

3a) Discuss and critically evaluate the development of sustainable construction since the Rio conference and Kyoto agreements and include and compare agenda 21, HECA, affordable warmth, fuel poverty policies and guidelines and their apparent effectiveness in terms of the spirit of the Rio agreements.

The construction industry is one of the most intensive in terms of its consumption of natural resources and energy and in its production of waste materials. In order to meet the goals of sustainable development, the construction industry must embrace more sustainable forms of building and make better use of the resources available. It is not just an issue of matching consumption patterns to the earth's available natural wealth. The extraction, processing and transportation of these materials have a huge environmental impact - the more consumed, the more damage there is. Sustainable construction therefore, requires not only reducing consumption, but also re-using and recycling the materials already available.

The United Nations Conference on Environment and Development was held in Rio de Janeiro, Brazil in 1992. It was attended by political leaders from 178 countries together with representatives from all the major environmental organisations. The objectives of the conference were to respond to pressing global environmental problems and five separate agreements were made, including 'Agenda 21' - a blueprint for sustainable development.

Agenda 21 called on all nations to :

- Cut down their use of energy and raw materials.
- Reduce pollution and waste.
- Protect the fragile natural habitats of animals and plants.
- Share wealth and opportunities more fairly between the developed and the developing world.

By 1997, not much progress had been made on the Rio conference objectives. Also in 1997, the Climate Treaty Conference was held in Kyoto, Japan. More than 150 Nations attended the Summit and agreed to reduce their greenhouse gas emissions to below 1990 levels by the year 2012. The Kyoto Protocol was the first ever International Treaty to set legally binding emissions reduction targets on developed countries that have ratified it. Under the Kyoto Protocol, the European Member States agreed to meet a joint target of 8% emissions reduction. This shared arrangement allows for redistribution between member states to reflect their national circumstances, requirements for economic growth and the scope for further emissions reduction. The UK agreed to reduce its emissions by 12.5%.

www.defra.gov.uk/environment/climatechange/international/un-kyoto.htm

Since the Rio Conference and the Kyoto Summit, it has become clear that the issues surrounding the concept of sustainable development are complex and challenging. The UK became one of the first countries to produce a Sustainable Development Policy 'Sustainable Development: The

UK Strategy'. In 2000, the Government published a Strategy for Sustainable Construction 'Building A Better Quality of Life' which provided the first steps to improving standards in the industry and highlighted ten themes for action which remain relevant today:

- Re-use existing built assets
- Design for minimum waste
- Minimise energy in construction
- Minimise energy in building use
- Avoid polluting the environment
- Preserve and enhance bio-diversity
- Conserve water resources
- Respect people and their local environment
- Set targets (benchmarks & performance indicators)

Also in 2000, the Government established the Sustainable Development Commission which was responsible for moving the sustainable development agenda from analysis towards implementation. In 2001, the Government published its first annual report reviewing progress towards sustainable development - 'Achieving a Better Quality of Life'. Also in 2001, the Government launched a new Sustainable Development website www.sustainable-development.gov.uk and a new Sustainable Development Research (SDR) Network to strengthen the delivery of high quality research .

Since then and on an annual basis, the Government has produced several reports regarding sustainable development, the most recent being in June 2007 'Draft Strategy for Sustainable Construction - A Consultation Paper'. This provided a basis for an intelligent discussion between industry, NGOs (Non Governmental Organisations) and Government about sustainable development. It stated that "buildings are also responsible for almost half of UK carbon emissions, half of water consumption, about one third of landfill waste and 13% of all raw materials used in the UK economy. To achieve our sustainable development goals, we have to change the way we build." The proposed Sustainable Construction Strategy is currently being developed (post consultation) and is due to be launched on 11 June 2008. This strategy aims to take a longer-term view on how the UK construction industry can become more sustainable and the Government aims to establish a joint Government and Industry Strategy for Sustainable Construction.

