

REPORT

on

“Study tour of Afghanistan delegates to India for the Human Capacity Development Program (HCD)”

*03nd Oct. to 16th Oct. 2017
New Delhi & Mt. Abu*



Submitted to
GIZ, Afghanistan

By



NATIONAL PRODUCTIVITY COUNCIL
5-6, Institutional Area, Lodhi Road
New Delhi, India

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Acknowledgement

National Productivity Council place on record its sincere thanks to the GIZ for entrusting the task of providing technical support for ***Study tour of delegates from Afghanistan to India for the Human Capacity Development Program (HCD) on Renewable Energy and Energy Efficiency.***

We are grateful to **Mr. Zabiullah Tahirzada, Deputy Programme Director, IDEA-Project, GIZ Afghanistan** and **Mr. Ali Maher, Component Coordinator, IDEA-Project, GIZ Afghanistan** for their keen interest and full cooperation in carrying out this program.

Our sincere thanks are due towards **Mr. Ziaul Hoda, Project Advisor GIZ India**, for his unstinted support in the successful completion of the program.

We would like to thank all the delegates, for their keen interest and cooperation in making this study tour a valuable experience. Lastly a very special thanks to all the **resources persons, faculties, site visit coordinators** and **their organizations** for their valuable contributions and enormous support to the program.

Study Team



Team Composition

NAME	DESIGNATION
Mr. B. P. Bhandary	Director & Head (EM), NPC, Delhi
Mr. Dishant Mishra	Deputy Director (EM), NPC, New Delhi
Mr. Vipin Rohilla	Deputy Director (EM), NPC, New Delhi
Mr. S. Gautham	Project Associate (EM), NPC, New Delhi

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1. ABOUT THE PROJECT:

- 1.1 **GIZ** is executing the “**Institutional Development for Energy in Afghanistan**” (**IDEA**) project as a part of the Afghan-German Cooperation Programme. Currently Afghanistan receives a significant share of its electrical power from its neighboring countries and a small amount of power is generated of its own capacity which is around 500 MW. An overwhelming share of power consumption is in buildings and commercial sector. Ministry of Energy and Water (MEW), Government of Afghanistan, which is the key national agency for energy and water management has taken up the initiative for institutional development, capacity building, creation of appropriate legal and policy framework for energy efficiency and renewable energy.
- 1.2 During this program, A delegation from Afghanistan comprising of officials and decision makers at national and provincial levels from government, academia and private sector visited India as a part of GIZ’s human capacity development project under the name of “**Strengthening institutional capacity to support Energy Efficiency in Afghanistan**”.
- 1.3 **National Productivity Council (NPC)** facilitated the program in executing technical components of the said project. This report has been prepared with an objective to capture key highlights of the program.

2 OBJECTIVE

- 2.1 As spelt out in the TOR document the following objectives were to be met during and after the completion of this study tour:

1. Development of a Knowledge and Experience sharing platform

- Indian experiences and approaches on various sustainable energy aspects and technologies (e.g. planning, installation, maintenance, economics, policy, financing, project development, resource assessment); are shared and trained to participants
- Challenges faced in Afghanistan’s Energy Sector are highlighted and possible solutions are discussed with Indian Experts
- Sharing of knowledge and information on good and/or poor practices to support implementation of sustainable energy investments or programs are shared and discussed
- Best practices and technology solutions in achieving self-sufficiency goals on Sustainable Generation and Consumption of energy in India are introduced, trained and showcased

2. Professional networks are built between the participants and Indian experts for long term professional collaboration.

3. National Action Plan 2018 is developed by the participants to be presented for colleagues and leadership of participant organizations

3 METHODOLOGY

- 3.1 The methodology to complete this work is envisaged to have the following major activities and steps:

- 1. Formulation of module of classroom sessions & field excursions**

- Discussions with GIZ Officials on proposed agenda
- Evolving stress areas/preferences in line with TOR
- Anticipated outcomes of this tour viz-a-viz action plan
- Previous study tour's experiences

- 2. Finalisation of detail tour program - sites/companies to be visited, classroom topics/activities**

