7. Onshore wind power

Onshore Wind turbines represent large wind turbines. Often located along windy coasts or desert valleys, turbines are built as large as possible to capture the stronger, smoother wind available 100m or more above ground level. Turbines are designed to operate efficiently at a particular speed (defined by site), and will not operate below a minimum speed (often 3m/s) or above a maximum limit for safety.

The last decade

There has been considerable interest in wind turbine potential along the coast in Bangladesh. As further capacity is installed around the world (156 GW by 2010) turbine technology is becoming larger and more efficient. Bangladesh currently has no large scale wind turbines supplying electricity to the national grid.

Assumptions of model

They are assumed to be operating at peak capacity 30% of the time. A turbine size of about 3MW has been used in the model. Turbines are retired after 15-20 years. An example of a 3MW turbine is the V126-3.3 MW. It has a hub height of 117m and a rotor diameter of 126m.

Levels

Level 1

Least effort. No onshore wind turbines are added to the national grid.

Level 2

Current policy. Starting from the present, 10MW of new onshore wind capacity are added each five year period.

Level 3

Starting from the present, 20MW of new onshore wind capacity are added each year.

Level 4

Starting from the present, 30MW of new onshore wind capacity are added each year. Including retirement, this is equivlent to having 50 3MW turbines operational by 2050.

Interaction with other levers

Large turbine farms require wide open spaces to reduce turbulence in the wind. If they are built along the coastline, they may compete with space with mangrove plantations (under the marginal land for biomass lever).

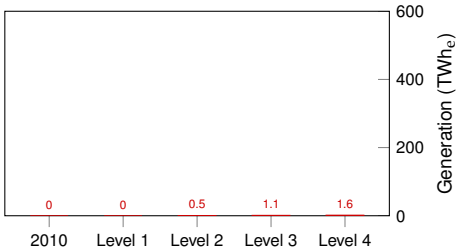

Figure 7.1: Projected Capacity in 2050

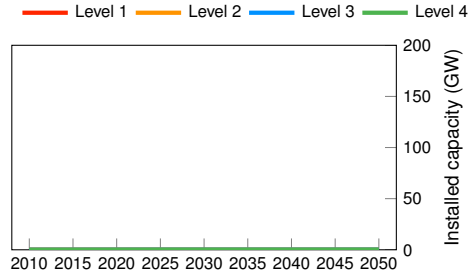

Figure 7.2: Development of capacity by scenario

Figure 7.3: An example onshore wind turbine