

Interview with Prof. Ramchandra Pode

“I believe that Korea will create a space for herself in near future as a top exporter in the global market in the field of solar energy.”

In an interview with the Asia-Pacific Business and Technology Report, Ramchandra Pode, assistant professor of Physics in Kyung Hee University, said Koreans’ achievement, hard work, and vision of investment in science and technology are very admirable.

“As a part of the undergraduate course work in Kyung Hee, I asked the students to collect information about the solar cell activities in Korea in recent years. Many students said that big conglomerates have shown interest in solar cells and industries are prepared to start solar cell activities on large scale, and will achieve amazing result soon.”

He was fascinated by the high level of confidence of the people and especially of young generation to overcome any barrier. “Korea was one of the poorest countries in 1960’s with 80 US dollar GDP per capita which is enhanced to over 20,000 US dollar in 2008.”

That was not all he was deeply impressed by.

“Students were so sure about the success of these industries. The confidence they have shown was really incredible. Perceptions and the confidence I have seen here made me to believe that Korea will be a top exporter in solar energy field.”, he said. Asked why solar energy is one of the best alternative energy, he stressed that solar energy has a potential to change the world economies and politics not just Korean economy since solar energy is fair to everyone.

“Solar radiation is free, natural, and an abundantly available source of energy; there is no investment in receiving sun light and no nation has the ability to solely control it. Both poor and rich nations equally receive the solar radiation emitted by the sun.”

Solar energy is critical for those people who do not have access to electric grid. About 45 percent of Indian households use kerosene lanterns for lighting, the cause of many serious health related problems. Replacing kerosene lanterns with solar radiation energy can reduce air pollution, improve studying conditions for children, and also lower the cost of kerosene. Overall, quality of life is improved.

According to his explanation, the total amount of energy received on the earth’s surface everyday is 10,000 times more than the total global energy consumption per day. A 0.1% coverage of the total earth surface with solar cells with 10% efficiency is sufficient to produce all our energy needs.

“Conventional energy resources such as oil, coal, and natural gas are depleting fast. The use of combustible fossil energy sources emits carbon dioxide, pollutes the environment, and contributes to global warming.” He added, “When photovoltaic modules are used to convert solar radiation energy into electric energy, no carbon dioxide is emitted during this conversion.”

That’s why he suggests solar energy as a future alternative energy, a clean and green source of energy which is neither polluting the environment nor contributing to the global warming. “Thin film solar cells, flexible solar cells, and organic solar cell will be the next generation solar cell technology. In my opinion, the investment in renewable energy is the investment for the future and for a better world.”

In recent India-Korea IT Business Forum, Professor Pode suggested Korea and India joint forum since the two countries have common and favorable features for a joint collaboration in developing solar energy. Regarding the size and the population of two nations, Korea and India have different features. India is a very big country with a population of over 1 billion people, plenty of natural resources and has some advantages of its geographical location. Although Korea is an area-wise small nation with almost no

natural resources, but has a potential to contribute to the world civilization, science and technology, he added.

“Korea has a strong base of infrastructure in displays and semiconductor fabrications which make possible for Korea to readily adopt and implement solar- cell technology. However, the Korean domestic market for renewable energy is minimal and may saturate in near future. On the other hand, the Indian domestic market for renewable energy is growing at an annual rate of more than 15 percent, but India doesn’t have basic infrastructure to adopt photovoltaic technology and to produce solar cells.”

Although in its nascent stage, the Indian solar industry has huge potential. The lack of adequate investment in solar/photovoltaic manufacturing and R&D make the speed of growth slow. However it is believed that the high demand for energy and India’s tremendous rate of economic growth will act as a catalyst which will see this industry rapidly grow in the near future.

With different features of two countries, India and Korea can work to develop technology to convert solar radiation into energy which will be affordable by all -from poor to rich nations can benefit equally, Professor Pode said. In terms of sun radiation, both countries receive sun radiation for 4~5 hours a day for about 300 days a year.

“This way, both India and Korea will benefit from cooperation in this sector.”

He also mentioned that two key things to develop future solar technology. “Having the knowledge of both countries’ civilizations is very vital to understand the people better. To be successful in any field of cooperation, starting from culture, science, technology, to innovations between two countries, it is extremely important to understand the people from two different civilizations.”

