Indo-German Energy Forum Support Office

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Federal Ministry for Economic Cooperation and Development

KFW

Ministry of POWER
GOVERNMENT OF INDIA

Ministry of New and Renewable Energy

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

DEVELOPMENTS IN INDO-GERMAN ENERGY COOPERATION

GERMANY AND INDIA LEAD THE 'RENEWABLES CLUB'

On invitation of the German Federal Minister for the Environment, Peter Altmaier, high-level representatives from 10 countries have gathered in Berlin to establish the "Renewables Club", with a common goal to scale up the deployment of renewable energy worldwide.

"As members of the Club we aim to lead by example," said Minister Altmaier. "The Renewables Club is a political initiative of pioneering countries that are united by an important goal: a worldwide transformation of the energy system." In such a system, renewable energy should play a key role in the future global energy supply.

"We are determined to work together as advocates and implementers of renewable energy at global level," said Altmaier. "We, in Germany, do not stand alone with our Energiewende, but are a part of a strong group of leaders." The Club is intended to supplement and support the International Renewable Energy Agency IRENA.

"Renewable energy is not only a good way of combating climate change, it also contributes to prosperity and supply security throughout the world," said Altmaier. "Especially at a time of growing energy demand, this is the attraction of renewable energy for countries all over the world."

The Club was initiated by German Federal Environment Minister Peter Altmaier. The founding members are China, Denmark, France, Germany, India, Morocco, South Africa, Tonga, United Arab Emirates, United Kingdom and the Director-General of IRENA, Adnan Amin. The 10 members currently account for more than 40 percent of global investments in renewable energy.

The next meeting of the Renewables Club will be hosted by the United Arab Emirates in Abu Dhabi in January 2014 in the framework of the next session of the IRENA Assembly.

NEW MILESTONE IN INDO-GERMAN DEVELOPMENT COOPERATION

During the Indo-German negotiations on development cooperation, the German government committed 864 million Euros towards various sectors in India. Since energy has become the most important sector of Indo-German development cooperation, the biggest chunk of this fund, 630 million Euros, was committed to the energy sector to promote investments in energy efficiency and renewable energy projects. The fund is to be channelled through a sustainable funding mechanism of the KFW Development Bank for various public sector entities and state-run power generating companies as well as for technical assistance through GIZ.

Amongst the various projects for which this fund is ear-marked, the West Bengal Power Development Corporation would receive a concessional loan from KFW to promote the rehabilitation and modernization (R&M) of its Kolaghat Thermal Power Station. Another major project to receive this fund is the Himalayan Hydro Power Project, which is being implemented by the Himachal Pradesh Power Corporation Limited (HPPCL) to further harness the hydro- power potential in Northern India. The other projects to be financed include the "Energy Efficient Residential Housing Programme II" by the National Housing Bank (NHB) to promote more energy efficiency in residential buildings.

Further, during the Indo-German Government Consultations between Prime Minister Singh and Chancellor Merkel on 11th April 2013 in Berlin, the German side had expressed their willingness to provide concessional loans of up to 1 billion Euros as well as technical assistance for the planned "Green Energy Corridors". During the Indo-German government negotiations on development cooperation in July 2013, the German government has committed the first tranche of 250 million Euros channelled through KFW for this purpose, and also two initial technical assistance projects worth 4 million Euros to be implemented by GIZ.

IMPROVING ENVIRONMENTAL EFFECTS ON THERMAL POWER PLANTS; KFW'S PROMOTIONAL LOAN TO NTPC

On 27th June 2013, KfW has extended a fixed interest promotional loan of Euro 95 million to NTPC for the renovation and retrofitting of Electro Static Precipitators at various power plants to reduce fly ash emissions. Under this scheme, 9 projects of NTPC with an aggregate installed capacity of about 11,500 MW will be covered. This promotional loan agreement has been signed under a special mandate from the German government. Although, KfW does not receive any budgetary subsidies from the German government for promotional loans., KfW has still been able to offer concessional rates for this project. This is due to the good refinancing conditions of KfW which were passed on to NTPC to promote the project. KfW intends to expand this mode of cooperation in India over and above the usual government supported and subsidized lending.

KfW signed a promotional loan facility of 100 million USD with NTPC in 2007 for the capital expenditures for the renovation and modernization schemes at selected power stations. In addition, KfW IPEX Bank is partly financing the Barh II project of NTPC with an ECA covered loan for the supply of a SIEMENS turbine for this new supercritical power plant.

FACT FINDING MISSIONS FROM INDIA

An Indian delegation of architects, real estate developers and consultants travelled to Germany from 19-23 August 2013 to understand how Germany forayed into the building sector. The delegation was organized by the Indo-German Chamber of Commerce within the framework of the export initiative 'Efficiency from Germany' of the German Federal Ministry of Economics and Technology (BMWi). The group travelled to Berlin and Hamburg, where they met policy makers, company representatives, researchers and other stakeholders during seminars and workshops. The program included the visit of pilot projects, demonstration objects, energy efficient buildings and training institutes. Highlights of the visit were a tour to the Technology and Science Park in Berlin Adlershof and a tour to the IBA – International Building Exhibition in Hamburg where the group visited a world war bunker that has been converted into a CHP plant as well as a façade integrated plant to grow micro algae (which are used to fire a biogas plant).