- Identifying suitable sites/organisations for excursions, keeping in mind the objective of the program
- Discussion with proposed sites/company officials on proposed visit and seeking confirmation
- Developing key learning tasks for on-site visits and on-site discussions
- Developing classroom training module in line with proposed agenda and finalisation of training module and trainers
- Preparation of training material

- 3. Execution of the program as per approved timeline**

- Organising classroom session and field excursions.
- Revision/documentation of key learning
- End of the day discussions & feedback
- Course correction, if any

- 4. Consolidation of key learning, guidance for action plan & study tour concluding discussion**

- 5. Preparation and submission of report containing all major highlights, agenda, key learning, pictures & recommendations.**

4 SCHEDULE OF THE PROGRAM

- 4.1 The following learning format were followed during the program
 - a. Classroom sessions (7 sessions, 14 classroom presentations)
 - b. Field Excursion (11 session)
 - c. Internal discussion/Presentations (2 sessions)
 - d. Learning Consolidation (4 sessions)**Total Session: 24 Sessions (each session is of half a day)**

SCHEDULE OF STUDY TOUR OF DELEGATION FROM AFGHANISTAN TO INDIA DURING 03RD -16TH OCTOBER 2017

Date	Day	Pre Lunch Session		Post Lunch Session	
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
03-Oct	Tues	Welcome & Introduction - GIZ & NPC Delegate's Presentations		Indian RE Model and Financing Mechanism - IREDA	Solar Policy & Projects – Int'l Solar Alliance
04-Oct	Wed	Delhi Secretariat – Solar Plant Visit		Indo-Solar PV Manufacturer Plant Visit, Noida	
05-Oct	Thu	Green Building - a design perspective – EDS Global	Waste to Energy Programs in India – NPC/EN Div.	Standard & Labeling and other energy efficiencies program of India - BEE	
06-Oct	Fri	Suryamitra Program - NISE, Gurugram		Solar Projects of Delhi Metro - DMRC, Yamuna Bank	
07-Oct	Sat	Green Building - ITC Green Gurugram		WtE Plant, Jindal Ecopolic, Timarpur, Delhi	
08-Oct	Sun	Off Day			
09-Oct	Mon	Visit to Brahmakumaris Retreat Centre, Mt. Abu			
10-Oct	Tues	Visit India One Solar Facility, Abu			
11-Oct	Wed	Return to New Delhi			
12-Oct	Thu	MSME EE Projects/financing – SIDBI	Case Studies - MSME EE Projects/financing – SIDBI	LED Program of India – EESL	ESCO model & Projects undertaken – ISTSL/SIDBI
13-Oct	Fri	Solar Products & services – Jakson Solar, Noida		World Cafe – Discussion	
14-Oct	Sat	Solar Policy of State of Delhi – EE&REM, Govt. of NCT of Delhi	EE programs for large Industry - PAT Scheme – BEE/GIZ	Wind Energy Policies in India – NPC/EM Div	DSM Policy – NDPL
15-Oct	Sun	Consolidation of learning and agreement on action plan format			
16-Oct	Mon	Development of individual action plan			

5. SESSION DESCRIPTIONS

Classroom session

5.1 **India Renewable Energy Model and Financing Mechanism**

By Mr. Abhilakh Singh, General Manager
Indian Renewable Energy Development Agency, (IREDA) New Delhi

IREDA is a public sector company of Government of India established as a Non-Banking Financial Institution engaged in promoting, developing and extending financial assistance for setting up projects relating to new and renewable sources of energy and energy efficiency/conservation. Mr. Abhilakh Singh is General Manager at IREDA Head office at New Delhi. He initiated his session as a recap of historical perspective of India's renewable energy scenario and its journey over last few decades. His session dealt in details the financing mechanism of RE projects in India and its impact on macro and micro economics of RE activities in India. This session also highlighted the current policies in Renewable Energy Sector, targets in various subsector of RE of set up by federal and state government/s in India, its progression so far and its future.

