**Day 2 Plenary discussion: Show me the money – innovative financing that works**

The Energy Efficiency Financing landscape in India has started to improve in the last couple of years. This

plenary will present Indian and global experiences on how the potential for energy efficiency can be converted into investments of a scale, estimated to be over $400 billion per year to reach the SE4ALL Goals by 2030. The focus will be on more innovative and commercial financing instruments using public finance mechanisms to mobilize private sector capital.

The chairman, Mr Gailius Draugelis, introduced the session by saying that in the effort to keep global warming down to 2 degrees, EE had a highly significant role, but while there were many deals being worked out, the scale was nowhere near where it should be. Renewable energy seemed to attract most of the money available while energy efficiency seemed to get short shrift.

Mr Jigar Shah, from the International Finance Corporation, introduced the organization and its role in providing finance for EE, saying that the IFC focused mostly on the private sector with key areas of investment being green buildings, renewable energy, energy efficiency and climate-smart agriculture. One of the schemes/tools that he mentioned the IFC had developed were, EDGE, which was used for benchmarking green buildings.

Ms Anubha Prasad of the Small Industries Development Bank of India, SIDBI, tracked the history of this pioneer bank in India with respect to financing EE, and its role as the apex bank for the MSME sector since 1990. The EE initiative of SIDBI started simply as a loan-giver through lines of credit extended by organizations/institutions such as KfW, JICA, WB, etc., to about 8000 MSMEs; however, since 2009 EE had become a full-fledged vertical, becoming the market-maker in India. The largest barrier SIDBI faced was reluctance to invest in EE ventures, and it was trying to change this by devising instruments related to cash-flow, insurance, etc.

Dr Steven Fawkes from EnergyPro Limited, UK, pointed out at the most significant barrier was making EE projects 'investible' particularly since there was much capital looking for investment, and green investment, more specifically. He cited four factors as being responsible for the success of programmes in his experience. These were: project finance and development finance; large pipelines (EE projects were much smaller compared to capital costs); standardization (key to aggregation, and which would help banks reduce risk); and, building capacity (to develop good, bankable projects). Dr Fawkes mentioned the availability of an underwriting toolkit which would help assess the risks involved in a project but pointed out the opportunities in the form of new buildings, factories, etc., also pointing out the necessity for a banking regulation which looked at climate-related risks – this discussion, although quite out of the current discourse on EE policy, was one whose time had come. He spoke of the Carbon Energy Fund in the UK for which many bankable projects were not available, and cautioned those applying for funds to close deals in a timely manner else the money would be channeled elsewhere owing to declining bank interest.

Rajat Misra, Asian Infrastructure Investment Bank, China, spoke next about the challenges of delivering, given the small scale of projects but he remained optimistic about the potential saying that standardization and scale would go a long way in addressing the issue. He held that if banks were willing to lend working capital to MSMEs, they should, equally, be willing to lend for EE activities.

Mr Kenichi Yokoyama of the Asian Development Bank (ADB), India, said that the bank would double its annual climate financing to $6 billion by 2020, of which $4 billion would be dedicated to mitigation actions such as support for renewables, energy efficiency, etc. He pointed out that the ADB wanted to do more on the demand-side, with enough money being available – bankability remained a challenge, but a sound policy framework and holistic view would help overcome hurdles in this otherwise dynamic area. A partnership agreement had recently been signed with the Indian government, and the bank wanted to work with similar organizations such as The World Bank, SIDBI, EESL, to create and tap large markets because it saw value in developing this agenda. Global knowledge and networking would be essential in achieving this end.

Some questions discussed in the following discussion session were:

Q. Since de-risking finance and investment is closely linked to scale and a robust pipeline of projects, what has worked, from experience? What is the role of the (relatively flexible) philanthropic organizations in mobilizing funds since they were better able to take risks? Would such lending work better in countries such as India?

A. In reply, speakers mentioned the lack of deep data that banks can use to assess how EE projects might perform. They also mentioned that certain big opportunities in the form of corporate finance were being missed. Also, EE activities were often embedded into the broader project and did not get recognized, as such. With respect to the role of philanthropy, the opinion was that the money available wasn't large enough for EE projects and could be used, instead to much greater benefit in capacity-building, for example.

Q. Is it possible that there are other issues at play? Could it be that the EE movement is leading to more expensive, say, housing markets, and therefore, equity issues?

A. Speakers were of the opinion that there is a *perception* that green building design is very expensive which should be removed.

Q. How did SIDBI, for example, move to EE projects? Did regulation play a role by encouraging it to invest in EE activities?

A. The mandate to develop MSME through cheaper funds for EE came around 2000, but SIDBI did not have the structure or targets, at first. Other speakers said that push from regulators could be key, while CSR could be tapped for funds/investments, too.

In response to questions from the audience, some important points emerged:

1. Place EE activities/projects in the context of climate resilience to attract attention of investors.
2. Speak of EE in terms of the value that it brings, rather than on its own, for merit to be seen. Examples are saying that it brings about modernization, diversification, raises the value of property, brings health co-benefits.