India has one of the lowest energy consumption per capita in the world - 565.65 kg of Oil Equivalents (OE) per year as compared to 4003.26 kg OE in Germany in 2010. Yet India's economy is comparatively energy inefficient. In 2010 it took the country 186.14 kg OE to create $1000 GDP (in PPP) whereas it was only 119.27 kg OE in Germany. India already faces huge challenges in securing its energy supply. India will have to bring down its energy intensity and improve the energy efficiency in virtually all areas of life for sustainable growth. Germany can be an example for India, since the country was poor in raw materials and faced the same challenges some decades ago. Germany successfully managed to decouple its economic growth from a growth in energy consumption.

In the course of the week many new contacts between German and Indian organizations were established. The Indian participants took away new project ideas and inspiration for the development of their own business. In turn the German counterparts learnt a lot about the conditions in India. The different social, climatic and economic environment very often calls for different and creative solutions – solutions which might as well be applied in Germany as well.

POLICY UPDATES

INDIAN GOVERNMENT'S DRAFT NATIONAL POLICY ON OFFSHORE WIND ENERGY

India has the 5th largest onshore wind deployment in the world with the installed capacity of over 19,600 MW. The country also has a very robust onshore wind energy manufacturing base. Wind turbines with state of the art technology are being manufactured by 18 manufacturers with about 45 models ranging from unit size from 250 - 2500 KW.

India is blessed with coastline of 7,600 km. The initial near shore measurements have indicated offshore wind energy potential in Tamil Nadu, Gujarat and Maharashtra coasts. Further, the preliminary estimate, carried out by a Scottish consultancy organization found a potential of 1 GW each at Kanniyakumari and Rameshwaram in Tamil Nadu, which however needs further evaluation.

The Government envisages carrying forward, in a systematic manner, the development of offshore wind energy in the country, to overcome the existing barriers, and to create technical competences within the country.

MNRE has constituted an **Offshore Wind Energy Steering Committee (OWESC)** under the chairmanship of the Secretary; examine the policy framework and the requirements of inter-agency coordination towards exploiting offshore wind resources in the country. The OWESC has come out with the Draft National Offshore Wind Energy Policy 2013 for MNRE.

The essential elements of the draft policy are referring to offshore wind resource assessments and the setting of technical requirements and procedures. Also economic aspects and incentives for the deployment of wind offshore are addressed in the document.

1. Preliminary Resource Assessment and demarcation of blocks, each with sizable offshore wind energy potential.
2. Environment Impact Assessment (EIA) study of proposed Offshore Wind Farms regarding aquatic life, fishing etc., studies relating to navigation, undersea mining and related exploration/exploitation activities and other users of the sea.
3. Oceanographic studies to determine the construction costs for special foundations, special ships for both operation and maintenance requirements.
4. Offer of blocks through International Competitive Bidding (ICB) Process.
5. Sea Bed Lease Arrangement with the successful bidder.
6. Grid Connectivity and Evacuation of Power.
7. Development of turbine and installation technologies.
8. Incentives to promote deployment of the offshore wind energy turbines.
9. Demonstration Projects in collaboration with interested stakeholders for showcasing the technology.

The draft has also been placed on MNRE website inviting comments and suggestions of stakeholders.

EVENTS & ACTIVITIES

GERMAN DELEGATION VISIT TO INDIA ON ENERGY EFFICIENCY IN THE INDUSTRY

26 NOVEMBER 2013, NEW DELHI

The Indo-German Chamber of Commerce (IGCC) organised a delegation visit from Germany focussing on Energy Efficiency in the Indian Industry. This delegation is part of the Energy Efficiency Export Initiative funded by the German Federal Ministry of Economics and Technology (BMWi).

Germany enjoys an outstanding reputation throughout the world for its high-quality technical products and its practical expertise, particularly in the field of energy efficiency and the Energy Efficiency Export Initiative is aimed to help local companies establish contacts with German companies and experts. A one-day seminar was organised during this visit on 26th November, 2013 in Pune during which the German companies showcased their technologies on energy conservation and efficiency. During this event, the German delegates also met potential partners in India. On the Indian side, presentations were made from the government agencies, IGCC, GIZ and IGEF which gave the companies an overview of the Indian energy market as well as the regulatory and fiscal incentives available. Mr. Markus Wypior, Director, IGEF Support Office presented on the "Private Sector Initiative" of the IGEF that compliments the efforts of the IGCC for the German companies to establish themselves in India by providing a platform for interaction with the Indian and the German ministries as well as with agencies such as BEE, EESL and KFW/DEG Bank.

The event clearly showed that a market exists for such applications in India, especially because of the PAT scheme as well as the rising cost of energy in the country. The most evident result of these has been the development of the framework of the ESCOs (Energy Efficiency Services Companies) in the country. The initiatives of the IGCC, GIZ and IGEF in this direction would help in the proliferation of these technologies from Germany, which have proven their efficacies. The companies from Germany included Arqum GmbH, Atlas Copco, Modl GmbH and GEC Group."

The presentations are available in the IGCC website.

