



Sustainable Development

What is sustainable development?

The most recognised definition;

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

This was coined by the 1987 UN Environment Commission under Brundtland.

This definition has spawned a series of sub-definitions to meet different sectors needs;

- **Sustainable design** is the creation of buildings which are energy-efficient healthy, comfortable, flexible in use and designed for long life (Foster and Partners, 1999).
- **Sustainable construction** is the 'creation and management of healthy buildings based upon resource efficient and ecological principles (BSRIA, 1996).
- **Sustainable materials** are 'materials and construction products which are healthy, Durable, resource efficient and manufactured with regard to minimising environmental impact and maximising recycling' (Edwards, 2004).
- **Sustainable Communities** can grow over generations, enjoying a healthy environment, prosperous economy and vibrant civic life. (www.state.nj.us/dep/dsr/bscit/SustCommunities.htm)

The overall idea is that growth and social welfare has to be balanced by the conservation of resources for future generations.

Sustainable buildings (design and construction)

- Design for minimum waste use of standardized parts and Sustainable materials.
- Lean construction & minimise site waste.
- Minimise energy in construction & use, source local materials, energy efficient buildings.
- Do not pollute.
- Respect people & local environment.
- Preserve & enhance biodiversity by working with nature.
- Conserve water resources by using less and recycling more.
- Monitor & report on progress using benchmarks, certificates.

Most of these points simply make good business sense such as minimising waste increases efficiency.

Source: Adapted from DLTR

The Government signed up to the Kyoto Protocol and now aims to reduce the UK's CO2 emissions by 60% by 2050 with real progress by 2020. But it won't achieve this by building new sustainable buildings if the old building stock continue to waste resources and pollute.

So changes to Part L of the Building regulations are designed to begin to tackle this problem by including both new and refurbished buildings.

EU Directive on the Energy Performance of Buildings, 2003

- All EU governments to develop a common methodology for the integrated energy performance of buildings
- Set common minimum standards of energy efficiency for new and refurbished buildings by 2005
- Certify the energy performance of buildings every 5 years with performance certificates for public buildings prominently displayed
- Require the regular inspection of boilers and air-conditioning systems over 15 years old

Sustainable materials

By specifying reused, recycled or reclaimed materials it maybe possible to reduce the environmental impact of a building.

The energy used to transport the materials to and from the recycling plant and the additional energy used to reprocess the material must also be considered.

This is true of all materials not just recycled.

The energy used in the processing and manufacture of materials and products should be considered. The embodied energy of steel is about 20

times higher than that of concrete (un-reinforced) and about one-quarter that of aluminium. But embodied energy needs to relate to the weight/strength potential of the material and to its ability for subsequent material reuse.

Since transport costs are largely related to weight, heavy materials such as concrete and bricks should be sourced locally

Sustainable communities

Policies for sustainable housing

- Ensure social integration through mixed tenure housing types, Private, Housing Association & Key worker Homes.
- Mixed use developments to integrate residential and non-residential land uses.
- Use energy efficiency to dictate settlement design and Use urban design to modify climate, orientated to maximise solar gain, trees between buildings to avoid wind tunnel/eddies.
- Maintain density to support public transport, local shops, schools etc.
- Limit car parking by setting maximum, not minimum, standards. Create car-free developments close to Public transport links.
- Exploit existing infrastructure to the full.
- Reuse urban land and buildings, develop brown field sites and refurbishments first.
- Exploit renewable energy sources, wind, sun, sea.
- Source materials and labour locally to reduce energy and pollution generated in transport and support the local economy.

Source: Adapted from DLTR

Other References:

Rough Guide to Sustainability by Brian Edwards (RIBA Publishing).