



## **Sustainability: Life Time Home Considerations:**

### **Self-Build versus Major Developers:**

According to a [survey](#) by the Building Societies Association (BSA) a great deal of people are interested in undertaking a self-build family home project. This coincides with increased environmental awareness and demand for more energy efficient housing to reduce household running costs. Undoubtedly, the emerging demand for sustainability in the housing sector is evidence of the fact that home buyers are becoming more environmentally and economically aware. Self-building attracts sustainability and when incorporated in the design of houses can lead to a significant reduction in life-time operation costs, while minimising the environmental impact of the housing sector.

Self-building, or custom building as it is also known, is an umbrella term that generally refers to the development of a single home. This self-building model generally consisting of individual designs is an attractive alternative to the large scale commercial developments where entire residential communities live in similar designed properties.

The self builder may choose to be completely independent and carry out all design and manual work themselves or hire designers and building contractors to undertake the build; frequently a combination of both procedures occur.

Group-self building refers to a number of people who collaborate in the development of their homes. This may be as simple as funding the purchase of land or as extensive as planning, joint building of homes and developing communal areas such as children's play areas and other facilities.

Self-builders however can be accused of adding to the work of local planning authority's as each home requires full planning attention. Whereas only a small percentage of house designs submitted by a major developer requires examination.

The National Self Build Association (NaSBA) [reported](#) that 12,000 to 15,000 self-build homes were built in the UK every year prior to 2010. This figure was expected to be in the proximity of 18,000 following 2010. In late 2011 the trend seemed to be still on the rise according to data collected by NaSBA. The University of Portsmouth [reports](#) a similar increasing trend in sustainable housing demand. The latter is likely due to raised environmental awareness, driven by the [promotion campaigns](#) of environmental organizations but also due to the fact that sustainable housing is the most optimal solution in terms of life-time savings of operating costs. In the case of self-built housing, greater control over house design is probably the key driver. Efficiency, control and reduced overall cost are the common denominators in the demand of both self-built and sustainable housing.

### **Why are self-built homes more likely to achieve a high sustainability rating**

According to a study by the [Tyndall Centre for Climate Change Research](#), the **mainstream property developing** model in the UK is characterized by:

*“Low levels of innovation, mass production from large suppliers and separation of design from construction”*

These characteristics, the study says, are:

*“Incompatible with social and ecological optimisation”*

The study reports that a regime change towards more sustainable home building can be facilitated by small community groups or individuals who are driven by their own commitment to build and live sustainably with the bonus of reduced operating costs.

Commercial property developer's favour more convenient, less environmentally friendly practices since compliance with strict environmental standards, such as those in the Code for Sustainable Homes are on occasions more time consuming and not wholly enforced by law. The implementation of sustainable and green features can increase initial building costs which is the main reason why commercial developers are not keen to implement them. The self-builder however sees an opportunity to offset their construction costs by employing sustainable and green technologies that will reduce life-time operating costs.

Savings resulting from the implementation of green technologies, such as solar panels, geothermal heating and water harvesting etc, not only offset the cost of installation but also result in a reduced life time operating costs. Unfortunately, this holistic view is not prevalent in the commercial development industry whose primary concern is to maintain low construction cost in order to secure immediate maximum return on investment. By becoming more involved at the design stage the self builder has room to innovate in ways that would be outside the scope of mainstream property developers, due to their short-term financial only involvement with home building projects.

For individuals wishing to adopt a greener lifestyle, self-built homes offer more flexibility in terms of controlling the extent and type of green features that are adopted. This is the main reason why self-built homes generally rank higher than commercial build on sustainability issues.

The UK government has realised that self-building goes hand in hand with sustainability performance. Recently an action plan has been proposed to encourage more people to build their own homes.

Grant Shapps, a member of the British parliament and Minister of State for Housing and Planning, is co-ordinating efforts between NaSBA and UK government in aimed at promoting self-building. He recently [stated](#):

*"Self-builders deliver affordable, greener and more innovatively-designed homes, and make a big contribution to the number of new homes built in this country. But there is still significant opportunity for growth in the sector which can only be opened up if Government and industry work together."*

Government action to promote self-building is already underway. These actions include:

- On-going discussions with Building Societies and banks on providing financing for self-built houses
- Enhancing regional governance and the promotion of regional policies infused with sustainability considerations
- Deregulation of self-building
- Making public land available for self-building

Additionally, further action is proposed through a report prepared by NaSBA and government officials on Mr Shapp's request. These proposals include:

- Funding to be made available for group self-built projects
- Enhanced government support of small scale developments
- Information sharing and technical support to self-builders
- Availability of financial products for self-building projects.

Grant Shapps seems to be committed in bringing self-built houses into the mainstream. In his own words:

*"Government is already taking significant steps to make self-build not only more attractive but also more accessible. But I pledge to continue pushing for further action to make self-build an easier option for everyone"*

Promotion efforts have resulted to the production of an information sharing portal that is accessible through the web. [The Self Build Portal](#) functions as an information gateway for aspiring self-builders. The information provided range from plot discovery, funding guidance, construction methods, budget advice and sustainability considerations.