In this regard, Professor Pode proposed that more Korean literature should be made available in Indian languages to the people of Indian subcontinent and vice versa. This solar energy expert also pointed out that the interaction between the global scientific community, research institutions, and the multicultural scientific workforce will be the

driving force in having a strong sense of competitiveness in scientific and technological innovations.

“At present, US lead the world in scientific discovery and innovation by drawing the best scientists to universities, industries and laboratories from around the world. I believe that the multicultural workforce of US is the essence of competitiveness in scientific and technological innovations.” He added that favorable rules, regulations, and strong support by the government will help to grow the solar cell and photovoltaic module industries.

Currently, the Korean German Cooperation Forum on solar energy has been founded by the Korea Energy Management Corporation in order to promote the development of the country’s domestic solar industry. Korean conglomerates, such as LG Electronics and Hyundai Heavy Industries, have joint venture with German companies.

However, collaborations between Korean conglomerates and German companies are limited to the production and manufacturing of solar cells and photovoltaic modules in Korea, Prof. Pode said.

He strongly recommended that there is a need to look beyond scientific cooperation in technology development and innovations. “Until now, the current cooperation between India and Korea has been limited to the exchange of scientists and scientific research. This cooperation is more scientific than technological. Its functioning is more personal than institutionally based.”

He went on say, “Instead of limiting themselves to only this first step, India and Korea must avail themselves of the potential, and infrastructure available to them to work on the technological innovation and development. They must set up procedures and rules, as well as adopt conceptual models and policies that could facilitate and improve their areas of cooperation.”

He discussed EU countries' co-project, OLLA project-Organic LEDs for ICT and Lighting Applications- as a successful example. "Under this cooperation, several universities, research institutes and companies from different European countries are encouraged to work on the development of next generation technology of energy efficient and eco-friendly organic lighting sources."

Although Korea has many famous electronic companies like Samsung, LG, and Hyundai, it has shown little interest in the solar cell industry till recent years. There were no domestic manufacturers of solar cells as recently as 2001. By 2005, South Korea tapped German expertise in order to help grow its own solar industry. Also, the Korean government has provided strong political support through an increase in trade and heavy R&D investment. Furthermore, the government has committed 210 million US dollar to R&D of renewable energy.

In 2008, South Korea emerged as the fourth largest photovoltaic market in the world after growth took off spectacularly in 2005. Domestic photovoltaic installations grew from 1MW of installed capacity in 2005 to 100MW in 2008. Korea is investing heavily in its photovoltaic energy production capacity; forecasts project that Korea will become the third largest manufacturer of photovoltaic modules by 2012, with a 10% share of the global market. Korea aims to deliver solar modules, worth more than 8 billion US dollars and generating 2.67GW energy by 2013.

While India has become one of the most rapidly emerging solar energy markets, it is also a favorite investment destination for both local and global players, thanks to the country's geographical location, large population, and government support. The Indian government aims to make India a global leader in solar energy and envisions an installed solar generation capacity of 20,000 MW by 2020, 100,000MW by 2030 and 200,000MW by 2050. The average growth rate of photovoltaic manufacturing in India has been an astounding 35% during the past 3 years and the Indian photovoltaic market is expected to represent up to 600 MW by 2013.

“It is a radical change from the past. Truly, in today’s competitive world, new discoveries and technological innovations in the field of solar energy are imperative to have an edge in the field of solar energy. A partnership between South Korea and India will help to develop competitive solar technology in both countries respectively.”

Unfortunately there are still many obstacles which are inhibiting the widespread adoption of solar energy systems. The cost affordability is a serious issue which must be overcome before their widespread use. “It is true that the initial costs of the solar photovoltaic systems are very high and beyond the reach of common people. However, there is no any further investment after the installation of the solar system. So, the solar energy system is beneficial in the long term and also does not contribute to the global warming.”

He also said that the durability and reliability of the solar system are the most important for end users; they must provide reliable, uninterrupted electricity. “Of course, consumers must be assured that they will get electricity through out the day.”, he added.

Professor Pode studied at the Nagpur University (India) and earned his Ph.D. in 1984. He worked as a faculty member at the same University until 2007 and currently, he is an Assistant professor of Physics in Kyung Hee University, Seoul. He is teaching courses on Energy Efficient Lighting Sources Technology and Photovoltaic Solar cell.