



Renewable Energy Technologies: Prospects and Challenges

RET WORKSHOP REPORT

This document is a short report of the workshop organized by Department of Physics, COMSATS Institute of Information Technology, Lahore on 20th March, 2016 in 5th PAK-China Business forum.

Dr Rizwan Raza

COMSATS Institute of Information Technology organized the Pak-China Business forum program to promote the collaborations in education, Industry, business and economic sectors for the mutual benefits of both countries. The primary focus of the Pak-China Business Forum was to take into account the current contemporary issues which needed to be focused. Among many other themes, one of the very important sections was based on current global energy crises and solutions based on the renewable energy technologies. A thematic workshop has been managed by Department of Physics, CIIT Lahore on 20th March 2016 in Expo Center Lahore with Pak China Business Forum. More than seventy (70) professionals from academia as well as from industry of both countries (Pak & China) have participated.

The proceedings of RET workshop were initiated with the recitation of Holy Quran and Naat. **Prof. Saleem Farooq Shaukat** welcomed the honorable guests and gave a thought-provoking talk about the energy situation in Pakistan. He discussed that the collaboration of Pak-China amongst the R&D organizations, academia and industry should be strengthened to develop better solutions in the area of Renewable Energy Technologies. After that **Dr. Rizwan Raza** (Incharge of the Workshop) shared the details of the Workshop and started to acknowledge the speakers and briefly explained the prevailing issues in the energy sector of Pakistan. *Why should such type of workshops be held in Pakistan?* Because Pakistan is an energy-deficient country and this workshop emphasized on the importance and challenges of new era technologies. The renewable energy sources like wind energy, solar energy, biomass energy and fuel cell technology could be used to overcome energy shortage in Pakistan. RET have the potential to provide solutions to the long-standing energy problems being faced by the developing countries like Pakistan. According to the present situation in Pakistan, there are very small activities of renewable energy resources to overcome this deficiency as well as to develop suitable environment, marvelous efforts are needed.

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Five national/international speakers have presented in this workshop in different areas of renewable technologies. The first speaker was **Professor Dr. Waqar Mahmood**, currently he is the Director of center for Energy, research and development (**CERAD**), UET, Lahore. He has focused on the Pakistan Energy Crisis, Challenges and Opportunities. In his detailed presentation, he discussed that developing countries of this region like Pakistan, is facing a serious challenge of energy deficit. Renewable energy sources can play an important role in meeting this challenge.



The 2nd Speaker was **Dr. Suhail Zaki Farooqui**, Currently he is working as a Director General of Pakistan Council of Renewable Energy and Technology (PCRET). He briefly discussed about the Role of his institute in the Promotion of Renewable Energy Technologies in Pakistan. He discussed the vision of the PCRET which is committed to research, develop, promote, disseminate, impart training provide energy services to the people living in remote areas, and creating renewable energy culture in the country.

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Also PCRET is strengthening the linkages with the Private/Public sector and end users to promote renewable energy in the country. Revamping of bilateral collaboration with countries like China etc. for technology transfer, need based research, development and deployment of RETs viz; Biogas, Microhydel, Solar Thermal, Solar PV, Wind. To provide energy services at the doorstep of people living in remote and far-flung areas, collaboration with provincial and local governments for the promotion, dissemination and deployment of RE systems is needed.



The third speaker was from Chinese company “ILP freight Limited” **Mr David**. He discussed how Pakistani and Chinese companies can work together in the area of renewable energy technologies.



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Dr Iftikhar Ahmed, currently a research scientist at **Masdar Institute, UAE** working on solar nanotechnologies for energy/water recovery applications and previously hold the position of Assistant professor in solar nanotechnology at University of Paris, France. He discussed about the “Smart Solar Nanotechnologies for Energy and Water applications”. Also he focused, how new technologies can play a vital/dynamic/key role for the sustainable development of Pakistan and to overcome the energy crisis.



Dr. Muhammad Ghaffar Doggar highlighted the potential of biogas in Pakistan. Currently, he is working as Principal Scientific Officer, at Energy Research Center, COMSATS Institute of Information Technology Lahore. He has also worked in many governments projects as Project Manager, Project Directors etc. He described that available biomass potential in Pakistan for the most part of Punjab and versatility in its use are highly favorable for energy production as a clean and cost-effective fuel option. It is necessary to know about the existing technologies and how they are used in a feasible way in Pakistan to produce energy. Biogas plants are an economical and superior option to the energy demands of Pakistan. Because of the fact, more than 60% of its population lives in rural areas and they are mostly related to agriculture and livestock. Pakistan, being rich in biomass resources, must generate some percentage of its total energy demand, create job opportunities by building biogas plants, cope with environmental issues and decrease the burden on its economy by the reduction of oil imports. Therefore, it is great opportunity for China to invest in the area of Biogas. At the end of his talk, one of the Chinese companies showed his interest in this area and held a detailed meeting with Dr Dogar to find out the solutions and ways how to collaborate and work together.

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At the end of the workshop, the vice **president of Biogas Company from China Mr Tang** discussed about the biogas potential in Pakistan as well as in China. He introduced some of their company product which can be used in Pakistan.