In summary,

* EE should be viewed as low hanging fruit, helping with the 2-degree temperature--rise scenario.
* There are huge opportunities for MSMEs but challenges remain in the form of available financing pipelines, not so much with respect to their availability but whether they are bankable.
* Banking regulators should look at climate risks.
* Speak of EE in terms of co-benefits especially in the philanthropy arena.

**Executive Panel Discussion #3: Energy-efficient market transformations – international experience and successes.**

A discussion on international success stories and best practices for successful market transformations through specific national policies, global programmes and other initiatives to scale up energy efficiency implementation around the world.

Dr Ashok Sarkar who chaired the session began by setting the context saying that improving EE was essential for removing poverty, and to maximize the output of public money. It brought great value but implementation was complex with the ability to attract investment depending a specific country's policy framework.

Mr Inchul Hwang of the Korea Energy Agency (KEA), used the analogy of a restaurant, saying that the KEA, an implementation agency had got the policy aspect of EE down correctly. Its success, because of which it is held up as an example by The World Bank, lies in the merging of several factors: a dedicated fund (for subsidies, loans, etc.), staff, tax incentives, strong regulation, a standards and labelling programme and strong building code. The KEA has an ear to the voice of its stakeholders, and the market and government trust each other, which is vital because the market knows that defaulters will be punished and those conforming, incentivized. The KEA has been able to bring together all the pieces of EE-opportunity and build a holistic policy.

Mr Mohammad Gannar, National Agency for Energy Conservation (AMNE), Tunisia, outlined the strong frameworks the country had in its institutions and incentives, as also its regulatory structure and strong political will. Between 1985 and 2015, what started out as the ANME was now a ministry. Supporting infrastructure in the form of laboratories for thermal property and other kinds of measurements were in place, as also an incentive framework to promote EE (National Fund for Energy Conservation), and an Energy Transition Fund since 2015.

Ms Laura McGrory from the Alliance to Save Energy called EE the greatest resource and tracked its progress in the US showing how energy productivity had increased so that between 1980 and 2014, the economic output from one unit had doubled, resulting in the much-desired decoupling. She drew attention to the fact that these achievements had all come from older policies and that her organization was searching for ways to push new and better policies. Two strategies suggested to this end were: (i) Changing conversation by showing co-benefits, and measurable economic benefits, and, (ii) creating public and private sector coalitions to build capacity on ground. Ms McGrory cited the Alliance's Systems Energy Initiative which looked at integrated design with respect to EE.

Mr Alexander Farsan of the Carbon Trust, UK, pointed out the general lack of awareness, confidence (suppliers and technology) and funding in the UK. In the interval from 2002 to 2012, the organization started a large-scale programme to tackle the barriers in the way of EE projects, with the outline of their approach being, Find (opportunities), Demonstrate (the business case), Implement (projects), Finance and Results. The Carbon Trust has developed and refined an analytical tool to design and evaluate EE finance programmes with key questions: (i) What is the market and what are the key motivators? (ii) Are there drivers for actions, subsidies? (iii) Is there a supply chain to provide service, finance, technology? Thus guiding the user to developing a bankable pipeline of projects.

Ms Anjali Jaiswal of the National Resources Defense Council (NRDC), USA, pointed out that cities were the hubs of action with large numbers of buildings and true city leadership was needed. The NRDC had translated this work to India in some locations. She mentioned California's first standards for computers and monitors and NRDC's support for the adoption of similar standards in India, and cited the huge breakthrough in the form of the Kigali Amendment in phasing out HFCs from air-conditioners.

'Implement, implement, implement' should be motto for 2018.

**Main points of Q and A session**

In response to questions about the impact of 90% penetration of air-conditioners in China, and related predictions for India, it was pointed out that regulations would have to be right for building codes with punitive action for defaulters. China's city emissions were certainly high, but not just because of electricity consumption – refrigerant consumption was significant, too.

Mr Saurabh Kumar, EESL, pointed out that global warming potential concerns and EE concerns must be integrated but in the recent meeting in Montreal, it did not appear that EE was an issue, and in such a situation, a business-level solution would not emerge.

Institutions needed to act very quickly because discussions in silos were very damaging.

**Highlights of session**

* Improving EE was essential for removing poverty, and to maximize the output of public money.
* Strong institutional, incentives and policy frameworks lead to success in implementing EE programmes.
* Discussions of EE global warming potential, etc., in silos were very damaging and did not serve the larger purpose.
* Take discussions from ministries dealing with energy to ministries of finance.

**Executive Panel Discussion #4: Energy efficiency market transformations – success stories from India.**

This discussion focused on EE market transformation in India, looking at transitions from conventional to best available technologies (BAT) in EE through policies, institutional development and market mechanisms.