## **What sustainable technologies are available to self-builders**

The self-builder may draw from the vast knowledge pool of sustainable design and construction practices that are often overlooked by commercial developers. Passive solar heating, for example, is a method of natural heating achieved by appropriately orientating a house to the sun path. A self-builder that is involved in the inception of house design may choose to adopt passive solar architecture. In the long-run, this will result in reduced cost for heating fuel.

Recycling of domestic waste water is another example of sustainable features that need to be considered in the design phase. Although water pipes can be reconfigured to accommodate such recycling schemes, it is significantly less costly to implement this technology from the beginning.

Contrary to commercial property development, self-building provides the end-user with the option to choose greener building materials that are most likely to contribute to a higher sustainability rating. The environmental performance of materials may go as far as measuring their embodied energy; that is the energy used through the material's entire lifetime, including fabrication and transportation to the building site. Such considerations are often outside the scope of commercial property developers.

Provisions for photovoltaic panels (PV) can offer more flexibility when they are taken within the holistic approach to property development that characterises self-building. The design of electrical configuration can be optimised for solar panel support. If PV technology is considered before construction, panels may be integrated into the building fabric rather than mounted. This will have an enhancing effect on aesthetics.

Group self-building can potentially lead to the creation of sustainable communities as there is greater motivation for the end-users procuring the development of their homes to create a harmonious relationship between their local built and natural environment. Many examples exist of group self-built projects that have resulted to sustainable communities. One such [example](#) is the town of Almere in The Netherlands.

In conclusion, self-building offers more choice and control over a home's design, construction and life-time operation. Additionally, it has been shown that self-building and sustainable development practices that may be adopted in the early stages of development can lead to reduced overall cost. Such options are often not considered in commercial property development as they do not offer short-term return on investment. However, the long-term involvement of the self-builder makes sustainable options more economically attractive as they result in reduced life-time operating costs. Apart from economic benefits, environmentally conscious self-builders also have greater liberty in customising their dwellings to their personal (green) life-style choices, by optimising environmental performance during the entire process of development.

Policies that have been implemented in some countries – the Netherlands being one of them – with the scope of promoting self-building, have shown to be successful in terms of resulting in more sustainable property developments. Such success stories might be the inspiration for the recently introduced action plan aiming at promoting self-building in the UK.

As the large company home building regime is presently inherently unsustainable, with no known financial incentive to bring about a major change in the near future; self-building is a more attractive option and is indeed a major step in the right direction to produce a significantly greater housing stock of high sustainable homes.

An increased emphasis and acceptance by planners and users of family home self-building can progress beyond the worthwhile and vital increase in sustainable housing; it can also result in the emergence of custom planned sustainable communities and the enhancement of life-quality for the families who live within them.

## **What is sustainability: how is it measured?**

The most widely accepted definition of sustainability to date is the one delivered by [The World Summit on Sustainable Development](#) (WSSD 2002) where the concept of the three pillars of sustainability (economy/environment/society) was introduced. According to the WSSD 2002 definition, sustainable development occurs when the impact on the environment and society is balanced against economic benefits. In policy-making sustainability is accounted for by legislation and guidelines infused with scientific knowledge. Their purpose is to aid the incorporation of sustainable standards in development activities.

In Europe, sustainability standards in the design, construction and operation of buildings were introduced by the European Parliament with the [Energy Performance of Buildings Directive](#) in 2003. Member countries of the European Union were obliged to comply with articles 7, 8 and 9 of the directive by January 4<sup>th</sup>, 2009. These articles involved Energy Performance Certificates (Article 7), Inspection of Boilers (Article 8) and Inspection of Air-conditioners (Article 9). The United Kingdom decreed the EPBD in [The Housing Act 2004](#). Furthermore, the British government in collaboration with the Building Research Establishment (BRE) and Construction Industry Research and Information

Association (CIRIA) developed the [Code for Sustainable Homes](#) which was released in December 2006. The code is aimed to complement the EPBD by acting as a rating system for sustainability.

The Code for Sustainable Homes considers nine categories against which the overall sustainability of a home is measured. These are the following:

- Energy and CO2 emissions
- Water
- Materials
- Surface water run-off
- Waste
- Pollution
- Health and well-being
- Management
- Ecology

The rating scale is 1 - 6, with each rank symbolized by stars. Rating is awarded according to defined standards, with some categories having a minimum that must be applied in order to acquire even a one star rating. The energy/CO2 and water categories have minimum standards throughout the rating range, while the materials, surface water run-off and waste categories have minimum standards for entry level (one star rating).

Minimum standards ensure that features aimed at tackling pressing environmental concerns (e.g. climate change and water conservation) are prioritized. For the categories that only require minimum standards for entry level, additional points are awarded for any extra features – relevant to the category in question – that are incorporated in the design.

Ratings are awarded based on sustainability assessments, carried out by designers and inspectors during the design phase and upon inspection following construction. In commercial, multi-house development, the design assessment is carried out once for every home type. Similarly, after the completion of large-scale property development projects, a small selected number of samples will be assessed and the same rating will be awarded to the entire development.