PROMOTING ENVIRONMENT-FRIENDLY COOKING SOLUTIONS: INDIA CLEAN COOKSTOVE FORUM 2013

25-26 NOVEMBER 2013, NEW DELHI

With the vision of enhancing the use of improved

cookstove technologies, Dr Farooq Abdullah, Minister of New and Renewable Energy, inaugurated the India Clean Cookstove Forum 2013, organised jointly by the Ministry of New and Renewable Energy (MNRE) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH operating on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) on 25 and 26 November 2013 in New Delhi, India.

With more than 150 participants, the forum was the largest national event on clean cooking solutions that has ever been organised in India. During the event, all relevant stakeholders in the Indian cookstove sector – social enterprises, NGOs,

foundations, donor agencies, government and financial institutions – discussed potential solutions to the most significant challenges hindering the large-scale adoption of improved cookstoves.

In his speech Dr Farooq Abdullah said *"increased use of clean and efficient cookstoves is crucial to reduce the burden of disease from indoor air pollution as well to avoid the overuse of biomass resources. Efficient cooking technologies have a direct tangible impact on the livelihoods of the poor, as they save time and money that previously had to be spent on procuring cooking fuels."* During the Forum, the Minister also launched a new initiative on biomass cookstoves developed under the Clean Development Mechanism (CDM) of the United Nations Frameworks Convention on Climate Change to reduce the cost of improved stove technologies to rural customers through the sale of carbon credits.

Following up on the results of the discussions, the Indo-German Energy Programme Renewable Energy Component (IGEN-RE), a cooperation project between MNRE and GIZ on behalf of BMZ will develop marketing and awareness campaigns, as well as pilot innovative mechanisms for end-user financing. Furthermore the development of a web-based platform will be initiated to support manufacturers and distributors of improved cookstoves in creating an open space for knowledge sharing among each other. To create an effective framework to initiate, and support collective efforts towards a large scale adoption of improved cookstoves, this event will be the first in a planned series of yearly events.

The detailed documentation of the India Clean Cookstove Forum 2013 is available online.

NATIONAL HOUSING BANK ANNUAL CONFERENCE ON ENERGY EFFICIENT HOMES

25-26 NOVEMBER 2013, NEW DELHI

The First Annual Conference on Energy Efficient Homes, as a part of the Promotional Programme for New Energy Efficient Housing**,** was organized by the National Housing Bank (NHB) on November 25-26, 2013 at New Delhi. In 2010, NHB launched a KfW line of credit of EUR 50 million to promote EE homes that reduce energy consumption up to 35% through passive and active measures. This Conference brought together different stakeholders on a common platform to seek views, ideas and experiences with this programme as well as propose ways of their enhanced participation. About 60 participants representing commercial banks, housing finance companies, industry bodies, developer community, industry practitioners, international financing institutions and research institutions contributed to the deliberations on design, business cases, financing models and demand creation for energy efficient homes.

Shri R V Verma, Chairman & Managing Director, NHB, welcomed and briefed participants on the progress of the promotional programme. Being the first pilot, Mr. Verma said that the implementation has been overall satisfying and the experience has provided many lessons for future programmes. The chief guest at the inaugural session of the conference, Shri H R Khan, Deputy Governor, Reserve Bank of India, acknowledged the significance of energy efficiency measures in buildings sector. Dr. Ajay Mathur, Director General, Bureau of Energy Efficiency emphasized a need for energy efficiency guidelines to include all types of residential buildings including low cost homes. Mr Peter Hilliges, Director, KfW New Delhi Office briefed on the experience of Germany in promoting energy efficiency in residential sector.

During the course of two days of intense discussions most suggestions for the way forward circulated around a) increasing awareness among home buyers or end users on the concepts of green and energy efficient homes by way of providing information on tangible benefits; b) designing mechanisms for credible certification of energy efficient projects through involvement of local bodies; and c) up-scaling the programme through financial incentives to end users.

INDO-GERMAN DIALOGUE ON 'RENEWABLE ENERGIES'

13 NOVEMBER 2013, NEW DELHI

The IGEF Sub Group "Renewable Energies" (RE), chaired

by Mr Alok Srivastava, Ministry of New and Renewable Energies (MNRE) and Dr. Martin Schöpe, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) held its second meeting of 2013 in New Delhi. The meeting was attended by representatives of the Indian and German government, finance institutions, industry as well as research and development organisations. Discussions focused on joint activities in the fields of renewable energy (RE) grid integration, biomass use for energy, off-shore wind policy, rural electrification and innovative business models such as Renewable Energy Service Companies (RESCO).

India and Germany share a common interest in increasing the share of grid connected RE into the electricity grid and creating the necessary policy framework, infrastructure and capacities. Changing the energy system from conventional power supply that is primarily based on non-fluctuating fossil fuel based power plants to a high share of fluctuating clean RE is a complex task. As Germany generated 23.5% of its

electricity from renewable energies in 2012 and is planning to increase its share to 80% by 2050, there is vast experience in the country on the challenges and solutions that are associated with a large deployment and grid integration of RE. In line with the Green Energy Corridors project of MNRE both chairs have agreed on further activities in the Sub Group such as a workshop on forecasting and balancing in early 2014. On long term a joint cooperation project in the International Climate Initiative will address the development of suitable market conditions and competences for the increasing grid integration of renewable energies in India.

