.

Gareth Martin, Head of Sustainable Energy, Climate and Environment, DFID, noting that although some countries have incentives in place to ease market establishment, he said RBF will provide a revenue stream to help initiate new innovations. Comparing the cases of solar power development in Tanzania and Benin, he noted the advantages of having an established market that eases introduction of unfamiliar technologies.

Marcel Raats, Co-manager, Energising Development (EnDev), Program RVO, described work in 26 countries, fostering energy market development through local NGOs, policy makers and the private sector. He noted promising results after the initial four years in countries with better institutions and existing markets, and said the programme often has to initiate where markets do not exist, since companies find it difficult and expensive to innovate in this sector while simultaneously establishing themselves. Raats warned against looking at RBF as a “silver bullet” with a “one-size-fits-all” approach, and urged adequate preparation and design, including through setting the defining barrier, finding the incentive levels, and monitoring verification.

On the experiences in Benin, Léonide Michael Sinsin, Director, ARESS Solar Distribution Company, said that in a country where 40% of the population has access to electricity, with only 10% in rural areas, establishing new energy innovations is easier. He

highlighted market acceleration as a priority, and urged promoting high-quality products, since products that offer mediocre solutions will ruin the market.

Ruben Walker, Director, African Clean Energy, on their experiences in Lesotho and Cambodia with a fan-driven gas energy source, said RBF provides opportunities for entering the market with less risk, which is crucial when offering such an expensive product. He noted that RBF was the first financial mechanism that required a business report, and that the ultimate aim is to develop the energy market more broadly in these countries.

In the ensuing discussion, participants posed questions about: upscaling RBFs to cover large-scale government interventions; improving the design of indicators to measure the results; and determining the right kind of results, whether it should be initial results that bring the costs down, or impact type of results that come into play later.

GLOBAL TRACKING FRAMEWORK 2017 - DEEP DIVE ON THE FINDINGS: The session was moderated by Jane Ebinger, Director of Policy, SEforALL. In the first half, presenters addressed the GTF. In the second half, presenters focused on regional aspects.

Rachel Kyte highlighted the GTF as an SEforALL knowledge partnership that is co-led by the IEA and World Bank with contributions from other organizations. She stressed that while a lot of progress is being made, it is not enough to achieve the 2C climate goal agreed in Paris. She emphasized that failure to invest now will lead to more expensive options in the future. Kyte noted the complementarity of the GTF with the Readiness for Investment in Sustainable Energy report.



(L-R): **Jane Ebinger**, Director of Policy, SEforALL; **Brian Dean**, IEA; **Hannah Daly**, IEA; **Paul Simons**, Deputy Executive Director, IEA; and **Rachel Kyte**, CEO, SEforALL, and Special Representative of the UN Secretary-General for Sustainable Energy for All

Paul Simons outlined the key findings of the GTF report, explaining that the GTF report measures progress from 2012 - 2014 and uses IEA forecasting tools to project where we may be in 2030 if current policies stay in place. He emphasized that we are not on track to meet SDG7. He pointed out that policy support for renewables in heat and transport is not as strong as policy support for renewables in electricity.

Hannah Daly, IEA, presented on energy access, noting a special report on Energy Access Outlook, to be launched in October. She highlighted that energy access is a moral imperative. Daly said by 2030, 91% of the global population is projected to have energy access, but noted rural Africa as an area of special concern. She said access to clean cooking lags behind access to electrification.

Brian Dean, IEA, presented on energy efficiency, noting that “we are getting close to the target of 2.6%,” but there is still work to be done. Dean noted that 30% of global energy emissions are covered by mandatory standards.

Robert Scott, UN Economic Commission for Europe, provided a regional overview of sustainable energy goals. He noted challenges with data quality, as well as definitions of energy access and efficiency. He underscored the need to look at energy as a service, rather than as a commodity.

Sergey Tulinov, UN Economic and Social Commission for Asia and the Pacific, said 431 million people lack access to electricity in Asia, and that 2.1 billion people rely on traditional biomass

Manlio Coviello, UN Economic Commission for Latin America and the Caribbean, emphasized that data can be used in many ways. He described GTF as a very useful tool that can be used to extract fine detail.

Soteri Gatera, UN Economic Commission for Africa, said that current access to energy in Africa is not a good story to tell. He stressed that only 10 countries have access rates above 70%, while some are under 10%. He highlighted geographical distance and transmission infrastructure costs as key challenges.

INDUSTRIAL ENERGY EFFICIENCY: EXPERIENCE, BEST PRACTICES AND HIGH IMPACT OPPORTUNITIES IN INDIA AND CHINA: Moderator Mark Lister, Copenhagen Centre on Energy Efficiency, cited the current 12-14 gigatonnes of carbon gap to reach the 2C climate goal, saying it can be reduced substantially by improving energy efficiency in the industrial sector.

Xianli Zhu, Copenhagen Centre on Energy Efficiency, elaborated on the SEforALL Energy Efficiency Hub’s activities, including: collecting best practices and success stories; collecting and disseminating most recent information through the Knowledge Management Platform; supporting policy making in key emerging countries; and promoting project and policy implementation through the Industrial Energy Efficiency Accelerator.

On China’s experiences, Sheng Zhou, Tsinghua University, emphasized the challenges of being the world’s largest energy consumer and carbon emitter, the domestic environmental impact pressures of sulphur dioxide emissions from coal, and the 60-65% GDP reduction that will be required to achieve the country’s Intended Nationally Determined Contribution announced in Paris in 2015.

Hemanth Kumar, Technical Manager, Energy Efficiency Services Limited (EESL), reviewed India’s industrial energy efficiency programmes, including: market transformation through energy efficiency indicators, service providers, and technology and knowledge transfer; institutional reforms through research and

international cooperation; and regulatory framework adaptation through notifications, rules, guidelines and providing strategic direction.

Sören Degg, Federal Ministry of Economic Cooperation and Development, Germany, referring to industrial energy efficiency as an underestimated resource, lauded the innovative LED work by EESL in driving costs down by 90% through robust incentives that do not provide subsidies and reward over-achieving.

James Wilde underscored the importance of sharing best practices at events such as the SEforALL Forum, building capacity when upgrading technologies, creating financial pipelines, and upscaling successful projects to unlock further investment.

TACKLING HEATING AND COOLING IN CITIES: WHAT DOES IT TAKE? The moderator, Julia Panzer, Director of Strategic Communication, Danfoss Cooling Segment, cited a UN Environment initiative to create awareness around the use of technology, capacity building, and creation of a project pipeline, to move from conversations to actual financing of projects.

David Rodgers, GEF, discussed the work of energy accelerators to provide support through global connections and sharing best practices. He explained how energy efficiency is insufficiently embraced by leadership and that a focus on sub-national governments, local jurisdictions, and private sector companies is key.

