academic, and governmental levels. The actors played varied roles as users, educators, and sellers. Through innovation and turnkey transfer, some components, such as charge controllers, deep cycle batteries, and 12V DC lights and fixtures, began to get manufactured locally. Some have attained qualities that are among the best, at the same time the cheapest, in the world. Forums, workshops, seminars and conferences began to take place at various levels. The number of active players continued to grow.

Especially since the late 1990s a much bigger combined thrust has come from more NGOs, governmental and semi-governmental agencies, universities and businesses to research, educate and disseminate PV systems around the country.

The economic, technological and environmental advantages of photovoltaics, bio-gas and solar cookers have been well proven in Bangladesh. To date, there are more than 400,000 installed stand-alone PV systems, termed "Solar Home Systems" (SHSs). Combined they generate over 20 megawatts of power. Grameen Shakti installed over 250,000 of these systems and BRAC 60,000. Available systems range in capacities from 20 to 120 watts. A typical 40-watt solar home system comes with three 8-watt fluorescent lights, a deep cycle battery, and a charge controller. The cost, around Taka 22,500 (about $320), includes installation and warranty. The solar module comes with a warranty of 20 years, and the battery, 5 years (with an expected life of 8-10 years and recycling options). The system also comes with the options of powering a small black and white TV and cell phone batteries. Such a system can save around Taka 400 per month spent on kerosene.

Still, the upfront payment can be high for many, so micro-credit financing helps in making the systems affordable. There are also about 17,000 mostly home-scale, biogas plants in Bangladesh, installed by the Fuel Research Institute of BCSIR, Brac, Grameen Shakti, and some other NGOs and private entrepreneurs. Although there are only a few installations, pilot projects with wind turbines, micro hydros, and grid-connected PV systems show great promise.

Bangladesh is already getting global recognition for its role in advancing the use of renewable energy technologies. It's a matter of immense pride that Grameen Shakti, Rahimafrooz Battery and Shidhulai Swarnivar Sangstha have been awarded the prestigious Ashden Awards for Sustainable Energy. Grameen Shakti and Rahimafrooz Battery received the award in 2006 for "the central roles which they have played in delivering the world's most successful solar power programme bringing light and power to rural people." Grameen Shakti also received the "Eurosolar Prize" in 2003 and the "Right Livelihood Award" (Alternative Nobel Prize) in 2007. Shidhulai received the Ashden Award in 2007 for its innovative solar powered school-library boats in the remote Chalanbeel region in Rajshahi.

We should also take pride that two of the lead authors of the report by the Nobel Prize winning IPCC, which has done a historic service to thrust the climate change crisis to the world's attention, are from Bangladesh: Dr. Atiq Rahman, executive director of Bangladesh Centre for Advanced Studies, and Dr. Saleemul Haque, head of Climate Change Group, International Institute of Environment and Development, London.

A renewable energy infrastructure is evolving. It's time to build upon it on a massive scale. We have the knowledge and experience of the crisis, and we have the knowledge and experience of the solution. Stand-alone PV systems are already proven to be the most cost effective way to generate electricity in areas outside the grid.

70 percent of the land area in Bangladesh lies outside the grid. Even in some areas with grid, the actual electricity supply is unreliable and negligible, if not nil. PV systems can be installed with a variety of designs and scales. Such expansion must also include recycling options of the system components.

Batteries, for example, contain toxic elements, and improper disposal of used batteries is harmful to health and the environment. It is highly commendable that Rahimafrooz, the largest seller of batteries for cars and solar systems in Bangladesh, was one of the first businesses in the world to institute a recycling program for used batteries. The program even includes free pick up and using a part of the proceeds from the recycling for environmental welfare.

One of the main barriers to widespread utilisation of solar systems has been the high upfront cost. Undoubtedly, micro-credit loans have helped in overcoming the barrier for many. At the same time, pointing to the usual range of interest rates, 18 percent to 70 percent, critics have raised the concern that such interest rates are too high.

The lenders usually justify it on the grounds of compensation for default risk and the high