Further decisions on cooperation have been taken in the field of biomass use for energy. The potential for power generation from biomass in India has been estimated to be at 16 GW and for cogeneration in sugar mills at 5 GW. MNRE supports several programmes for the promotion of biomass power and the existing biomass resource atlas shall be updated, which will help in fine-tuning the targets of the Biomass Mission. In addition, it was decided to form a task force on "waste to energy" concepts and technologies for municipal waste treatment with representatives of the private sector and governments.

In the field of off-shore wind, MNRE reported that the draft policy for the development of offshore wind energy has been issued by the Wind Offshore Steering Committee – see article in this newsletter (page no. 4). A meeting with German experts on offshore-wind is planned for early 2014.

The presentations of the meeting are available on our website.

INDO-GERMAN ENERGY FORUM SUB GROUP 3 MEETING ON 'DEMAND SIDE ENERGY EFFICIENCY AND LOW CARBON GROWTH STRATEGIES'

13 NOVEMBER 2013, NEW DELHI

The Sub-Group 3 meeting of the IGEF, on "Demand-Side

Energy Efficiency and Low Carbon Growth Strategies", was held on 13th November, 2013 at New Delhi. The meeting was chaired on the Indian side by Ms. Jyoti Arora from the Indian Ministry of Power (MOP) and on the German side by Mr. Marc Lendermann from the German Federal Ministry of Economics and Technology (BMWi). Participants included government representatives such as Mr. Ajay Mathur from the Bureau of Energy Efficiency (BEE) and Mr. Saurabh Kumar from Energy Efficiency Services Limited (EESL) as well as industry stakeholders and research institutions.

The meeting took off with the Indian side expressing their interest in the policy frameworks and fiscal incentives for energy efficiency in all sectors in Germany. BMWi and BMU presented some of these policies and fiscal incentives in the building and the industrial sectors in Germany. An energy assessment tool developed by The Environmental Research Institute (TERI) and the Fraunhofer Institute for the Indian domestic sector was presented.

The German side expressed their interest in the outcomes of the Indian Perform, Achieve and Trade (PAT) scheme as Germany had so far no domestic policy on base of trading systems. This was followed by a discussion on the need to set up a Centre of Excellence for Industrial Energy Efficiency in India showcasing technologies from Germany. A presentation from Alliance for an Energy Efficient Economy (AEEE) laid stress on International Performance & Verification Protocol (IPMVP), which is seen as the next step of energy audit exercise beyond the assessment for energy saving opportunities. IPMVP addresses the need for Monitoring and Verification guidelines that will create sustainable practices in the long run and provide knowledge enhancement.

EESL presented its business model to promote the energy efficiency applications in India, where German applications and technologies may play an important role. A presentation by the Wuppertal Institute pointed out the roadmap towards BEE and TERI joining the BigEE energy efficiency platform – BEE and the Wuppertal Institute agreed that the joint dissemination of information and awareness raising in this field are crucial for the success. not only to sign a cooperation agreement, but also to provide each other information and support for the same.

Responding to the request from MOP, the Wuppertal Institute agreed to provide information on the international best practices of the Energy Services Companies (ESCO) businesses. GIZ presented on the future proliferation of the Trigeneration project and the dissemination of the learnings from the pilot project, with EESL expressing the possibility of linking it to a chiller

replacement project in India with funding by the World Bank and the Global Environment Facility (GEF). The IGEF Support Office presented the draft Trigen Map that shows the potential of the Trigeneration technology in India by highlighting various parameters such as cost and availability of fuel, electricity, and water apart from the possible targets for such installations in various Indian cities.

The presentations are available on our website

DELEGATION VISIT TO THE TRIGENERATION PILOT PLANT SITE

14 NOVEMBER 2013, NEW DELHI

On the completion of one year of successful operation of the Trigeneration demonstration plant at the Jai Prakash Narayan Apex Trauma Center (JPNATC) in New Delhi, a site visit was organized for a delegation consisting of participants from Germany and India. The delegation, led by Dr. Martin Schöpe, Head of the Division, BMU, pointed out the satisfactory quality of the installation and site specific planning of the project in a government hospital. The economic benefits demonstrated by the pilot project underline the need to disseminate this promising concept, together with the Bureau of Energy

Efficiency (BEE) to relevant target groups and users. A monitoring system is being installed in the plant to monitor the plant parameters and to be made available online on the project website. The data will also be used to prepare a case study, which will also be uploaded on the website with detailed technical and financial information.

This technology is a pioneering concept of energy efficient power generation using environmental friendly natural gas. The plant has a capacity to generate 347 kW of electricity; the waste heat from the engine can generate 105 TR (TR, 1 TR = 3.514 kW) and about 20 kW for heating water. The payback period estimated during the initial phase of the project was 3.2 years as compared to the baseline. See also related article in this newsletter page no.13.