Cristian Gutierrez, Chile's Vice Minister of the Environment, described progress using a district model roadmap, adapted to Chile's particular geographic and demographic characteristics. He talked about work examining residential heating since burning firewood causes air pollution deaths. Gutierrez highlighted examination of other sectors, pilot projects, use of resources from municipalities, regional and national governments. He expressed desire for continued UN relationships, more projects involving the international community, and knowledge transfer.

Pierre Loyer, Vice-President at ENGIE, provided insights into his private-sector work with Chile. He explained how the existing plan helps his organization integrate into the project and deliver targets for the government. Loyer recognized the importance of being present early in a development project and establishing a long-term partnership.

Miodrag Grujić, Secretariat for Environment Protection, Serbia, reviewed work with the district energy accelerator in Belgrade. He explained their district heating system covers 50%



Gina Hall, Investment Director, The Carbon Trust

of Belgrade, and city energy efficiency improved from 78% to 88%. Grujić described a process of developing the action plan and new projects, using technologies, efforts to increase the share of renewables, learning from best practices, and utilizing feasibility studies.

Gina Hall, Investment Director, The Carbon Trust, said her organization matches the risk and return of projects to investors. She noted the need for further scaling to draw new investors, as well as the importance of disaggregating between different assets and types of investors, while considering risk allocation. She stated the importance of the private sector as a funding source, and that risk can be mitigated by having a public partner that can give assurances.

Ibrahim Thiaw, Deputy Executive Director, UN Environment, discussed the bigger picture, and how this work is essential for people's wellbeing, by helping the economy and health, enabling cities and households to save money, and protecting the planet from harms of climate change. He stressed convincing governments that energy efficiency is critical.

ACCELERATING THE EFFICIENCY OF ELECTRICITY ACCESS: Hannah Daly, IEA, moderated the session. Philippe Scholtès highlighted opportunities for renewable energy and energy efficiency in developing countries for strengthened industrialization. He underscored the need to build training capabilities.

Robert Denda, Enel, emphasized the opportunities brought by the digitization of the power sector, including great gains in terms of efficiency. He stressed that by 2030 half of global energy use will be electricity.

Anna Paola Minervini, Enel, focused on regulatory aspects for off-grid electrification, including the need for transparent electrification plans, clear mandates for institutions with no overlapping to avoid confusion and contradictory regulation, and reinforcing enabling conditions such as access to microfinance and local awareness. She said exit strategies are needed for investors and technical standards in case of emergence of the main grid.

Stuart Neil, World Energy Council, noted how the energy discourse is moving from peak oil to peak demand, particularly peak per capita demand. He stressed the opportunities to drive change through new technologies and energy efficiency.



Miodrag Grujić, Secretariat for Environment Protection, Serbia



(L-R): **Hannah Daly**, IEA; **Stuart Neil**, World Energy Council; **Francesco Catucci**, Enel Green Power; **Pepukaye Bardouille**, International Finance Corporation; **Thomas André**, Schneider Electric; **Aaron Leopold**, Practical Action; and **Robert Denda**, Enel Global Infrastructure and Networks

Francesco Catucci, Enel, highlighted India and East Africa as the largest off-grid markets in the world. Noting big differences between India and East Africa, including population density, load demand, and existence of rules to let the private sector operate, he said there is currently more interest in India due to more favorable conditions.

Pepukaye Bardouille, International Finance Corporation (IFC), stressed the importance of understanding who the end customers and the market are. She said finance blending is key to address market segmentation, so the capital with the highest risk appetite takes the higher risk portion of projects.

Thomas André, Schneider Electric, underscored his company's programmes in training and capacity building. He said his company helps local ventures expand and reach different scales for solar PV, with projects ranging from solar lanterns to mini grids.

Aaron Leopold noted that many governments lack the capacity to put in place mini-grid regulations. Stressing that universal access cannot only be about the private sector and business models, he underscored the need to address countries and areas where there is no commercial viability through government and NGO intervention.

OVERCOMING THE BARRIERS TO CLEAN ENERGY MINI-GRID DEPLOYMENT: The session was moderated by Guilherme Collares Pereira, Director International Relations and Access to Energy, Energias de Portugal. Dean Cooper, Chair, Clean Energy Mini-Grids Partnership, identified four key barriers to mini-grid development: finance, policy, technology and local capacity. He underscored the African Strategy for Mini-Grids which includes clear regulation and licensing, communication of grid extension plans, cost-effective tariffs and integrative energy planning. He said the Clean Energy Mini-Grids Partnership is a delivery partner for SEforALL.

Faruk Yusuf Yabo, Federal Ministry of Power, Nigeria, said solar home systems and mini grids are the lowest cost options to electrify rural communities. He underscored the importance of transparent processes, simplified licensing, and investment recovery, noting that in many cases the cost of tariff collection is higher than the tariff itself.

Daniel Schroth, African Development Bank (AfDB), said the Bank is placing strong attention on decentralized solutions, be it mini grids or solar home systems. He noted the lack of market intelligence on mini grids in Africa, including on how many mini grids there are and what technologies they use. He announced the future launch of credit lines for mini grids in four countries working with local finance institutions.

Suman Sureshbabu, The Rockefeller Foundation, explained that the Foundation's focus on mini grids is based on the idea that mini grids can boost development. She said the Foundation is exploring additional investment in East Africa and Myanmar.

Mayank Bhargava identified the main problems for mini-grid deployment as lack of transmission and the long time for project development. He emphasized that developing transmission and creating demand are different from generation.

Hari Natarajan said that in India, grid extension is a reality and will cover most of the country in the next two to four years. He said for mini-grid developers, this means shifting generation capacity from providing access to providing generation and grid support services. He underscored the importance of having exit options to avoid stranded assets when the main grid reaches a mini-grid area.

Alexia Kelly, CEO, Microgrid Investment Accelerator (MIA), described MIA as a new blended capital facility designed to address many of the mini-grid challenges identified in the session. She highlighted the importance of leveraging capital to de-risk mini-grid investments in India, Indonesia and Africa. Noting the

average mini-grid costs of US\$15,000, she emphasized the need for aggregation vehicles to reach minimum investment sizes considered by large investors.

The ensuing questions from the public included the role of standards, returns on investment sought by developers, the costs of creating demand, mini-grid market trends, and the role of local private sector associations.

FINANCING URBAN BUILDING EFFICIENCY:

Jennifer Layke described work with cities to bring investment into the building efficiency space, and noted policy changes, demonstration projects, and tracking progress against established goals.

The moderator, Clay Nessler, VP Global Energy and Sustainability, Johnson Controls, outlined the session's focus on a few example cities, with feedback from financing experts.

Petar Vasiljevic, Beogradske Elektrane, detailed work modernizing substations and heating systems through donations and loans, with a project on consumer energy efficiency requiring public-private partnership investment. He said the process will replace elements of the heating system to reduce energy consumption, with a benefit of reduced dependence on fuel from the Russian Federation.