5.2 **Solar Policy & Projects and Brief Introduction about International Solar Alliance**

By Mr. Rakesh Kumar, Director, International Solar Alliance

International Solar Alliance (ISA) is an International consortium of nations to address the specific solar technology deployment needs of the solar resource rich countries located between the Tropic of Cancer and the Tropic of Capricorn. Mr. Rakesh Kumar is the Program Director at ISA interim secretariat at Gurugram. Mr. Kumar highlighted the major initiative taken up by ISA at global level in the field of solar energy. ISA is creating capacities to cater to the need developing nations to invest and benefit of solar energy. Sessions also discussed about various technologies in solar, its performance and implementing issues.

5.3 **Green Building - a design perspective – EDS Global**

By Ms. Aarti Nain & Mr. N.K.Gopal, EDS Global India

EDS Global is a reputed consultancy firm in the field of sustainable habitation. It has worked on several LEED projects and has one of the highest numbers certified buildings to its credit. EDS has collaborated with leading urban planners, waste and water management experts in designing sustainable urban campuses and townships. Ms. Aarti Nain & Mr. N.K. Gopal are senior consultant EDS Global. Ms. Aarti spoke of the basic concepts of green buildings for sustainable living and working. She

described various parameters and technical concepts related to green buildings. She also introduced the ECBC 2017 and National Building Code (NBC), which are the currently prevailing guidelines for construction and maintenance of new commercial buildings in India. Mr. Gopal spoke of many green building projects that their company EDS has executed and about the various design features and benefits of Green building design. He also discussed various cases to highlights of various implementation challenges and thereof strategies & experience gained to overcome such challneges.

5.4 Waste to Energy Programs in India

By Mr. K.D. Bharadwaj, Director, Environment Division (EN) NPC, New Delhi

National Productivity Council's Environment Management Division is one of the renowned agencies on Environmental management and policy consultancy. It has wide and deep experience of implementing various programs of National and International agencies and Governments in the environment and related domains. Mr. Bharadwaj is Group Head & Director at NPC Environment Division, he spoke of the close interaction between Energy and Environment. He showed the potential of waste to energy (WtE) in urban planning in such a way that WtE is not just an energy benefits or Green opportunity but it is in fact more appropriately a waste management tool. He explained in detail about the process of waste to energy and about various such plants installed in Delhi region especially in context that the delegation was due to visit Timarpur WtE Plant in Delhi in the later part of this tour.

5.5 Standard & Labeling (S&L) and other energy efficiencies program of India

by Mr. Sourav Diddi, Director, BEE India

Bureau of Energy Efficiency is statutory body incepted under the provisions of the Energy Conservation Act, 2001. BEE is responsible to assist in developing policies and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act, 2001 with the primary objective of reducing energy intensity of the Indian economy. BEE's aim is to promote active participation of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors. Mr. Sourav Diddi is Director at BEE and is one of the key persons involved in S&L program of BEE. He explained in detail of the Standard and Labeling (S&L) program for star rating of consumers appliances which one of the most popular schemes of BEE which has resulted in a significant energy savings and power capacity avoidance. He spoke about other schemes of BEE and its benefits. In interaction with the delegates he suggested possibilities of taking up such initiatives in Afghanistan.

5.6 Energy Efficiency projects for Micro small and medium Enterprise and its financing mechanism

By Mr. Rajiv Kumar, DGM & Ms. Anubha Prasad, AGM, Small Industries Development Bank of India (SIDBI), New Delhi

Small Industries Development Bank of India (SIDBI) was set up by Government of India as a Principal Financial Institution for the Promotion, Financing and Development of the Micro, Small and Medium Enterprise (MSME) sector and for Co-ordination of the functions of the institutions engaged in similar activities. SIDBI is one of the key players in evolving and promoting EE and RE initiatives in the MSME sectors in India. Ms. Anubha Prasad who is AGM at SIDBI Head Office, New Delhi introduced various policies and programs of SIDBI for promotion of RE and EE technologies in MSME sector. She also deliberated upon women entrepreneurship and leadership in small scale enterprise and how her organization promotes this cause. Mr. Rajiv who is DGM at SIDBI gave an in-depth view of current programs of SIDBI in RE and EE in different MSME sectors and shared technical details and benefits of various projects taken up by their institution.