INTERSOLAR MUMBAI CONFERENCE SESSION 'GREENING THE SUPPLY CHAIN - OPTIONS & POTENTIALS WITH CSP/PV AND HYBRID'

12 NOVEMBER 2013, MUMBAI

The IGEF Support Office and the Indo German Chamber of Commerce (IGCC) jointly organised the side event, "Greening the Supply Chain – Options and Potentials with CSP/PV and Hybrid", during the Intersolar India on 12th November, 2013 in Mumbai. The event aimed at technology suppliers and manufacturing companies, which want not only to reduce the carbon footprint of their products, but also to cut their costs of energy. The participating companies included frontrunners, such as SMA Solar and Thermax, in the provision of technology solutions as well as leading academicians. The presented case studies served as the framework for discussions on options and limits of cost-efficient ways to greening the supply chains and the core businesses of the companies operating in India. Solar technologies established themselves both as reliable technical alternatives and as commercially viable additions to the energy supply of companies in India. Also solar hybrid technologies applied in the country have the potential to use both steam and electricity more efficiently to cut down on energy costs. The presentations are available on our website.

For more information, please contact: Mr Ankan Datta or Ms Hannah Sternberg.

WORKSHOP ON MARKET POTENTIALS AND BUSINESS APPLICATIONS FOR PHOTOVOLTAIC IN INDIA

24-25 OCTOBER 2013, BERLIN

To discuss market potentials and business applications for solar PV in India, the Federal Ministry for the Environment, the German solar association BSW-Solar and the IGEF support office jointly organised a conference on 24 -25 October 2013 in Berlin. In India, some 2 GW of solar PV have been installed but the country has ambitious goals to increase the installed capacity to 20 GW by 2022. Besides the government's Jawarhal Neru National Solar Mission (JNNSM) at the national level, several state governments have come up with incentive schemes to promote the deployment of grid connected and off grid solar pv. Market opportunities lie particularly in the fields of solar water pumps, rooftop PV, mini grids. The conference brought together policy makers from the Federal Ministry of the Environment (BMU), the Federal Ministry of Economics and Technology (BMWi), the Federal Ministry of Economic Cooperation and Development (BMZ) and representatives of the Chamber of Indian Industries (CII), the National Solar Energy Federation India (NSEFI), the implementing organisations of the German development cooperation (KFW and GIZ) and private sector players in the field of solar PV from both Germany and India. Over the course of two days, Indo-German bilateral energy cooperation and private sector experiences in the Indian on and off-grid pv market were presented and market potentials and barriers for the deployment of solar pv discussed. The participants agreed that there are huge business potentials in grid connected as well as off grid pv markets in India but apart from local experience suitable business and finance models are required. Please click here to download the presentations.

For more information, please contact Ms Hannah Sternberg.

BUILDING CAPACITIES IN OPERATION AND MAINTENANCE OF INDIAN COAL FIRED POWER PLANTS

30-31 AUGUST 2013, INDIA

The Excellence Enhancement Centre (EEC) conducted 6 advance level capacity building training programmes on different aspects of operation and maintenance of coal fired power plants. About 190 middle level personnel engaged in power plant operation and maintenance and project engineers involved in commissioning of thermal power plants, benefited out of these trainings.

The trainings held between August and September 2013.

For more information please click here.

EXPLORING OPPORTUNITIES FOR ADOPTION OF TRIGENERATION TECHNOLOGY TO ENHANCE ENERGY EFFICIENCY IN THE INDIAN BUILDING SECTOR

26 AUGUST 2013, NEW DELHI

The simultaneous production of electricity, heating and

cooling (Trigeneration) is already a successful business in Germany, helping the country to increase the energy efficiency in the building sector. GIZ through a demonstration project financed by the International Climate Initiative (ICI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), in cooperation with the Indian Bureau of Energy Efficiency (BEE), has successfully demonstrated the advantages of the trigeneration technology at Jai Prakash Apex Trauma Centre (JPNATC) in New Delhi.

On the above context, the Federation of Indian Chamber of Commerce and Industry (FICCI), in collaboration with BEE, Energy Efficiency Services Limited (EESL), Indo German Energy Forum (IGEF), GIZ and KFW, organised a workshop on *Trigeneration Technology – Promotion of Energy Efficiency in Indian Building Sector* in *New Delhi* on *26 August 2013*. The workshop brought together policy makers, technology providers, hotel and hospital authorities, builders and owners of commercial and residential buildings and experts from India and Germany to share relevant experiences and best practices and to analyse the challenges and opportunities to promote this energy efficient technology in India taking into account the policy and commercial framework currently existing in the country.

Two Memoranda of Understanding (MoUs) were signed during the workshop. Under the first MoU amongst FICCI, EESL and GIZ the partners will explore the feasibility of implementing a project based on trigeneration technology at the Federation House (FICCI Headquarters). Under the second MoU, FICCI will support the initiative of EESL to develop the power market for optimal utilization of energy and existing resources.

This assumes high importance, since India is already the world's fourth largest consumer of energy. Experts believe that the current energy demand could increase by more than twofold by 2030. Fossil fuel Imports also constantly rising. More than 70% of petroleum India needs is being imported and

it is becoming increasingly difficult to meet the fuel demand, especially for gas power plants. National energy supply is not able to keep pace with the current growth rate of the Indian economy. In order to keep import dependency in the conventional energy sector as low as possible, strategies for enhancing energy efficiency and utilizing renewable energy are increasingly becoming the focus of India's energy policy.