Juan Camilo Gonzalez, Sustainability Advisor to the Mayor, Bogotá, described the city's focus on new housing developments. He noted the urban area has comparatively low CO2 emissions in Latin America, but faces the challenge of doubling in households to 5.3 million by 2050. Gonzalez expressed need for funding to conduct a technical analysis and to test which type of housing works best, in order to create the right incentives to construct more efficient buildings.

Michał Olszewski, Deputy Mayor, Warsaw, detailed focus on buildings and energy efficiency, and work to connect buildings to district heating networks. He said a challenge is convincing private households to join due to significant upfront costs, and

seeking financing to incentivize more people to join the network. He said Warsaw has a small project focused on renewables for heating households, but technology is expensive, leading to problems with providing incentives.

Marcene Broadwater, IFC, said the IFC is interested in efficiency of buildings and housing, but from a financial viewpoint, wants to see larger projects. She stated public sector money can incentivize private sector funding, and described the need to match different types of financing with different market segments. She noted that a challenge working with private households is having many decision-makers, and the need to find financial mechanisms such as tax incentives.

Bruce Schlein, Director, Community Reinvestment Act Business Strategy, Citi, noted a disconnect between energy efficiency opportunities and investors deploying resources. He said important ingredients are scaling, standardization, and data. Schlein noted pilot programmes are essential for banks before scaling, and that different financing methods work for different situations. Schlein also noted comfort as the top motivator of a single-family home owner's efficiency improvements.

Nessler summarized that scale and standards are important, and that there is a need to figure out how to incentivize, as well as to educate banks on project funding.

ACCELERATING THE TRANSFORMATION OF THE ENERGY SECTOR: The session was moderated by Yera Ortiz de Urbina, IRENA. Salvatore Vinci, Deputy Head of Policy, IRENA, presented the main findings of the Rethinking Energy 2017 report. Highlighting 2016 as a record year for solar, wind and hydro, he identified cost-reduction and policy as key drivers for deployment. He emphasized flexibility, transmission and storage as key challenges. Noting the need for decentralized renewable energy solutions, he highlighted the International Off-Grid Renewable Energy Conference and IRENA's report on supporting the private sector in the mini-grid field.



(L-R): **Michał Olszewski**, Deputy Mayor, Warsaw, Poland; **Bruce Schlein**, Citi; **Marcene Broadwater**, Global Head of Strategy and Business Development, Climate Business Department, International Finance Corporation; **Juan Camilo González**, Bogotá Mayor's Office; **Petar Vasiljevic**, Beogradske Elektrane; and **Clay Nessler**, Vice President, Global Energy and Sustainability Johnson Controls



(L-R): **Dane McQueen**, Ministry of Foreign Affairs and International Cooperation, UAE; **Juan Ramón Silva Ferrada**, Acciona; **Frank van der Vleuten**, Ministry of Foreign Affairs, the Netherlands; **Morten Svendstorp**, Ministry of Foreign Affairs, Denmark; **Harish Hande**, Managing Director, SELCO, India; **Nawa Raj Dhakal**, Director, Alternative Energy Promotion Centre, Nepal; **Salvatore Vinci**, IRENA; and **Yera Ortiz de Urbina**, IRENA

Morten Svendstorp, Ministry of Foreign Affairs, Denmark, said his country has a policy to be fuel free by 2050. He noted public support for green energy derived from the triple shock of the oil crisis, the response measures to the oil crisis and air pollution. Svendstorp stressed that Denmark's electric grid is interconnected with that of several of its neighboring countries.

Frank van der Vleuten, Ministry of Foreign Affairs of the Netherlands, explained how the Netherlands reached a national energy agreement to increase renewables through a broad social debate. Van der Vleuten highlighted price reductions in off-shore wind power, noting that recent auctions achieved prices of nearly half what was expected.

Juan Ramon Silva Ferrada, Acciona, underscored the importance of regulation. He stressed Acciona's shift from being a primarily infrastructure company to a primarily energy company in less than a decade.

Dane McQueen, UAE Ministry of Foreign Affairs and International Cooperation, underlined how a recent auction in Dubai that reached 2.4 cents per kWh settled the argument about the cost of renewables in the UAE and in the region, and said the cost should be the main argument when talking about renewables. From a donor perspective, McQueen said there are often very compelling cases for renewables in the over 30 countries where the UAE operates.

Harish Hande, Managing Director, SELCO, India, said energy access is a catalyst for getting people out of poverty. He highlighted the need to create appropriate finance that allows the poor to become asset owners.

Nawa Raj Dhakal, Director, Alternative Energy Promotion Centre, Nepal, explained his agency's role in promoting renewables in Nepal. He said the government is trying to create a conducive environment for renewables through policies and strategies, including targeted subsidies for small scale renewable technologies and a biomass energy strategy.

DRIVING INNOVATIVE FINANCING TO SCALE THE COOKSTOVES AND FUELS SECTOR:

Moderator Peter George, Director Enterprise Development and Investment, Global Alliance for Clean Cookstoves, underscored the need for long-term investment in order to increase production capacity, expand distribution reach, finance working capital, extend end-user credit, and support growth initiatives in the cooking sector. He lamented the lack of interest from governments to address many of the issues faced by the sector.

Jonathan Cedar, CEO and Co-Founder, BioLite, described the company's experiences in selling wood burning stoves that use thermoelectric technology to power complementary appliances, including: lights, fans that reduce smoke, or charging mobile phones. He noted that the stove's additional health benefit of lessening smoke inhalation provides an aspirational quality that broadens the funder and consumer base.

April Allderice, CEO, MicroEnergy Credits, describing her organization as a social enterprise that provides micro-finance, outlined the different funding streams they have accessed over the past decade, including carbon funding and RBFs. She emphasized the need to innovate constantly in the sector, and called for flexibility to allow the business plan to evolve annually. On elements that drive successful initiatives, she highlighted customer awareness of the range of credit products, geographical location and fulfilment potential, and ability to expand the number of customers who can get access to credit.

Boston Nyer described how his company grew from designing, manufacturing and distributing 10 stoves to now over 12,000 stoves per month from a factory outside Nairobi. He underscored that their biggest innovation had been to develop and enter a nascent market sustainably. On upscaling, he emphasized focusing on developing good products and

establishing realistic distribution channels. He urged shifting the focus outside the normal countries and financial models, and developing funds for these types of pioneering ventures.

Nick Quintong, CEO, PayGo Energy, emphasized the need to adopt holistic approaches and to provide uninterrupted fuel supply to developing economy markets. He called for resilience and adaptability, saying, although it is a steep learning curve, the results are promising, with his company expecting a 350% increase in output this year.

