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Preparing to Meet the Challenges of the Future

An interview with Nasir El Bassam

Nasir El Bassam is president and director of the International Research Centre for Renewable Energy Germany (IFEED)



Nasir El Bassam is president and director of the International Research Centre for Renewable Energy Germany (IFEED) and member of the Council of the World Congress for Renewable Energy. He recently coauthored a book titled Distributed Renewable Energies for Off-Grid Communities, which was published by Elsevier in 2012. See www.ifeed.org for more information.

SGI Quarterly: What are the positive expectations we can have of renewable energy?

Nasir El Bassam: There are two key issues. First, nuclear energy and fossil energy supplies are based on limited resources, while renewable energy resources are unlimited. The resources available from solar, biomass and wind can provide several thousand times more energy than any foreseeable future energy demand, even if the distribution of solar, biomass and wind resources does not comply with the present distribution of the population worldwide. Second, we should be prepared to meet challenges in the future through a change from exploiting resources to developing technology that harnesses renewable energy. The countries that invest in renewable energy technologies and endorse these technologies will be the [winners](#) in the future because the development of renewable energy is essential to ensuring the supply of energy to humankind.

For instance, there has been considerable development of technology in Germany to ensure the reduction of industrial pollution and boost the supply of renewable energy. This ensures employment in different fields. Germany is the biggest economy in Europe, and now gets 25 percent of its energy from renewable energy resources, including bioenergy, solar energy, wind and biomass. The sector also employs 430,000 people!



Wind turbines and coal power plant in Saxony, Germany [© Westend61/Getty Images]

SGIQ: Are there any specific examples of where you feel this switch is already taking place effectively?

NEB: India has been the world leader in terms of family-size biogas plants for decades and is today among the world's top 10 performers in terms of wind energy because it has a manufacturing sector. India is better positioned than the industrialized nations to take advantage of the emerging transformation. It has little to lose. Its infrastructure needs fixing badly. In terms of population, more than 300 million people in India have no electricity. The rest have intermittent supply. Yet in India only 1 percent of the total energy supply is produced by renewable energy. Other countries around the world that are investing in renewable energy include Ethiopia, China, Kenya, Mali and Burkina Faso.

The share of the world population without access to the power grid is increasing because the population grows faster than the construction of new power grids. Renewable energy is now spreading, not necessarily for idealistic reasons, but because it is the only available option. For many developing countries, the import of fossil fuels already represents 50 percent or more of their foreign trade balance. In the future, with the increased costs of oil and gas, it is realistic that energy imports will not be affordable for many low-income countries. The population will suffer accordingly. Energy investments are for 20- to 40-year periods, which means that a renewable energy project can ensure long-term price stability.

SGIQ: How does the switch to renewable energy work in terms of centralized or decentralized power supply?

NEB: Rural and urban areas have unique issues and needs. Usually, urban areas have an energy grid already set up that can be utilized, but in some rural areas there is no grid, and therefore there is a different set of problems and solutions that entails a shift from centralized energy to decentralized energy. Solar panels can be installed on every building, biomass is available from agriculture and wind turbines can be constructed where there is wind. Rural communities and regions will become energy producers and suppliers instead of remaining as the energy consumers they are now. In this way, new income will be generated at the local level. To collect the economic benefits, local communities must own the energy generation equipment. State-guaranteed [loans](#) for local investments can pave the way for new rural prosperity. In the future, the rural sector will supply cities with power and other forms of energy.

In India, 350 million people have no access to electricity. Unfortunately, these people cannot be supplied with electricity through the old system. A decentralized system is needed for these regions, and without considering the energy questions in rural areas, poverty and hunger will never be eliminated. You see, poverty is the result of energy poverty in these rural areas. In India, the ability exists to develop solar, wind and biomass technology. If the poor are given opportunities to work together in producing energy to supply their needs, they will not have to give up anything--renewable energy can be incorporated into their lifestyles.



Solar panels in Germany [© Westend61/Getty Images]

In unserved areas with no power grid, which is about 25 percent of the world population, off-grid systems will be the norm in the future. Considering that lamps and appliances use less and less power, [investment](#) in large generation capacity and national power grids can no longer compete with individual and local power production and distribution. Costs of photovoltaic (PV) and wind energy have been reduced by a factor of three to five during the last 10 years, while costs of fossil fuel-based electricity are constantly increasing.