While addressing the workshop, Dr. Ajay Mathur, Director General, Bureau of Energy Efficiency (BEE) said it was the first formal outreach of trigeneration technology in India. He said, "Trigeneration technology is feasible, economically viable, environment-friendly and also provides natural resources efficiency." Highlighting the advantages of the technology, he stated that a building benefits from this technology, since the reliability of energy supply increases and there is evidence of reduction in the electricity bill. This helps the city to reduce the power load during peak hours as well as benefits the country in lowering imports of fossil fuel.

Mr Bhaskar Jyoti Sarma, Secretary, BEE, said that trigenera-tion would not only save money but could considerably reduce India's carbon footprint. In India, there is a need to adopt this technology because in spite of having the highest coal reserves, India has unable to harness its full potential. He informed that almost 50% of the coal that is used for thermal power generation consists of ash. Hence, in such a scenario, trigenertaion is not only efficient but also environment-friendly.

Mr Jens Burgtorf, Director, Indo German Energy Program (IGEN), GIZ, underlined the requirements for setting up a trigeneration plant. Ideally there is a 24x7 operational building with simultaneous requirement of electricity, heating and cooling. Further requirements are availability of sufficient space in the existing building, possibility of centralized cooling, and availability of natural gas.

The pilot plant has three main components viz. gas engine, vapour absorption machine (VAM) and centrifugal chiller. The waste heat produced during the power production from the gas engine is recovered for cooling through VAM and warm water is used for applications, such as kitchen, laundry, swimming pool heating, etc. The technology is suitable for buildings that have simultaneous cooling and heating load, explained Mr. Burgtorf.

Dr. Arbind Prasad, Director General, FICCI, said that air conditioners consume a lot of electricity, especially when temperatures usually reach over 40°C. Trigeneration technology although is by and large unknown has a large potential in the country. The most promising sectors for this technology are hotels, hospitals, airports, shopping malls, office and complexes.

Mr. Saurabh Kumar, Managing Director, EESL, explained the role of his organisation in facilitation, preparation and implementation of energy efficiency projects for public buildings, municipal, agriculture and any other faculty as an energy service company (ESCO). He expressed his willingness to promote this energy efficient technology through an ESCO business model in collaboration with financing institutions such as Tata Cleantech Capital Ltd. and the German development bank KfW.

Mr. Markus Wypior, Director, Indo German Energy Forum (IGEF) offered to the various stakeholders that information on best practices and successful case studies could be made available on the IGEF and Trigen website (www.energyforum.in and www.trigenindia.com).

Indo-German Energy Forum Support Office

EXPLORING POSSIBILITIES TO ENGAGE THE CORPORATE SECTOR IN ENERGY ACCESS TO RURAL INDIA

2 AUGUST 2013, MUMBAI

The energy access challenge for India is acute. Providing access to clean energy services requires the active involvement of a multitude of stakeholders including government, regulatory agencies, private businesses, development agencies, financial institutions, NGOs, community organizations, and the customers themselves. The business community plays a critical role as a solution provider in expanding access to energy such as developing innovative products and services, ensuring efficient product and service delivery, mobilizing financial resources, etc.

On the above context, GIZ, through the Renewable Energy Component of the Indo-German Energy Programme (IGEN-RE), organised two workshops in Mumbai and Delhi on 2 August and 23 August 2013 respectively, to explore the potential of involving the corporate sector to provide energy services to rural India. The workshops brought together 55 representatives from the corporate sector as well as social enterprises, interested in engaging in energy access space. The main outcomes of the workshops were:

- Development of an online platform to facilitate exchange between relevant social entrepreneurs and corporates to jointly design and implement projects on energy access.
- Development of a repository of the different needs of rural energy enterprises, which can then be used to explore the potential linkages with suitable corporates.
- Introduction of innovative financing mechanisms for utilization of corporate social responsibility funds to reduce the risk of social entrepreneurs working in the energy access space.

Contact: Mr Nilanjan Ghose

INTRODUCING THE ONLINE BOILER PERFORMANCE OPTIMISATION SYSTEM (BPOS) AT SURATGARH SUPER THERMAL POWER STATION

18 JULY 2013, NEW DELHI

A kick-off workshop with the Chairperson CEA, Director IGEN and Chief Engineer of SSTPS for the introduction of BPOS was held on 18 July 2013 at the Central Electricity Authority in Delhi. The Boiler Performance Optimization System (BPOS) is a state of the art online computer system which monitors and optimizes boiler operation of coal fired power plants. International experiences have shown that with installation of BPOS, the boiler efficiency / unit heat rate can be improved, the soot blowing system optimised and consequently the erosion of heating surfaces reduced.

To demonstrate the technical viability and financial attractiveness for retrofitting the Indian Power Plants with such a technology this project has been initiated under the Indo German Energy Programme. Global experiences indicate that with installation of BPOS, the efficiency of boiler can improve up to 0.5% which would result in potential coal savings of more than 5 million tons per annum for the Indian power sector.

During the occasion of the kick off meeting, a Memorandum of Understanding was signed between the beneficiary power station and GIZ. The installation work has already started at unit no 6 of SSTPS and the system is expected to be operational in 2014.

UNDERSTANDING THE GERMAN FRAMEWORK FOR PROMOTION OF SMALL SCALE ROOFTOP SOLAR PV IN INDIA

10-11 JUNE 2013, BERLIN

After gaining substantial experience in implementing large scale solar photovoltaic projects, India is preparing to focus on small scale and rooftop solar PV segments. In this regard, GIZ in cooperation with International Finance Corporation, the World Bank Group and IGEF, has organized a study tour for the Indian officials in Berlin during 10th and 11th June, 2013.