LEVERAGING THE TRILEMMA | THE PROMISE OF INTEGRATED ELECTRIFICATION PLANNING: Moderator Christoph Frei introduced the panel on distributed energy resources, organized to provide a range of perspectives about both decentralized and centralized electrification models.

Neha Misra noted the importance of serving rural poor, offering a basket of technologies, and building local capacity of women. She emphasized the value of “reaching the last mile with the first light.” Misra detailed how entrepreneurs need further training and financing as they go from nano to micro to small-scale. She called for recognition of social equity, declaring “we are at the Sustainable Energy for All Forum, but we need to underline the “for all” part.”

Dipal Chandra Barua, Co-Founder of Grameen Bank and Chairman, Bright Green Energy Foundation, described his programme’s success in installing solar home systems for 160 million people, using an integrated approach with subsidies for the poor, payments over time, and quality assurance from government. He explained that they first started with lighting, but people then wanted fans, water pumps, and more.

Xavier Helgesen outlined operations in Africa with a “plug and play” option for customers. He described the difference between items like lights and fans that can run on low wattage, compared to refrigerators and kettles that require a surge from either more battery, or connection to neighboring residences. Helgesen noted barriers to growth, such as utilities in developing countries that subsidize low-cost electricity, mismanagement, and import duties on panels, converters, and batteries.

Hillary McMahon, Managing Director, Econet, emphasized that with over 500 million people expected to have handheld computers in Africa by 2020, there will be more opportunities to reach customers for energy access. She stressed that they are competing against preferential treatment for diesel generators, which are “legacy projects”. McMahon said scalability could be tied to local assembly, so as to avoid issues with imports and tariffs.

Nawal Al-Hosany explained that there are many opportunities but also a need for further solutions and innovation. She called for leapfrogging through distributed solutions, and investing in solar home systems rather than expensive grids.

Barry Worthington, Executive Director, US Energy Association, described overseas projects integrating centralized and decentralized systems, and work on renewables. He said the US challenge is integration of rooftop PV with net metering. Worthington described a social equity issue where the poor are unable to purchase PV, and given rate structures, subsidize grid costs for the wealthy.

FROM GLOBAL TO LOCAL: GREEN ENERGY FINANCE IN AFRICAN POWER: This session was moderated by Stacy Swann, Founding Partner, Climate Finance Advisors, LLC, who challenged panelists to reveal some of the myths about investment and doing business in rural Africa.

Thomas Duveau highlighted that due to a knowledge gap about the rural customer base, the financial sector perceives it as risky since it is invisible with little data available. He said the perception should be rectified through renewable companies better informing the financial sector about progress made in the energy sector.

Maureen Harrington, Standard Bank, explained that the bank’s biggest challenge had been understanding the risks in lending in local currencies in Africa, a critical element in driving growth. She highlighted early lessons the bank learned, including unpacking different donor tools, understanding the customer, and partnering with other funders.



(L-R): **Xavier Helgesen**, CEO and Co-Founder, Off Grid Electric; **Dipal Chandra Barua**, Co-Founder, Grameen Bank, and Founder and Chairman, Bright Green Energy Foundation; **Hillary McMahon**, Managing Director, Econet; **Neha Misra**, Co-Founder and Chief Collaboration Officer, Solar Sister; **Christoph Frei**, Secretary General, World Energy Council; **Nawal Al-Hosany**, Executive Director, Masdar, and Director of the Zayed Future Energy Prize; and **Barry Worthington**, Executive Director, US Energy Association

Regarding gaps between developers on the ground and investors, Alexia Kelly identified programmes that allow high-risk initiatives to thrive and enable others to enter the market. She added it will require a concerted effort where all scales are important. She lamented that early-stage micro grids do not appear bankable because of the small scale of the business, hiding a tremendous amount of variation and innovation.

Ryan Levinson, Founder and CEO, SunFunder, elaborated on his company's experiences in East Africa as a solar energy financing company dedicated to providing debt funding, noting the advantage of working in close proximity to the customer, and the importance of expanding the role of local currency loans.

Megan Viernes, USAID, cited two myths regarding doing business in Africa: that local currency is too expensive; and that increasing finance is the answer to everything. She said the risks of not converting to local currencies are enormous, and suggested that access to finance for product development makes no sense when the consumer has no income. She said, "if people only go up the energy ladder, without going up the income ladder, it doesn't help."

THE BARRIERS TO AND OPPORTUNITIES FOR UNLEASHING OFF GRID SOLUTIONS TO DELIVER A SUSTAINABLE ENERGY FUTURE: Moderator Ali Al Shafar, Permanent Representative of the UAE to IRENA, Ministry of Foreign Affairs and International Cooperation, UAE, guided the panel through a series of questions, and noted room for innovation and improvement.

Xavier Helgesen said unseen emissions produced in places like Africa are not from renewables but rather are from energy sources like those used in current industrialized countries. He listed challenges in developing countries as low electricity costs, import duties, bad policies, and regulated tariffs for solar home systems. Helgesen noted that one area for improvement is greater sophistication on the credit side, with concerns that one failed institution or default would scare off major investors.

Neha Misra considered the challenge of energy justice, bringing energy to people but going beyond one lightbulb. In addition, she pointed out a need for women's leadership, as well as gathering further evidence on this issue. Misra noted areas of improvement are addressing structural barriers, creating linkages among stakeholders, and furthering dialogue about capacity. She underlined the need to talk about failures, and for more tolerance of experimentation and innovation.

Aaron Leopold critiqued the focus on "innovative" finance, since current approaches do work, and can be replicated and scaled. Leopold said sectors need to work together, and that decision-makers are still in an outmoded mindset. He emphasized that solar home systems are no silver bullet, and that "people don't care about electrons, they care about services." Leopold explained the need for data to quantify benefits and productivity, thereby making companies and financiers comfortable with project financing.

Dipal Chandra Barua explained that with more than 50% of people using solar energy for daily life, Bangladesh is a solar nation. He described opportunities for solar beyond residences,



(L-R): **Yongping Zhai**, Technical Advisor, Energy Sector Group, ADB; **Dipal Chandra Barua**, Co-Founder, Grameen Bank, and Founder and Chairman, Bright Green Energy Foundation; **Aaron Leopold**, Global Energy Representative, Practical Action; **Neha Misra**, Chief Collaboration Officer and Co-Founder, Solar Sister; **Xavier Helgesen**, CEO and Co-founder, Off Grid Electric; and **Ali Al Shafar**, Permanent Representative of the UAE to IRENA, Ministry of Foreign Affairs and International Cooperation, UAE

such as government buildings and temples. Chandra noted challenges in policy and costs, and considered as a lesson learned, that every country has a different situation and context, requiring unique solutions, continuous thinking, and new innovation.

Yongping Zhai noted the need to change the ADB's business model, which currently works with large state-owned power companies. He said the Bank is familiar with huge investments, but is learning from some smaller off-grid projects. Zhai explained that the ADB can work with partners, and carry out a system-wide or regional project (for instance in the Pacific islands). He stated that off-grid projects go beyond energy, and can be for social welfare.