Three presentations in this session tracked the development of policy and related institutions in India, after the Energy Conservation Act was passed and came into force in 2002. Mr Rajneesh Rana, EESL, India, spoke in detail about the solar power potential and related programmes, their modalities and operating details.

Dr Ashok Kumar, BEE, spoke of creating a domestic carbon market and described the institutional structure of bodies related to EE work as also active schemes floated by the government related to the country's National Action Plan on Climate Change.

Mr Girja Shankar described the Jaipur streetlighting project in detail.

In the Q and A session, Mr Garnaik spoke of the new agreement signed with the UP government covering engineering colleges, ITIs and diploma colleges, for retrofitting EE lighting. On a question asking about energy star ratings of 6 and 7 in Japan, he replied that ratings across countries could not be made owing to differences in operating conditions and comparisons would be appropriate only after harmonizing. Appliances with higher ratings were available in the market, but they would not be affordable by the public at large.

**Executive Panel Discussion #5: Capturing the co-benefits of EE towards sustainable development: enabling universal energy access and creating green jobs.**

Like many other countries, India is blessed with a demographic dividend and the government's current focus is on skills development and creating jobs. This session discussed and highlighted how innovation in energy efficiency and other clean energy technologies can help to create 10 million green jobs, scale up energy access, and result in other co-benefits.

Chair: Mr Steve Nadal of the American Council for an Energy-efficient Economy (ACEEE)

Dr Rahul Walawalkar, Indian Energy Storage Association (IESA) described the MICRO (Microgrid Initiative for Campus and Rural Opportunities) programme he runs, and whose motivation is the Indian Government's goal to create 24/7 access for everyone by 2019 as also his belief that rural people cannot wait for the grid to reach their villages. Small townships can also use this model.

Mr R Subramanian, Saint Gobain, India, spoke of the criticality of certification and Saint Gobain's e-learning, curriculum development and delivery initiatives for students of architecture and civil engineering. He stressed the need to bring humanities into technical classrooms so that behavioural aspects that govern the use of resources and interactions could be taught. He also emphasized tapping digital-based methods of learning such as those using augmented reality and simulations, saying that they were best adapted to the large scale of operations found in the Indian setting.

Mr Sanjeev Seth, Ingersoll Rand India, suggested driving EE through different technologies. He cited the importance of government – private partnerships to bring in new technology, solar energy for cooling (technology available but costs are high). In the education arena with reference to green buildings, he mentioned that ISHRAE was orienting engineers to EE by training them, and that Ingersoll Rand had started a LEED certification programme. He mentioned the co-benefits of EE in green building design as being financial, with paybacks on investments within 2-3 years.

Dr Chetan Solanki, IIT Bombay, spoke of a conflict in India's need to raise energy consumption and the large dependence on imports of oil. He described in detail the SoUL solar lamp project, localised for sustainability, where assembly and maintenance of lamps are carried out by the village community. He urged thinking of energy access from the bottom up, rather than top-down.

Mr S Raghupathy Confederation of Indian Industry (CII), spoke of green buildings and the many advantages, and co-benefits they offered, especially in terms of improved productivity of the workers. He pointed out savings of water and payback periods of 2-3 years, saying that pride and image were two drivers of interest in green building design. The large number of green buildings constructed each year, about 1000, created a large business opportunity and green jobs and also increased the value of the asset (building).

In the Q and A that followed some points made were:

* Co-benefits were many, in terms of health and well-being, improved light and ventilation led to higher productivity, higher quality products, higher asset value.
* A lot of the green building revolution was driven by voluntary actions and recognition, and not policy. Rating residential apartments would help.
* Implementation of green building design was low at present but a movement should begin with building owners, and by including relevant topics in college curricula.
* Micro grids would not only provide access to energy in remote areas but also sustain economic activity at the local level.
* Technically there is no challenge to energy access and provision but there is a misalignment of incentives. Design of microgrid should meet needs.
* Remote and village communities should not have to wait until national-level programmes reach their doorstep, possibly ten years. If generation is local (solar), electricity can be provided much earlier, faster. Finance, however, is a limitation.
* Energy generation should create economic activity in communities and also provide lighting in the home.
* Microgrids are viable and jobs created in villages around electricity generation will reduce pressure on cities by migrating workers in non-farming season.

**Special remarks: new frontiers in energy efficiency**

Mr Saurabh Kumar, EESL

Dr Demetrios Papathanasiou, The World Bank

This free-flowing discussion with questions from both participants pointed out several features of energy efficiency, ESCOs, visibility of EE, and activities associated with it.

* EESL was cited as a success mainly because it had been able to bring together finance and technical aspects of EE.
* EESL should bring in more companies from the Indian states: in the future it might break down and spin off into smaller entities, or absorb others as replication took place.
* When EE starts making money for the people involved, many more people will sit up and take notice.
* If EE's value is recognized and EE is made financially attractive, attracting investment will no longer be a challenge: in a sense, regulators do not *allow* its value to be seen.
* The biggest challenge faced at this point was the absence of baseline data, but now all projects involved measurements.