11. Photovoltaic (PV) electricity generation

Solar Photovoltaic panels convert sunlight that falls on them into electricity. They can range from simple fixed panels to complex frames that move to track the sun. At large scale solar 'farms' may also use giant mirrors to concentrate the light into one spot, boiling water and using the steam to drive turbines.

The last decade

The International Renewable Energy Agency reports that in 2014 Bangladesh is installing 80,000 SHS units a month.[1]. These are not grid connected, but demonstrate the potential for solar in Bangladesh.

Assumptions of model

An average solar irradiation intensity has been taken for the country as 4.78 kWh/m^2. Panels convert 20% of the incoming sunlight and due to weather and nights, operate at full capacity 16% of the time.

Levels

Level 1

Least effort. No new capacity is added. Existing capacity degrades to zero with time.

Level 2

Current policy. Solar panels continue to be added to the grid. Capacity is 49.4 GW by 2050.

Level 3

Solar panels continue to be added to the grid. Capacity is 98.8 GW by 2050.

Level 4

Solar panels continue to be added to the grid. Capacity is 197.6 GW by 2050. This is roughly equivalent to using all urban rooftops and a high proportion of rural buildings.

Interaction with other levers

The model also includes options for distributed demand (such as irrigation or off-grid houses) to switch to solar. This demand is automatically met and measured independently. This lever only considers additional solar panels that are built to feed into the electric grid. Since solar panels require sunlight, they cannot be installed in the same location as biomass crops.
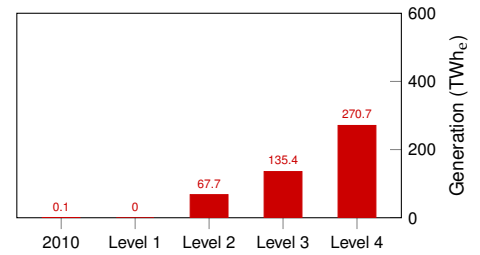

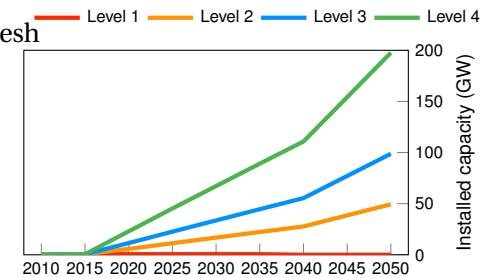Figure 11.1: Projected Capacity in 2050

Figure 11.2: Development of capacity by scenario

Figure 11.3: Solar Photo Voltaic Panels in Bangladesh
[1] http://www.irena.org/Publications/rejobs-annual-review-2014.pdf