SILICON VALLEY CLEAN ENERGY TECH CHALLENGE: The session was moderated by Molly Ward, US State Department. She underscored the Silicon Valley Cleantech Challenge bringing together the Bay Area technology companies working in the clean energy space. Ward identified six challenges in the energy access space, including battery storage, metering and monitoring, efficient appliances, business models, off-the-shelf and open-source components, and generating demand and awareness.

Carolyn McGourty, Booz Allen Hamilton, highlighted the possibilities of using data science to inform the energy access space. She described a weekend "hackathon" where data scientists with no previous energy experience were provided data, and asked to identify off-grid customers with ability to pay in Myanmar. She underscored how one of the keys for involving data analysts is a proper definition of the problem and its parameters.

Kevin Connolly, Director of Energy Access, Microsoft, underlined the role of technology and partnerships to achieve energy access, noting the Affordable Access Initiative. Connolly identified four core areas for technology-based partnerships: the cloud; the internet of things; data; and artificial intelligence. He underscored that without partnerships with local organizations, donors end up with "white elephant" projects.

Rachel Posner Ross, Director of Partnerships for Energy Policy and Investment, Allotrope Partners, presented on the Microgrid Investment Accelerator (MIA). She described MIA as a hybrid

profit/non-profit entity with four key goals: mobilizing capital, catalyzing projects, making the business case, and building finance ecosystems. Posner said MIA aims to have its first pilot projects in 2018 in India, Tanzania and Indonesia.

PARTNERSHIPS TO INTEGRATE ENERGY RESOURCES AND LAST-MILE ACCESS FOR INCOME GENERATION: Moderator Vijay Modi, explained that although large companies are good at scale, technology, and finance, an ongoing challenge is the last mile. He reviewed his research showing customers as very credit worthy, while delivery was sometimes unreliable, thereby ruining customer experience. Modi noted that the poor prefer spreading out their payments to up-front costs, and paying only for the energy they use.

William Landuyt, ExxonMobil, viewed access to energy as a key aspect of human development, affected by increasing global population and GDP. He noted the significance of countries that are not part of the Organisation for Economic Co-operation and Development in these areas, so that as income grows over time, their demands and needs for energy increase. He said technology is important in order to use energy more effectively.

Jean-Marc Fontaine, Vice President of Social Business and Societal, Total, described Total's bottom-up efforts via a lanterns programme focusing on innovation, the last mile, and partnerships involving market knowledge, manufacturers, distribution, financing, and recycling. Fontaine observed that Total's fuel station networks present an opportunity, used as an anchor from which to spread out their sales of lanterns.

Faris Hasan provided background on its work with SEforALL, and OFID's success story in the last mile. He said when it started working with SEforALL, OFID focused on advocacy for energy and coordination, since people were not working together. He noted OFID provided a revolving fund for money, and this supported dispersal of more than 450,000 lanterns, in addition to cookstoves. He stressed that partnerships are all about exploring what the other partner can do.

Ariel Yopez, Chief Energy Division, Inter-American Development Bank, described investments of US\$1 billion per year in the energy sector in Latin America and Caribbean, focusing on access and sustainability. He said that, considering



(L-R): Kevin Connolly, Microsoft; Carolyn McGourty, Booz Allen Hamilton; Molly Ward, US State Department; and Rachel Posner, Allotrope Partners

the region is 97% electrified, covering the remaining 3% is a challenge, requiring cooperation and commitment by governments, the private sector, and civil society.

Daniel Schroth, SEforALL Africa Hub Coordinator, AfDB, said energy has become the top priority of the Bank. He explained that the AfDB is focusing on universal access in Africa by 2025, creating urgency since this is five years before the SDG deadline. Schroth observed that universal access requires all types of energy, not only reliance on grid extension. He underscored the challenge of reaching those at the bottom of the pyramid.

Jay Taneja, UMASS-Amherst, reviewed data analysis and inferences on Kenyan cell phone customers. He studied actual electricity use, which is connected to how much they need to grow their systems. Taneja listed as two main takeaways: importance of meeting customer needs and stimulating electricity demand; and data's value for providing new insights on customers, and revealing incentives for increasing and retaining customers.

SHINE - INVESTING IN ENERGY ACCESS FOR ALL:

This session was moderated by Fletcher Harper. Sarah Butler-Sloss, Founder Director, Ashden Awards, emphasized that access to clean affordable energy is a very important tool to lift people out of poverty. She said the Ashden Awards were created to recognize the pioneers and innovators in the sector. Noting cost reductions in the last years for solar PV, batteries and LED lightbulbs, she said off-grid options are currently the fastest and cleanest options to provide energy access.

Fletcher Harper provided an overview of the SHINE campaign, and identified SHINE's key elements as campaigning, strategic investments, targeted advocacy and being a community of practice.

Aniket Shah, Sustainable Development Solutions Network, said annual global investment in energy is US\$2 trillion, of which 300 billion are in renewables and only 13 billion in energy access. He said US\$30-50 billion annually are needed to bridge the energy access gap, which while a large quantity, is less than 2% of total annual global energy investment. Shah identified challenges including lack of early-stage risk-seeking capital, technical knowledge at the community level, and the cost of working capital.

Archbishop emeritus Anders Wejryd, Europe President, World Council of Churches, said spirituality is connected to the real world, and that this is the reason his church works on climate change and renewable energy. Anders explained the Church of Sweden's decision to invest in renewable energy and divest from fossil fuels, noting that as a byproduct, they make good money.

Neha Misra said the sustainable energy goal touches everything and is instrumental to reaching the other sustainable development goals. She noted the importance of values and faith. While acknowledging a role for the private sector, Misra said local organizations need to be involved as well in order to ensure long-term value.

Sarah Wykes, Catholic International Development Charity, said ending energy poverty is critical for development and a strategic priority for her organization. She emphasized affordability as key for access, and the need to measure impacts on people's lives, rather than services delivered.

VOICES FROM THE VILLAGE – ARE YOU LISTENING TO WHAT WE REALLY WANT? This session, which heard from high-impact countries about the benefits of achieving energy access for off-grid and remote communities, was moderated by Molly Hurley-Dépret, Smart Villages Initiative.



