

**Energy efficiency for sustainable
communities:
The role of planning and design**

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Intergovernmental Panel on Climate Change: 4th Assessment Report 2007

“Warming of the climate system is unequivocal ...

Global greenhouse gas (GHG) emissions due to human activities have grown since pre-industrial times, with an increase of 70% between 1970 and 2004 ...

Continued GHG emissions at or above current rates would cause further warming and many induce many changes in the global climate system during the 21st century ...

Mitigation efforts and investments over the next 2 or 3 decades will have a large impact on opportunities to achieve lower stabilisation levels.”

UK Stern Review 2006

What we do in the next 10 or 20 years can have a profound effect on climate in the second half of this century and in the next. Mitigation – taking strong action to reduce greenhouse gas emissions – must be viewed as an investment, a cost incurred now and in the coming few decades to avoid the risk of very severe consequences in the future.

Ireland: National Climate Change Strategy 2007 - 2012

- ***Emissions from the residential sector accounted for 10.2% of total greenhouse gas emissions in 2005***
- ***Commitment to introduce new planning guidelines on sustainable residential development which would encourage more energy-efficient housing layouts***
- ***Revisions to Part L of the Building Regulations to achieve up to 40% improvement on current standards***

Draft planning guidelines on sustainable residential development

- Initial focus on updating 1999 density guidelines
- New material added in response to Issues Paper:
 - Discussion of sustainability, including energy efficiency
 - Urban design
 - Small towns and villages
- Companion best practice design guide sets out 12 criteria for sustainable residential development, including energy efficiency – some illustrations included in this presentation

Solar orientation – site layouts

- Ideally, orient as many dwellings as possible within 30 degrees of south
- Avoid obstructions (other buildings, tall trees) which block light
- However, passive site design needs to be integrated with other design objectives to ensure a balanced approach
- Design guide recommends starting with a site appraisal



The use of wide fronted units can allow for a greater degree of light and dual aspect to more rooms and activities, as in this example at Loughrea, Co. Galway.

Solar orientation - dwellings

- Energy efficiency gains from site layout can be maximised if internal layout of individual dwellings achieve optimum solar collection and minimising glazing on the north façade
- Maximise the number of dual aspect dwellings; apartment guidelines (Sept. 07) recommend that north-facing single aspect apartments should not be permitted



A combination of thermally efficient terraced housing and passive solar design, articulated well with contemporary architectural treatment. In this case, the terraces have differing orientations to respond to the site and provide a garden space.

Micro-renewable energy technologies

- Planning Regulations amended in 2007 to exempt a range of micro technologies for dwellings (wind turbines, solar panels, heat pumps)
- Exemptions complement SEI grants under the Greener Homes Scheme

Further information

- Copies of draft planning guidelines, best practice design guide and micro-renewables Planning Regulations can be downloaded from the DEHLH website:

www.environ.ie