Energy Panel Discussion:

At the end of workshop, a panel discussion was arranged by the organizers, in which following members pointed out their views in the light of renewable energy technologies.

1. Prof. Dr. Khalid Saeed, Head of Energy Research Center CIIT, Lahore
2. Dr. SohailZaki, Director General PECRT
3. Dr. Waqar Mahmood, Director Energy Research UET Lahore
4. Dr. Muhammad Ghaffar Dogar, COMSATS IIT, Lahore
5. Chinese Delegate Mr. Tang, Vice President of Biogas Company....

The panel discussion was chaired by Mr. Khalid Saeed (Head, ERC,CIIT). He appreciated the efforts of Pak-China business forum organizer to provide such platform, where professionals from both countries could discuss and collaborate the needs of the nations and society.



1. Prof. Dr. Khalid Saeed

- He told that there was an excellent program to express Pak-China Friendship particularly in the form of business forum.
- In this forum, we might have got an opportunity to highlight the importance of the products based on renewable energy technologies.
- He also discussed the policy issues by Energy Board (1994, 1998, 2002, 2006).
- We have been facing crises since last 8 years.
- In 2013-14, a policy was devised to use the sources like 1/3 from furnace oil and 2/3 from gases. There is nothing in terms of solar, wind, and even coal, nuclear etc.
- He informed that now Energy Development Board EDB has targeted till 2030 at least 50% usage of renewable energy. In this regard, 500MW wind power will be added in grids in next year.
- By Product of Sugar Industry BPSI might play a vital role to support renewable energy programs?
- To remove the load shedding in Pakistan, we need much and massive program on behalf of solar energy technologies.
- Income from power generation not only should be tax free but also confirm to pay incentive.

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- To invite others foreigner's experts, either in conferences or symposium/workshops is beneficial to take initiative steps in renewable energy technologies.

After the details discussion on current energy scenario of Pakistan, Dr SohailZaki (DG, PCRET) have started discussion on the theme of the workshop and how can we work together in this area?

2. Dr. SohailZaki (DG PECRT)

- Pakistan is paying 40-50 Billion Dollars in climate issue
- 500MW @ 6 cent/KWh in America 5 cent/KWh from solar and 2.5 cent/KWh from wind sources cost is being estimated.
- Due to rise in usage of renewable energy technologies, the oil prices reduce dramatically from last two months.
- The 45% power from Biogas will be transferred in grid.
- In order to implement renewable technologies, policy makers ensure that no new plant based on fossil fuels will be installed after 2030.
- In future, new plants will be installed on renewable energy technologies.
- Two-third part of energy is used in the form of non-electricity.
- 2/3rd number of population belong to rural areas.
- Mother cause of evil is the raise of population, and population growth issue should be discussed at every forum and it also should be limited like China.

3. Prof. Dr. Waqar Mehmood (Director, CERAD, UET Lahore)

- We should host more and more B2B forum to energy companies for investment. We have a lot of opportunities in renewable energy technologies.
- India has a capacity indigenous manufacturing.

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- However, there are five Research centers based upon RET in Pakistan.
- They are being run by the funding of Government and students also contribute widely to work in these energy research centers
- In last comment, he admitted the hard work and progressive success of China and wished to work with Chinese companies.

4. Chinese Delegate

- He needs collaboration on the projects of Biomass and Biogas as well as Waste to Power Generation Project.
- He has a team here and can talk; how it is possible to contact and cooperative details can be shared to Pakistani team



Questions

1. How can we involve the stakeholder, either Government or Private Sector (Industries)? Because energy is multidisciplinary subject.
2. Can PECRT take a charge to get funds to enhance the solar technologies in Pakistan even in abroad? PECRT, AEDB are the Incharge of policy makers.

Answer by Dr. Zaki

- We are in the process of incubation not only for solar but for all other RET technologies and YES it is possible but we have little funds and even no fund.



The interest of the participants was evident from the number of questions they asked relevant to current energy crisis and the role of industry and academia.

The workshop, undoubtedly, was an international event. The feedback from the participant was very encouraging which enhanced motivation to work more diligently and solution based on the RET through meeting many experts from different areas. It was an excellent opportunity of exchange of expertise between specialists from Pakistan and China. This Thematic Workshop was successful to achieve its main objectives, one to increase awareness in the ongoing research programs and second to review the latest developments in the area of RET.

We are feeling very privileged in thanking our Worthy Rector CIIT and the honorable director CIIT Lahore for their encouragement to organize such great event.



At the end, vote of thanks with shield was presented to the speakers by honorable Head of the Physics Department Prof. Dr Saleem Farooq Shaukat. He also thanked to the all organizing team, especially Dr Ayesha Anjum who hosted the complete event, and other members, Dr Ghazanfar Abbas, Dr Muhammad Saleem, Dr Saif Ur Rehman, Dr Muhammad Ajmal Khan, and PhD, MS, BS Students for their commitment to make this event successful.

“Let’s save the energy, save the world”

Dr Rizwan Raza

Incharge Thematic Area

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