Policy makers and representatives from Central Electricity Regulatory Commission and Ministry of New and Renewable Energy along with nine (9) States/Union Territories from Assam, Chandigarh, Jammu & Kashmir, Jharkhand, Kerala, Nagaland, Orissa, Punjab, and Tamil Nadu participated in the tour and learned the framework designed in Germany for promotion of rooftop solar photovoltaic projects from leading market experts.

The presentation sessions were followed by site visits to

rooftop solar facilities.

The efforts of GIZ, IFC and IGEF were appreciated and it was proposed to organize similar study tours for the grid operators and other relevant stakeholders in Germany, and to invite electricity market experts from Germany to India.

Presently, GIZ is supporting the Indian Government in designing the framework for a Net Metering Mechanism for

rooftop solar PV projects. It is also supporting few Indian States in developing a suitable framework for the promotion of rooftop solar PV projects following the regulatory framework specified by the State Electricity Regulatory Commission.

Contact: Mr Sven Eberle, Mr Hemant Bhatnagar

SHARING BEST PRACTICES IN QUALITY ASSURANCE OF SOLAR PV COMPONENTS AND POWER PLANTS

04 JUNE 2013, NEW DELHI

The Ministry of New and Renewable Energy (MNRE),

Government of India and GIZ jointly organised a workshop on Solar PV Quality in New Delhi sharing best practice in quality assurance of solar PV components and power plants. In the meeting held on 4th June 2013, technical experts from India and Germany shared their experiences on module testing and on field performance. EPC companies, project developers, financial institutions and other stakeholders attended the workshop.

The workshop was inaugurated by Mr. Tarun Kapoor, Joint Secretary, MNRE, who stressed upon augmenting the quality standards presently in place as MNRE gears to implement the second phase of the Jawaharlal Nehru National Solar Mission. Two experts from Germany, Mr. Dietmar Obst, Partner, 8.2 Consulting AG, and Dr. Juergen Arp, General Manager, PV Lab Germany GmbH, shared their experience on inspecting over 1.5 GW of solar plants, for quality aspects and assurance for PV modules. The Indian experience on outdoor performance of PV modules was presented by Dr. O.S. Sastry, Director, Solar Energy Centre of India (SECI), MNRE.

An interactive panel discussion was also held, chaired by Dr. Ashvini Kumar, Director Solar, Solar Energy Cooperation of India (SECI) with Mr. Andreas Thermann, Deputy Director, KFW New Delhi, Mr. Rajesh Bhat, Managing Director, Juwi India Renewable Energies, Mr. Dietmar Obst, Partner, 8.2 Consulting AG and Dr. Juergen Arp, General Manager PV Lab Germany as panelists. The session concluded with the message that implementing high quality solar power plants does not require huge amounts of money, but rather being aware and motivated to spend a little extra to ensure that the plant performs consistently for the next 20-25 years.

For more information, please click here

FLAGSHIP PROJECTS

IGEN-RE EFFORTS TO PROMOTE CLEANER COOKING TECHNOLOGIES IN RURAL COMMUNITIES

To ensure access to sustainable cooking energy, the Renewable Energy Component of the Indo-German Energy Programme (IGEN-RE) aims to strengthen the market for improved biomass cook stoves by creating a conducive market environment, as well as directly addressing existing challenges on both the supply and demand side.

As a first step, IGEN-RE recently initiated a study to understand user preferences for improved cook stoves. This study is an effort to strengthen the supply side for improved cook stoves by facilitating stove selection and design through the analysis of user preferences and stove acceptance. By testing 6 stove models in each of the 180 participating households in the three states of Bihar, Uttar Pradesh and West Bengal, factors that are appreciated in the new generation of improved cook stoves were identified (portability, reduced fuel consumption, reduced soot and smoke, and aesthetics), as well as aspects that need further improvement (cooking time, fuel accommodation, ease of cooking, stove materials, and safety).

The project implementation will also include:

1. Developing cost effective marketing and awareness raising campaigns, as well as establishing models for end-user finance, to address challenges on the demand side

2. Developing innovative and sustainable distribution and business models in cooperation with project partners SwithOn and Project Dharma, to strengthen the supply of improved cook stoves

3. Supporting the design and implementation of policies and support schemes of state level cook stove initiatives, Mobilizing carbon finance, Providing detailed market information, Facilitating knowledge sharing through a series of workshops and events and creating a conducive market environment.