Pre-session Introduction

(Mr. S.Haldar, Ms. Anubha, Mr. Rajiv Kumar, Mr. B.P.Bhandary) (L to R)

5.7 Case studies of Energy Efficiency projects for Micro small and medium Enterprise and its financing mechanism

By Mr. Sankar Haldar, Sr. Program Manager, Small Industries Development Bank of India (SIDBI), New Delhi

Mr Haldar is Senior Program Manager at SIDBI, He deliberated upon the details of few case studies of the projects taken up by SIDBI under its Energy Efficiency program. These cases implemented technologies of EE on pilot basis where it was initially difficult to convince operational and managerial staff involved in small units of the benefits however post implementation its results are highly motivating. Thus these pilot projects are becoming key turn around points for small industrial units to follow it up at bigger and larger scale.

5.8 LED Program of India

By Mr. R.K.Rakra, AGM, Energy Efficiency Services Limited (EESL), Noida

Energy Efficiency Services Limited (EESL) is a public sector company of Government of India which is raised with an objective to fill the gap of funding for the opportunity which exist in the field of large and medium range energy efficiency project in India. EESL is thus a super ESCO or Energy service company. Mr. Rakra who is AGM at EESL deliberated on the LED program of EESL, its implementation challenge, cost benefit analysis and its overall benefits to the company and society at large.

5.9 ESCO model & Projects undertaken by ISTSL/SIDBI

By Mr. Kiran Kumar, India SME Technology Services Limited (ISTSL)/SIDBI New Delhi

India SME Technology Services Ltd. (ISTSL) is a consultancy wing of SIDBI in the field of energy management which works in ESCO mode and provides a platform where Micro, Small and Medium Enterprises (MSMEs) can tap opportunities at the global level for acquisition of new and emerging technology or establish business collaboration. Mr. Kiran Kumar is Project Manager at ISTSL, spoke of the concept of ESCO model for implementing EE/RE projects in industries and talked various cases where ISTSL implemented technology in MSMEs.

5.10 Solar Policy of State of Delhi

By Mr. T.C.Sharma, Sr. Manager, EE&REM, Govt. of NCT of Delhi

Energy Efficiency and Renewable Energy Management Centre is a service arm of Department of Power, Govt. of NCT of Delhi (state government of State of Delhi) and works as a State Designated Agency (SDA) to coordinate, regulate and enforce of the said Act in the state of Delhi in association with Bureau of Energy Efficiency (BEE). It has also been designated as State Nodal Agency (SNA) for implementation

of programs of Ministry of New and Renewable Energy (MNRE), Govt. of India and State Agency by Forum of Regulators. This Centre is responsible for promotion of renewable energy, energy efficiency and energy conservation in the Delhi state. Mr. Sharma is Senior Manager at EE&REM, he spoke about various policy measures of Govt. of NCT of Delhi which his office is implementing. He spoke in length to share details about the solar policy of his Government which is well appreciated nationally.

5.11 Energy Efficiency programs for large Industry - PAT Scheme

by Mr. Vikash Ranjan, Advisor, BEE/GIZ

PAT scheme is a regulatory instrument to reduce specific energy consumption in energy intensive industries, with an associated market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded. Under this scheme, reductions in specific energy saving targets are assigned to Designated Consumers (DCs/Large Industries) for a three year cycle. The target reduction for each DC is based on their current levels of energy efficiency, so that energy efficient DCs will have lower target of percentage reduction, as compared to less energy efficient DCs which will have higher targets. While calculating the specific energy consumption “gate-to-gate” approach is adopted, thereby including all energy consumption against the total production. A robust process of normalization is adopted to neutralize the impact on specific energy consumption due to factors beyond the control of participating DCs. Verification of the performance of DCs at the end of the cycle is carried out by a cadre of energy professional. Mr. Vikash Ranjan who is a key advisor in PAT scheme, deliberated upon the key aspects of the scheme and presented details of the procedure of target setting, implementation phase and performance & overall benefit of the scheme nationally. He also talk about the various praises and appreciation that the PAT scheme has received internationally.

