

Small-medium hydropower

Figure 1 Japan has a century-long experience in hydropower generation



Source: IGES stock image.

For over a century, hydroelectricity has served as one of the major sources of energy for Japan. Hydropower has proved to quite stable in terms of supply and generation costs. The country operates various types of hydropower plants: large (> 100 MW), medium (10 – 100 MW), small (1 – 10 MW), mini (0.1 – 1 MW) and micro (<0.1 MW). As of 2010, Japan's small-medium hydropower capacity stood at 10.46 GW, generating 55 TWh/y of electricity (MOE, 2012a).

Level 1

Level 1 assumes that Japan's 2010 small-medium hydropower capacity is sustained up to 2050 without any further efforts. With this 10.46 GW capacity, Japan generates around 55 TWh/y of electricity in 2050.

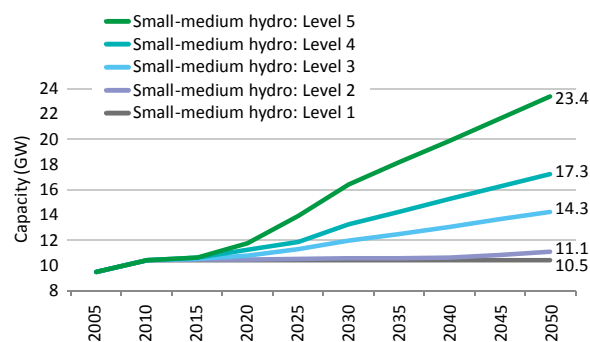
Level 2

Level 2 assumes that Japan makes low efforts to enhance its small-medium hydropower. Installed capacity rises to a little less than 11 GW in 2030 and then to over 11 GW in 2050. At this level, around 58 TWh/y of electricity is generated.

Level 3

Under Level 3, moderate efforts from the government lead to an increase of installed capacity to 12 GW in 2030 and then to 14.3 GW in 2050. At this level, Japan generates 75 TWh/y of electricity in 2050.

Figure 2 Japan's small-medium hydropower capacity versus time



Source: Authors.

Level 4

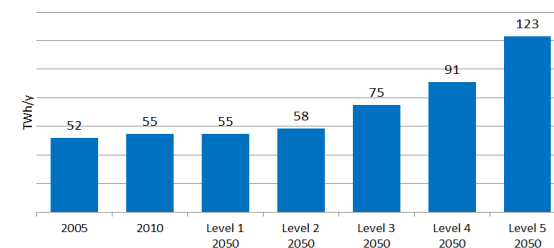
With great efforts, Japan's small-medium hydropower capacity under Level 4 rises to 13 GW by 2030. Capacity is further increased to 17 GW by 2050, which generates 91 TWh/y of electricity.

Level 5

Level 5 represents Japan's physical and economic potential for developing small-medium hydropower capacity. At this level, Japan's capacity reaches 23.4 GW in 2050, which generates 123 TWh/y electricity.

For detailed references related to the level settings, please see the Excel spreadsheet model (Zhou et al., 2014).

Figure 3 Small-medium hydroelectricity generation under different scenarios



Source: Authors.