(L-R): **Aniket Shah**, Program Leader, Financing for Sustainable Development Initiative, Sustainable Development Solutions Network; **Neha Misra**, Chief Collaboration Officer and Co-Founder, Solar Sister; Archbishop emeritus **Anders Wejryd**, Europe President, World Council of Churches; **Sarah Butler-Sloss**, Founder Director, Ashden Awards; **Sarah Wykes**, CAFOD; and **Fletcher Harper**, Executive Director, GreenFaith



(L-R): **Gregory Etienne**, Mayor of Pilate, Haiti; **Martin Kariongi Ole Sanago**, Community Leader, Terrat Village, Tanzania - Smart Villages; **Alfonso Guevara Chota**, District Mayor, Napo, Peru; **Molly Hurley-Dépret**, Smart Villages Initiative; **Tri Mumpuni (Puni)**, Co-Founder, IBEKA; **Marc Antoine Archer**, Observatoire Haitien de l'Energie-Observer; and **Jessica Olivares Magill**, Acciona Microenergy, Peru

Martin Kariongi described his experiences growing up in a remote Maasai village, and setting up a community radio station powered by a generator with external financial aid. He said the connection with the outside world overcame opposition to electricity and paved the way to introduce the community to new technologies, which brought with it the benefits of education, refrigeration, and agricultural extension. On changing mindsets, he said it requires patience and persistence, and highlighted that over 200 households and schools have access to electricity, which unlocked the entrepreneurial skills of community members to charge mobile phones, and improve the milk processing practices.

Tri Mumpuni, Co-founder, IBEKA, shared the experiences in rural Indonesia of introducing renewable sources through a community-based electrical power supply. She said local communities need to be trusted to have the awareness of their own needs, and be allowed to take ownership, thus ensuring sustainability. On the unsustainability of many aid projects, she said this usually happens when communities' needs are ignored and they are not involved, whereas the strength of a project lies in empowering the community to maintain their own appliances through training and capacity building, a key component of any technological aid initiative.

Mumpuni emphasized that electricity forms the backbone of economic development, leading to cooperatives, particularly for women. On connecting to the grid schemes in local communities, she shared the government's involvement, explaining that communities were enabled to sell their power to the national grid in exchange for social services like free health care.

Alfonso Guevara Chota, Napo District Mayor, on the challenges of energy access to the village, shared his experiences as a dentist in 16 communities in a remote part of the Peruvian Amazon, where less than 20% have electricity access. Commending the role the government played in assisting these remote parts, he emphasized the role of the financial sector and technology transfer by experts, which unlocked the business potential of electricity access. He shared his experiences of installing over 60 solar panels in households, and the positive reception by the local communities. In spite of challenges, he

said the introduction of the renewable energy technologies has enormous potential, particularly with increased introduction of electrical appliances.

Gregory Etienne, Mayor of Pilate, Haiti, shared his experiences working among remote communities in central Haiti, with 60,000 inhabitants, mainly surviving on agricultural livelihoods. On electricity access, he described the evolution over the past 30 years, lamenting a government transition at one stage, when access to electricity ceased for a period. He said recent development in solar power introduced new opportunities, including diversification in farming practices, education, and tourism. On the cost of the technology, Etienne lamented that it is not yet long-term or stable, but applauded support from many actors who supported them in reestablishing electricity access.

Jessica Olivares Magill, Manager, Acciona Microenergy, Peru, described the experiences of developing energy access through renewables in a region in Peru with the least access to electrification. She noted that 99% of the communities live in extreme poverty. She highlighted recent developments to provide electricity supply to the remote Amazonian communities, through PV systems. She stressed that socially sustainable programmes always prioritize the needs of the community.

Marc Antoine Archer, Chairman Observatoire Haitien de l'Energie-Observer, described populations in Haiti who have never seen electric light, and urged the Forum to assist in "breaking the chains of poverty" by introducing stable and sustainable renewable electricity supply to those left behind.

POWERING HEALTHCARE: MAKING THE CASE FOR GREATER INVESTMENT IN HEALTH FACILITY ELECTRIFICATION: Moderator Jem Porcaro, Senior Director of Energy Access, UN Foundation, reviewed the critical link between energy access and healthcare, noting that 25% of health centers and clinics in Africa are without electricity, while intermittent electricity in district hospitals affects 300 million people. Porcaro declared that this correlates with higher rates of maternal and child death. He also noted that scarce resources need to be allocated thoughtfully, although there remains a lack of data.



(L-R): **Will Zeck**, Chief of Health and Nutrition, UNICEF; **Guy Rino Meyers**, Senior Advisor for Procurement and Supply Management, UNDP; **Gareth Martin**, Head of Sustainable Energy, Climate and Environment, DFID; **Nawa Raj Dhakal**, Director, Alternative Energy Promotion Centre, Nepal; **Chitalu Chilufya**, Minister of Health, Zambia; and **Jem Porcaro**, Senior Director of Energy Access, UN Foundation

Chitalu Chilufya said that health is an economic investment, and includes a range of factors, from nutrition to water to sanitation and infrastructure. He explained that facilities need to have stable power, whether for vaccines or women during pregnancy. Chilufya stated that health centers in rural areas can serve as a dividend. He supported partnerships with philanthropists and the UN. He stressed solar as an investment for rapid response.

Nawa Raj Dhakal described work in Nepal on providing solar based systems for households, schools, and health centers, since the grid is not reliable and only 75% of households are electrified. Dhakal noted complications with local political leaders as a potential challenge for energy access. He described the use of a few health centers as a pilot, which increased demand from larger hospitals.

Gareth Martin described DFID's support for a programme to show how solar power can improve reliable electricity in rural areas, and thereby lead to better health outcomes. He detailed the use of demonstration pilot projects with the UN Foundation in health clinics, and the provision of training and capacity building beyond just installation. Martin considered impact evaluation as critical for measuring benefits and drawing lessons for publication.

Guy Rino Meyers, UNDP detailed work in the health sector to reduce energy use through efficiency and increased provision of power. He described standardization of processes to lower costs, although with adaptation to local contexts, and low overhead of 15%. Meyers described losses when unreliable energy leads to waste of costly medicine, and the failure to use equipment as frequently as possible.

Will Zeck, Chief of Health and Nutrition, UNICEF, described untenable situations like doctors using cell phones for lighting. He stated that UNICEF sees electric power as part of strengthening health systems, in its work on vaccines and resilience in fragile

settings. He said technology and data play an important role, and called for sectors like health and education to collaborate across their silos.

A PEOPLE-CENTERED ACCELERATOR TO ADVANCE GENDER EQUALITY, SOCIAL INCLUSION AND WOMEN'S EMPOWERMENT IN THE SUSTAINABLE ENERGY SECTOR:

The session was moderated by Rachel Kyte. She announced the soft launch of a People-Centered Accelerator to advance gender equality, social inclusion and women's empowerment in sustainable energy. She described the Accelerator as a voluntary group of like-minded partners that want to advance these issues.

Mary Robinson underscored the large gender dimension of climate change impacts as part of the broader climate justice issues. Robinson suggested the Accelerator should influence all the other SEforALL accelerators.

Nawal Al-Hosany quoted Christiana Figueres in saying that the time for talk is over and it is important for the Accelerator to start with action. She underlined giving women opportunities through education, ownership and partnerships.

Harish Hande explained how in his experience, social pressure from families is a barrier for the career development of women. He highlighted the key role of women in his company's success.