5.12 Wind Energy Policies in India

By Mr. Dishant Mishra, Energy Management Division, NPC, New Delhi

Mr. Dishant Mishra is Deputy Director at Energy Management Division at NPC New Delhi who took this session. He deliberated on the subject of Wind Energy Polices in India. He explained the basics of wind energy systems and technologies, its comparison with other renewable energy forms. He spoke of the wind energy growth in the India and about the current policies and target of Wind Energy Installation in India and its future path.

5.13 Demand Side Management Policies by Tata Power Delhi Distribution Limited (DISCOM)

Mr. Sujoy Kumar Saha, Head DSM, Tata Power DDL, New Delhi

Tata Power Delhi Distribution Limited (Tata Power DDL) electrical distribution company in North & North West parts of Delhi and serves a populace of 7 million. With a registered consumer base of 1.6 million and a peak load of around 1852 MW. The company's operations span across an area of 510 sq kms. Tata Power-DDL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its consumer friendly practices. Mr. Sujoy Kumar Saha, is Head of Demand Side Management Program at TPDDL. He deliberated upon various DSM Schemes taken up by TPDDL and its benefits.

Field Excursions

5.14 Solar power Plant of Delhi Secretariat, New Delhi

Delhi State Secretariat, which is the seat of the state Government of NCT of Delhi. It is fully powered by a 3 MW solar power plant which is in the vicinity of the state secretariat building beside the bank of Yamuna River in Delhi. The Delegation visited the plant and understood it working. They appreciated the aspiration of the Delhi Government and its Officials to take up such initiative.



Delegation Visit to Delhi Secretariat Solar Power Plant

5.15 Indo-Solar PV cell Manufacturer Plant, Greater Noida, UP

Indosolar Limited is an Indian photovoltaic cell and solar panel manufacturer. It is the one of the large PV cell manufacturer in India by capacity with an annual production capacity of 450 MW. It process silicon wafers to manufacture PV cells the smallest bit size for any PV solar module. These PV cells are installed in various configurations of Solar modules. The delegation visited the manufacturing facility of Indosolar at Greater Noida. They were briefed about the process and taken through a plant tour to see the manufacturing process.



Interaction at Indosolar Plant, Greater Noida

5.16 Suryamitra Program – National Institute of Solar Energy, Gurugram, HR

SuryaMitra, meaning ‘Friend of Sun’, is a vocational training program for young professionals at pre-university level. It is a uniquely designed program to prepare young trainees to take up technical position in designing, commissioning, Operations & Maintenance of solar power projects of industrial, institutional or domestic scale. It prepare trainees in multiple domains of Electrical, Electronics & Controls and Civil Engineering Module to be absorbed for future employment by solar plant developers (EPC), equipment suppliers, plant operators & contractors, Sales & Marketing Divisions of Solar Technology companies. The delegates met the trainers & trainees of this program and interacted with them on many topics related to the program, learning and their expectation. Officials from National Institute of

Solar Energy assured the delegation to support if such training initiative be taken by Government of Afghanistan.



Interaction with SuryaMitra Trainers and Trainees

5.17 Solar Projects of Delhi Metro Rail Corporation, Yamuna Bank, New Delhi

Delhi Metro is the metro rail service of Delhi and National Capital Region which is world's 12th longest metro system in length and 16th largest in ridership. Delhi Metro's network consists of five colour-coded regular lines and the Airport Express line, with a total length of 218 km serving 164 stations. Delhi metro has taken a pledge to install solar projects to a capacity of 50 MW by 2022 out of which 20 MW has already been installed on various metro station & metro service depots roofs. This is a challenging project in terms of installation as well as maintenance. In the visit to Yamuna Bank Metro Depot the delegation was shown details of projects and how Delhi metro prepared itself to take up such projects and its benefits.