For more information, please contact Mr Santosh K Singh

FULFILLING RENEWABLE ENERGY PURCHASE OBLIGATIONS IN MAHARASHRA BY COMMISSIONING 125 MW PHOTOVOLTAIC SOLAR POWER PLANT IN SAKRI

The Indian government has given a strong push to develop the solar energy sector in India when it launched the Jawaharlal Nehru National Solar Mission (JNNSM). KfW is financing the Solar Photovoltaic Power Plant in Sakri, with a total planned capacity of 150 MW under Indo-German Financial Cooperation (FC). The plant is located in the Dhule District in the northern region of Maharashtra. It is the largest single-owner photovoltaic power plant in India and one of the largest in the world. The German government committed the funds for this FC project during Indo-German government consultations at the end of March 2011 and the loan agreement was signed in August 2011 between KfW and the Republic of India. 125 MW out of the planned 150 MW of the Photovoltaic Solar Power Plant Sakri have been commissioned successfully in March 2013. As the plant commissioned before the end of the Indian financial year 2012/2013, the project secured a feed-in tariff of 15.61 Indian Rupees per kWh (equivalent to around 0.20 Euro/kWh). The 125 MW_p currently in operation will generate around 180 GWh of electricity per annum thereby supplying around 200,000 Indian households with electricity and avoid more than 150,000 tons of CO_2 emissions per year.

The Project is implemented by the government-owned electricity generation company Maharashtra State Power Generation Corporation Ltd. (Mahagenco).

At the time of loan signing, there was only limited solar PV experience in India totalling a few MW of utility scale installations. The financial closure of a 150 MW project at that time has been a significant breakthrough in motivating domestic commercial financing to the Indian solar sector. At the time of tendering, the project revealed “best-in-country” cost per watt of solar power, primarily due to synergies and economies of scale generated by the size of the project.

KfW also provided financing for the technical assistance measures for this project on behalf of the German government. This technical assistance ensures high quality in technical, commercial and procedural matters and is thus a big enabler towards establishing a landmark solar power plant for the Indian energy sector.

After the successful commissioning of 125 MW of the Photovoltaic Solar Power Plant Sakri, Mahagenco now has plans to further expand the solar energy generation base in the state of Maharashtra to fulfil the renewable energy purchase obligations in the state.

Further site analyses, financed by KfW on behalf of the German government, conducted in the framework of the Maharashtra Solar Valley Cluster Initiative have already helped identifying further highly promising sites for additional PV plants.

For more information, please contact Mr Andreas Thermann

COOKSTOVE CDM-PoA REGISTERED IN INDIA

To make improved cookstoves (ICS) affordable for rural households and community institutions throughout India, the Indian Ministry of New and Renewable Energy (MNRE) with support from GIZ has successfully registered a Programme of Activities (PoA) to tap international carbon funding. In addition to making improved stoves more affordable, funds generated through the PoA will also be used to stimulate demand for improved cookstoves through awareness campaigns, end user financing and user trainings.

Just in time for meeting the EU deadline of 31st Dec 2012, the PoA has been registered on 28th Dec last year. Therefore the credits from this PoA will be eligible under the European Union Emission Trading Scheme (EU-ETS). Currently, the PoA is undergoing the Gold Standard registration process which will serve as a quality label enhancing the value of the carbon credits generated.

For more information please refer to the UNFCCC website: or contact Mr Michael Blunck

NEW STUDIES & PUBLICATIONS

REPORT ON SOLAR WATER PUMPING FOR IRRIGATION: OPPORTUNITIES IN BIHAR, INDIA

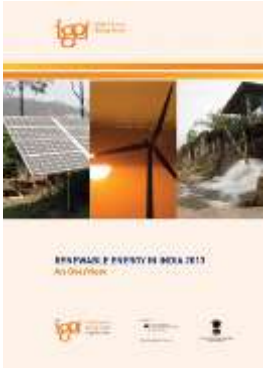
This IGEN-RE study is a first step to provide an overview on current usage of solar water pumps for irrigation, as well as analysing the challenges and opportunities for their usage in India, Bihar in particular.

Please click here to download the study from IGEN-RE website.

IGEF STUDY ON RENEWABLE ENERGY IN INDIA

The IGEF study on Renewable Energy in India, gives an update on the current developments, policy framework and challenges and opportunities in the field of Wind, Solar, Biomass and Small Hydro Power.

Please click here to download the study from IGEF website.



REPORT ON INGRADIENTS FOR SUSTAINABLE COOKSTOVE INTERVENTIONS

This IGEN-RE report is a comprehensive analysis of existing literature on the Indian National Programme for Improved Cookstoves (NPIC), which identifies the factors for its successes and shortcomings.

Please click here to download the report from the IGEN-RE website.

MODEL NET METERING GUIDELINES FOR ROOFTOP SOLAR PV PROJECTS

Ministry of New and Renewable Energy (MNRE) in cooperation with ComSolar, GIZ, International Finance Corporation, Ilyod and the Forum of Regulators developed the net metering guidelines, to explore the potential of rooftop solar PV in India. Net metering is a mechanism which facilitates the self-consumption of electricity generated by the rooftop solar PV plant and allows for feeding the surplus into the network of the distribution licensee. The guidelines are available at the Forum of Regulators website. In order to access the same, please click here.

UPCOMING EVENTS

- Information on our planned activities/events can be downloaded from our website.

DISCLAIMER

The views expressed in this newsletter are solely those of the Indo-German Energy Forum (IGEF) Support Office team. The IGEF Support Office cannot assume any responsibility for the contents of other websites linked in this newsletter.

The Support Office of the Indo-German Energy Forum provides liaison services for all stakeholders. It serves as a **first point of contact** both to the Indian and German governments as well as companies seeking to get involved in the process. The Support Office answers queries regarding proposals for the IGEF dialogue or IGEF projects and any other subject relevant to the private sector.

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