Linda Davis, wPOWER Hub, said strong partnerships are the only way to really accelerate access to energy. She underscored the importance of having women at the center of the supply chain. Noting the need for evidence such as data supporting that women are good for business, she said the Accelerator could play a role to collect and exchange data and best practice.

Nicola Armacost emphasized the need for hard data to build business cases, including profitability, financial sustainability and repayment track record. She said that time after time evidence shows women are more reliable, and that the Accelerator should showcase successes and failures.

Ana Rojas, IUCN, emphasized the role of data in identifying and addressing gaps in women's participation in innovation, technology and the work force. She highlighted a case of geothermal energy company in El Salvador that invested in social dividends and gender inclusion.

Nathalie Weisman, Economic Community of West African States (ECOWAS) Centre for Renewable Energy and Energy Efficiency, outlined a study on energy and gender conducted in the ECOWAS region. She said the study found, for example, that only five out of 15 countries in ECOWAS have legislation protecting women land assets. Weisman emphasized the recently endorsed ECOWAS policy to close gender gaps.

Sarah Butler-Sloss said women can play a critical part in delivering energy. Noting two examples of equal rights and opportunities for women in clean energy companies, she emphasized such cases should go from being the exception to being mainstream.

Susan Gibbs, Wallace Global Fund, said an analysis of foundation funding for gender and climate revealed that in 2014 only 3.5 million dollars were granted, stressing the need for more.

Sheila Oparaocha said the narrative on gender needs to change to show to others that gender inclusion is central to achieving the solutions and sustainable energy goals.

TURNING THE POWER ON FOR 1.1 BILLION PEOPLE: THE ROLE OF OFF-GRID SOLAR SOLUTIONS IN MEETING THE NEEDS OF UNDERSERVED

HOUSEHOLDS: Johanna Diecker, Global Off-Grid Lighting Association (GOGLA), moderated the session. Using the analogy of a staircase that builds on previous innovations, she urged panelists to consider the role of entry-level lights in providing universal energy access to the underserved households in rural and remote areas.

Tom Derksen emphasized the role of development partners in entering emerging markets, underscoring the need for continuous adaptation to consumer needs, through changing the incentives, and investigating the market barriers to address these.

Jacob Lewandowski, Senior Manager, Platform, d.light, urged development of lighting sources that do not require continuous replacement. Noting that the network for mobile phones far exceeds the current electricity grid, he said this provides an opportunity to sell renewable light sources with a charging facility, thus expanding off-grid reach. He emphasized a human-centered approach which incorporates customer feedback into the business model.

John Foye, Fenix International, noting that entry-level lights have the advantage of being less costly, said that even though currently in a pioneering phase, entry-level lights pave the way for more durable and advanced systems, since people get used to new forms of technology.

Grace Horwitz, Blue Haven, emphasizing the aspirational aspect of entry-level lights, described the initial transition from kerosene as a huge leap for remote and isolated communities, and how access to credit unlocks additional finance to obtain other appliances as well. She applauded the decrease in cost of PV and batteries, and stressed the importance of knowing customers'

strategies to access electricity. This information, she said, can then be used to specialize in developing innovations in the areas of the value chain where gaps exist.

Arne Jacobson, Director, Schatz Energy Research Center, cautioned about the negative consequences of low-quality products, saying that, although promising, entry-level lights should be of sufficient quality to not spoil the solar energy market for the next generation of products. He urged good follow-up actions which are generally not a function of the companies who initiate the business. On sharing his organization's market survey experience in Uganda, he described how customer decisions are influenced by previous exposure to new technologies. He noted that people who bought the entry-level products, were generally the customers who tended to move onto multiple appliances in the same sector. He reported that other factors influencing decision making included proximity to a retailer, or through customer referral programmes.

DISRUPTIVE VOICES

On Monday, Odón de Buen Rodríguez, Director General at National Commission for the Efficient Use of Energy, México, provided insights into energy efficiency, and the need for organization, standards, and training. He noted that a technology for energy efficiency is not the solution if you do not have the people to operate it. De Buen Rodríguez declared that energy efficiency "takes a village."

On Tuesday morning, Amory Lovins, Co-founder and Chairman Emeritus, Rocky Mountain Institute, emphasized the opportunity that exists in helping all people, including the poorest, to improve energy efficiency. He stated that efficient energy use delivers more energy services than oil does, but that this is sometimes overlooked because unused energy is invisible. He declared that advanced efficiency is the cornerstone of rapid access and fair development.

Lovins reviewed a range of advancements over the past years, including China's dramatic increase in solar panel production, the fact that PV models became 89% cheaper over the past five years, and the dramatic increases in renewable energy use. He noted that it is best not to "protect the old," as change is led by entrepreneurs



Amory Lovins, Co-founder and Chairman Emeritus, Rocky Mountain Institute

and insurgents, rather than incumbents. Lovins concluded by claiming that a “richer, safer, fairer world can become our common destiny.”

On Tuesday afternoon, Harish Hande, regarding the 1.1 billion people requiring sustainable energy, urged looking at the figure in terms of people, not merely as markets and business models. He emphasized the opportunities represented by this figure, which could include innovators and inventors, and highlighted the Forum as a base platform to share and exchange ideas and inspirations. He encouraged Forum participants to think of the 1.1 billion as intellectual capital to be connected with, and not merely as a source of revenue.

On Wednesday, Steve Howard underscored “going all in” with 100% targets as the way to move forward because these make it clear what success looks like. He used examples from IKEA’s 100% LED lightbulbs and renewables commitments, noting that in 2011 IKEA sold 750,000 LED lightbulbs at a cost of EUR12 for 400 lumen, while in 2016 it sold 79 million LED lightbulbs, and next year it is expected to unveil a 99 cent 400 lumen LED lightbulb. Howard emphasized the business case for energy action, noting that IKEA turned energy from a cost center to a benefit center.

CLOSING PANEL

Peter Thomson, President of the 71st Session of the UN General Assembly, congratulated participants on the success of the meeting. He said it is imperative for the international community to combat climate change and achieve universal energy access, emphasizing that development gains can be reversed by adverse extreme weather events.

Peterson identified four critical steps for the international community to drive progress on the sustainable energy goals, including: establishing policy and regulatory frameworks such as energy efficiency targets, integrated energy plans, and energy price signals; building strategic and innovative partnerships that bring together governments, civil society, academia, international organizations and the private sector; engaging the private sector; and mobilizing US\$770 billion annually until 2030, including public, private, blended and alternative



Peter Thomson, President of the 71st Session of the UN General Assembly

sources, and taking advantage of historically low interest rates. He underscored a series of SDG high-level action events and stressed that action on clean and affordable energy must be prioritized both on its own and as a means to achieve the other SDGs.