Interaction at Delhi Metro

5.18 ITC Green Centre (Green Building), Gurugram, HR

ITC Green Centre is the corporate head quarters of ITC hotel group, It is one of the first green building projects (Newly constructed category) in India to have been certified under USGBC. It is a platinum rated project and has been a global front runner in the top projects worldwide. With around 16000 Sq. Meter of floor area, this building has a Zero water discharge and 30% less carbon footprint than a conventional building of this size. The visiting delegation was given a detailed presentation about the project followed by a building tour. The delegation learned about the challenges and benefits for operating a green building project.



Mr. H.C.Vinayak, ITC presenting the key features of ITC Green Centre

5.19 **Waste to Energy Plant, Jindal Ecopolis, Timarpur, Delhi**

Timarpur Okhla Municipal Solid Waste Management project is one of the first commercial waste-to-energy facility in India which converts one-third of the Delhi garbage into electricity. The project is registered under CDM with United Nations Framework Convention on Climate Change (UNFCCC) for earning carbon credits. The project is the largest integrated waste management project being set up in the country, aiming for a sustainable solution (Zero Waste Concept) taking MSW through an environmentally friendly process to generate clean and renewable energy from MSW. The delegation visit to the plant is useful in learning about WtE Concept, its challenges and benefits.



Interaction at Waste to Energy Plant, Timarpur, Delhi

5.20 **India One Solar Thermal Facility**, by BrahmaKumaris, Abu, Rajasthan

India One Solar Thermal Power Project taken up under World Renewal Spiritual Trust (WRST), a registered Charitable Trust / solar research centre and a sister organization of the BrahmaKumaris, has set up a 1.0 MWe solar thermal power plant in order to demonstrate and multiply this alternative technology for India. The delegation visited the facility to learn about the possibility of using solar energy in thermal mode.

5.21 **Solar Products & services** – Jakson Group, Solar Division, Noida

Jakson Group is a leading energy and engineering solutions company offering a wide range of products and services. Jakson market facing businesses include Powergen & Distribution, Solar, EPC and Defence. Jakson offer hosts of products and services in Solar including Solar EPC and Solar Panel modules in varied sizes. It is one of the leading companies from India taking up projects at multiple scale and application to variety of its client. The Delegation visited Jakson Group's Solar Division Manufacturing facility in Noida and to its corporate office.



Interaction with Jakson Group Management

6 FEEDBACK

6.1 Feedback from the delegates received during and after the program has been duly recorded and discussed to benefits from in designing of future programs. Some of the critical feedbacks are as follows:

- The major topics covered during the program was appropriately selected however solar was covered more extensively than other topics
- The schedule was very closely packed, more time for intermediate discussion could be accommodated for review at the end of a session or preview before one.
- The local travel in Delhi was a critical time consuming activity this could have been reduced if possible.

About National Productivity Council (NPC):

NPC was established in 1958 to promote productivity culture in India. It is an autonomous tripartite body with equal representation from the Labour Unions, Industry Associations & Government. The plans and programmes of productivity promotion are undertaken through a three-tier structure i.e. the NPC Headquarters at the national level, Regional Offices at state/regional levels and Local Productivity Councils. NPC has 13 Regional Offices spread across major states of India and has a total strength of about 150 full-time qualified and trained consultants with specialization in a various professional domains such as Process Management, Agri-Business, Energy Management, Information Technology, Waste Minimization & Green Productivity, Human Resource Management etc.

NPC's Energy Management Division:

Energy Management Division of NPC offers Consultancy/Training services since 1964. NPC has core strength of more than 40 EM consultants across its offices in India besides having global footprints in around 15 countries in Asia Pacific and Eastern Europe, having core area of expertise in

- Energy Management and Audit in major types of process industry, Commercial buildings, Power generating plants, Transmission and Distribution.
- Demand side management Potential with focus on the industrial sector.
- Strengthening policy aspect in Power and Energy.
- Technology Up gradation and Resource Conservation in SME's through Cluster approach.
- Integration of cleaner Production – Energy Efficiency for Clean Technology and Environment Protection.