It has been argued (Capello, 1999; Droege, 2002) that a number of scientific and technical objectives of Solar Cities are needed to achieve the overall goals,[1] and that some key activities are needed to ensure that the objectives are met (www.solarcitiesineurope.nu).[2]

Some activities have already been implemented. The use of renewable energy and micro-power systems is already on the rise, but the current speed of change is still too slow to meet the global goals for CO_2 reduction in time to avert the pending serious crises threatened by climate change and fossil fuel depletion (Droege, 2002). Cities and towns are increasingly regarded as settings for co-ordinated policy implementation programmes aimed at global renewable energy technology introduction (Figure 18.2). Against this background a number of 'Solar City' projects and initiatives have been established as global or regional networks in Europe and America.

Figure 18.2
Solar thermal systems – Kunming City Roofscape in Yunan Province, China. (*Source*: Susan Roaf, 2003.)

For example, in Ashland, Oregon, in 1996 the municipal utility supported a net metering law that established a simple grid-interconnection policy that guaranteed the purchase of exported electricity at full retail price of up to 1000 kW of excess electricity per month. On a larger scale San Francisco, spurred on by the power crisis of 2000/2001, plans to place as much as 50 mW of photovoltaic (PV) panels on city rooftops, financed by the sale of revenue bonds agreed by the electorate (www.e-coop.org/news529.cfm). In Europe the strong coalition of Solar Cities, reinforced by European research funding (www.solarcitiesineurope.nu) includes London and Berlin, and also Barcelona, a city where every new building must have a solar hot water system and where the local municipality has invested heavily in PV systems on public buildings. In 2002, a group of local Oxford Councillors, council employees, consultants and academicians put together a team to promote Oxford as a leading Solar City in the UK, and the following sections detail their approach to this challenge.

A community-based approach

Increasingly local authorities are recognising the need for efficiency, demand management and lower-carbon energy (including renewable energy) to go hand-in-hand. The more successful local authorities, for instance in dealing with related issues such as carbon reduction strategies and the mitigation of fuel poverty in the future, are likely to be those that identify the non-carbon benefits (financial, social and developmental) arising from CO_2 reduction initiatives.

Moreover, actions at the local to regional scale are needed to deliver extensive carbon emission reductions, but to date most strategic thinking has focused on national policy (Shackley *et al.*, 2002). There is a great untapped potential for community-driven carbon reduction initiatives at the local to regional scale. The participation of local and regional authorities creates a favourable context for area-based carbon reduction as many of their key priorities have a strong link to carbon emissions (e.g. regeneration, inward investment, renewable energy, transport, new markets, job creation, rural diversification). New strategies should focus on planning and objective setting, although carbon reduction typically extends across the principal sectoral and functional priorities and groupings.

Members of the European coalition of Solar Cities are generating, not only a range of solar scenarios for their own