Rachel Kyte said the Forum had achieved its role as a marketplace, bringing transactions in information, partnerships, and even deals. She urged participants to take a moment to celebrate the many achievements showcased during the Forum, yet reminded them that “we are not on track to meet the sustainable energy goals and much remains to be done.” Expressing her hope for the future, she closed the meeting at 4:43 pm.

UPCOMING MEETINGS

Vienna Energy Forum 2017: The Vienna Energy Forum (VEF) is a biennial, global and multi-stakeholder forum. It aims to explore how energy can contribute to meeting global developmental challenges. VEF 2017 will focus on the theme ‘Sustainable energy for the implementation of the SDGs and the Paris Agreement.’ **dates:** 9-12 May 2017 **location:** Vienna, Austria **contact:** UN Industrial Development Organization **email:** vef2017@unido.org **www:** <https://www.viennaenergyforum.org/>

UNGA High-Level Event on Innovation: Building on the Multi-Stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals (STI Forum), the UNGA President is convening a High-Level Event on Innovation and Connectivity. Leading innovators from major corporations will interact with Member States on how emerging technologies can transform efforts aimed at the successful implementation of the 2030 Agenda for Sustainable Development. The event is part of a series of ‘High-Level SDG Action Events’ that will be convened to advance the theme of the 71st UNGA session, to deliver a universal push for implementation of the SDGs. **date:** 17 May 2017 **location:** New York City, US **contact:** Office of UNGA President **www:** <http://www.un.org/pga/71/event-latest/high-level-event-on-innovation/>

Expo 2017: Future Energy: The Expo, organized under the theme ‘Future Energy’ and the sub-theme ‘Solutions for Tackling Humankind’s Greatest Challenge,’ will address future energy from several perspectives, including: exploration of strategies, programmes and technologies for sustainable energy development; promotion of energy security and efficiency; and the encouragement of renewable energy use. The EXPO will also include an Energy Ministerial Conference, convening within the Eighth International Forum on Energy for Sustainable Development. **dates:** 1-11 June 2017 **location:** Astana, Kazakhstan **contact:** Expo 2017 Press Office **phone:** +7 7172 91 94 63 **e-mail:** info@expo2017astana.kz **www:** <http://www.expo2017astana.com/en>

Asia Clean Energy Forum: This is a networking and knowledge-sharing event dedicated to clean energy and energy access in Asia. Participants will take part in plenary sessions, deep dive workshops, technical seminars, and other chances

for learning and networking. **dates:** 5-8 June 2017 **location:** Manila, Philippines **contact:** Connie Sayon, Forum Secretariat **phone:** +63 2 632 4444 **fax:** +63 2 636 2444 **e-mail:** cleanenergy@adb.org **www:** <http://www.asiacleanenergyforum.org>

Clean Energy Ministerial 8 (CEM8): CEM is a high-level global forum to promote policies and programmes that advance clean energy technology, to share lessons learned and best practices, and to encourage the transition to a global clean energy economy. Initiatives are based on areas of common interest among participating governments and other stakeholders. **dates:** 6-8 June 2017 **location:** Beijing, China **contact:** Wang Mu, Chinese Wind Energy Association **email:** liaison-office@cwea.org.cn **phone:** +86 10 59796665 **fax:** +86 10 64228215 **www:** <http://bjcem8mi2.medcon.org.cn/en/>

EU Sustainable Energy Week: The conference is dedicated to sustainable energy policy issues. Sessions organized by the European Commission and energy stakeholders debate new policy developments, best practices and sustainable energy ideas, while networking events forge alliances. **dates:** 19-25 June 2017 **location:** Brussels, Belgium **contact:** European Commission **www:** <http://www.eusew.eu>

III Ministerial Meeting of the Energy and Climate Partnership of the Americas (ECPA): The ECPA convenes energy ministers, national authorities, and others, to provide an opportunity to sharpen priorities, strengthen cooperation, and deepen commitment to a transition to sustainable energy. **dates:** 7-8 September 2017 **location:** Viña del Mar, Chile **contact:** Juan Cruz Monticelli, ECPA Technical Coordination Unit Manager **email:** jmonticelli@oas.org **www:** <http://ecpamericas.org/Ministerial-Meetings/ECPA-2017-Ministerial.aspx>

2017 International Renewable Energy Conference (IREC): Hosted by Mexico, the 2017 IREC (MEXIREC 2017) will focus on global renewable energy development with a special focus on Latin America. Initiated at the renewables2004 conference in Bonn, IREC is a high level political conference series dedicated to renewable energy policy worldwide. Dedicated exclusively to the renewable energy sector, IRECs are hosted by alternate governments every two years and convened by REN21. **dates:** 11-13 September 2017 **location:** Mexico City, Mexico **contact:** REN21 Secretariat **e-mail:** secretariat@ren21.net **phone:** +33 1 44 37 50 91 **fax:** +33 1 44 37 50 95 **www:** <http://www.ren21.net/irecs/mexirec-2017/>

Fifth Annual International Conference on Sustainable Development (ICSD): The Fifth Annual International Conference on Sustainable Development (ICSD) will take place on the theme, 'The World in 2050: Looking Ahead for Sustainable Development.' The 27 conference topics will cover all 17 SDGs and a number of cross-cutting issues, including data, the role of universities in achieving the SDGs, and the arts as a tool to raise awareness of the SDGs. **dates:** 18-19 September 2017 **location:** New York City, US **email:** info@ic-sd.org **www:** <http://ic-sd.org>

UNFCCC COP 23: The 23rd session of the Conference of the Parties (COP 23) to the UNFCCC will be organized by Fiji and hosted at the headquarters of the UNFCCC Secretariat in Bonn, Germany. **dates:** 6-17 November 2017 **location:** Bonn, Germany **contact:** UNFCCC Secretariat **phone:** +49 228 815 1000 **fax:** +49 228) 815 1999 **e-mail:** secretariat@unfccc.int **www:** http://unfccc.int/meetings/unfccc_calendar/items/2655.php?year=2017

GLOSSARY

ADB	Asian Development Bank
AfDB	African Development Bank
CEM	Clean Energy Ministerial
CIF	Climate Investment Funds
ECOWAS	Economic Community of West African States
GEF	Global Environment Facility
GTF	Global Tracking Framework
IEA	International Energy Agency
IFC	International Finance Corporation
IIED	International Institute for Environment and Development
IRENA	International Renewable Energy Agency
MIA	Microgrid Investment Accelerator
OFID	OPEC fund for International Development
OPEC	Organization of the Petroleum Exporting Countries
PV	Photovoltaics
RBF	Results-Based Financing
SDG	Sustainable Development Goal
SEforALL	Sustainable Energy for All
USAID	US Agency for International Development
DFID	UK Department for International Development
UNFCCC	UN Framework Convention on Climate Change
UAE	United Arab Emirates
UNGA	United Nations General Assembly
WRI	World Resources Institute