In industrialized countries, households have so far delivered renewable energy to the public grid using feed-in tariffs. This is changing now because home power production is becoming cheaper (up to 40 percent) than power from utilities. When using solar PV and small battery storage, an average German family can produce 60 percent of its annual demand for electricity with the balance coming from utilities.

So renewable energy can exist in tandem with the existing system, which will make it easier to build up renewable energy supplies and slowly move away from finite energy.

SGIQ: What is an Integrated Energy Settlement as promoted by the United Nations?

NEB: IFEED has installed Integrated Energy Settlements in Germany, Bulgaria and Iran--energy is only one element of these settlements. Without improving incomes and education, and creating jobs, we can never alleviate hunger and poverty. Now at our center in Kirchweg, Germany, using up-to-date technology, we have integrated a 1.8 MW generator into the community to supply people with electricity. We can realize all these social aspects within the community and we will open in May this year. We have also made business and manufacturing developments, and numerous job possibilities have been created alongside new educational facilities. We will finish with a greenhouse to produce food for the integrated energy settlement.

This is greatly satisfying. We have employed specialist researchers, technicians, educators and other professionals. It took two years to develop the settlement. The 1.8 MW generator supplies electricity to 4,000 people. It has been made possible only because people working

here are convinced this is the only way to survive, based on our current way of living and environmental challenges. Idealism without any revenue is nothing. Without improving the social and environmental conditions, renewable energy is nothing. But there cannot be a "one size fits all" model. Each settlement will have to be individualized for each community or climate.

SGIQ: To what extent do you think that the revolution in renewable technology is also a revolution in development?

NEB: The need for proper financial schemes and programs is huge. Innovative financial schemes that match the situation of the rural population and the decentralized character of renewables can be seen in Bangladesh. Grameen Shakti is a successful organization that has provided hundreds of thousands of citizens with electricity from solar power for basic energy needs at affordable costs. Many other countries can adopt similar solutions which, however, are often blocked by vested interest in conventional energy supply and lack of information among the population. The Indian All Women's Conference is trying to establish biogas plants on the home scale--there are millions of them in India. Those involved are poor, but they have idealism.



Cooking with a solar energy stove in Madagascar [© R.Maró/version-foto.de]

In the future, we will see a wide variety of technologies combined in many different ways, depending on income, consumption patterns and resources available. In most African countries and rural parts of India, Bangladesh and other countries, less than 10 percent of the population have access to modern energy services. In a West African village, a 150 Watt PV panel and a truck battery supply the school or the clinic with lighting for four hours per day. This may be the first but very important and affordable step toward providing electricity to those who are currently without it. In more developed communities, a combination of solar, wind and biomass energy can form a reliable local power supply.

Aid for developing countries was very good until the first oil crisis in 1973. The aim of world leaders was once to really assist, develop and help, and then after 1973 there was a shift in the developed world toward controlling rather than simply giving aid. That is very sad.

At the moment, many countries feed renewable energy to the grid with some small benefit to the consumer. National governments have also been trying to develop their economies, but it is also their duty to listen to other voices. There are so many intelligent people in India and Africa investigating and publishing research--but the leaders are busy with other things. They are preoccupied with how to keep control, to continue, to govern, and so on.

SGIQ: How feasible is it to provide the two billion people currently without access to modern energy with renewable energy?

NEB: I think that in the short term this issue cannot be addressed. It will take many years and significant commitment to provide renewable energy to the two billion people without access to modern energy. But, in the short term, efforts to do so can be started--even if only on a small scale. Implementation of renewable energy will continue to spread because finite sources of energy will be depleted sooner than we think.

During the last two decades, a wide variety of advanced renewable energy technologies has emerged which did not previously exist. These technologies have also become cheaper. Just as legislation paved the way for conventional energy forms with colossal public subsidies and infrastructure, a change to clean decentralized energy forms will require massive public involvement as well. While fossil fuels will be exhausted during the coming decades and cause enormous damage to the environment and climate, renewables will be a long-term solution that constantly lower costs, ensure security of supply, and therefore lead to a more peaceful world. A great proportion of the military costs incurred by many countries can also be avoided as a result of less conflict to secure the remaining fossil fuels.