

building facades program in the commercial sector can be realized by installing 5000 systems, assuming an average size of 30 kWp per building. With an additional capacity of 50 MWp for stand-alone systems the total target for installed PV for Europe will be 650 MWp (approx. 6 500 000 m²).

22.1.2 Definition of Building Integration

A large part of the future PV market will be associated with building applications, especially in Europe and Japan where the population density is high and the land is valuable [3]. In areas with less population, it will be possible to find land for ground-mounted PV structures (Figure 22.1) [4].

Building-integrated, grid-connected PV systems have the following advantages [5]:

- There is no additional requirement for land.
- The cost of the PV wall or roof can be offset against the cost of the building element it replaces.
- Power is generated on site and replaces electricity that would otherwise be purchased at commercial rates.
- Connecting to the grid means that the high cost of storage is avoided and security of supply is ensured.

Additional benefits of public awareness are [6] as follows:

- Architecturally elegant, well-integrated systems will increase market acceptance.
- Building-integrated PV (BIPV) systems provide building owners with a highly visible public expression of their environmental commitment (Figure 22.2).



Figure 22.1 The 1 MWp ground-mounted system in Toledo, Spain. Reproduced with permission by BEAR Architekten T. Reijenga