In the UK, 90% of our energy needs come from fossil fuels, 9% from nuclear and just 1% from renewables (energy sources that are replenished - solar, wind, geothermal, hydro and biofuels). Energy used in the home is responsible for 25% of the UK's carbon dioxide emissions. The energy use of an average family in the UK releases over 25 tonnes of carbon dioxide and 4 kilograms of sulphur dioxide into the rain every year, adding to the problems of global warming and acid rain. The urgent need to reduce the emissions of carbon dioxide and other greenhouse gases, which are largely responsible for causing climate change, is a major factor behind the Government's drive to raise standards of construction. Following the Kyoto Agreement the UK is currently on track to meet and surpass its Kyoto target. UK emissions in 2010 are predicted to be 23.6% below base year levels i.e. 11.1% lower than required by Kyoto. DEFRA (2007) Climate Change and Energy, http://www.sustainable-development.gov.uk/publications/pdf/strategy/SecFut_complete.pdf

The Government is encouraging environmental change through selective tax regimes on land filling waste, aggregate extraction and the climate change levy. In addition, many organisations are taking steps to assist the House Building Industry to adopt sustainable development policies and practices with the aim of improving energy efficiency and reducing the detrimental effect on the environment. The Construction Industry has been bombarded with a plethora of literature - both voluntary and statutory - on sustainable development but at present there is no single plan of action on sustainable construction that applies across Government and Industry. Instead, there is a variety of policies, regulations, performance standards, guidance documents and voluntary initiatives that apply to many issues and audiences. It is understandable therefore, that within the House Building Industry responses to the demand for sustainable development have been inconsistent. (Kersey (2004)

The Home Energy Conservation Act 1995 (HECA) requires every UK local authority with housing responsibilities - "energy conservation authorities" - to prepare, publish and submit to the Secretary of State an energy conservation report identifying:

- practicable and cost-effective measures to significantly improve the energy efficiency of all residential accommodation in their area; and
- report on progress made in implementing the measures.

HECA has served to focus the attention of local authorities more closely on the energy efficiency of all residential accommodation, and on developing an integrated approach to their housing and energy efficiency strategies.

<http://www.defra.gov.uk/environment/climatechange/uk/publicsector/localauth/heca95/index.htm#Background>

As a result of current legislation (largely due to revision of Part L building regulations introduced in 2006) a new house is now 40% more energy

efficient than one built in 2000. But there is a realisation that current targets and policies are mainly applicable to new-build properties and will not affect existing housing stock. The Government have offered no incentives for existing properties to reduce their energy consumption and/or carbon emissions so these properties will remain unaffected by sustainability policies and targets and no action will be taken to improve their energy efficiency.

Fuel poverty is one of Britain's largest social ills. Often caused by poor insulation and old or inefficient heating, fuel poverty affects more than 3 million families in the UK. Where a household cannot afford to keep warm, their health is at risk and their quality of life is affected. Fuel Poverty is defined as the properties' energy bills being equal to more than 10% of the household's income and those who are most vulnerable are from households with low incomes, unemployed, the elderly and the disabled.

A major theme of Agenda 21 is the need to eradicate poverty by giving poor people more access to the resources they need to live sustainably. The Government's Affordable Warmth Programme aims to improve the level of comfort in up to 1 million homes through the development of initiatives providing efficient heating to households in conjunction with energy efficient measures and advice. This Programme however, only addresses the needs of one third of those suffering fuel poverty.

In the spirit of the Rio Conference and the Kyoto Agreement, the UK Government is addressing the issues of sustainable construction but regulations are in respect of new building. In respect of existing building stock, little has been done to address the situation and many homes and buildings are energy inefficient. Even in terms of new build, the Government's present strategy is confusing for the industry and delivery of sustainable development is largely inconsistent.

Bibliography / References

BERR (Department for Business, Enterprise & Regulatory Reform)
Draft Strategy for Sustainable Construction : A consultation paper July 2007
<http://www.berr.gov.uk/files/file40641.pdf>

BRE (Building Research Establishment), 2002 RRR: Sustainable Construction
Task Group- Reputation, Risk and Reward, a Business Case for More
Sustainable Construction.
www.projects.bre.co.uk/rrr/

DEFRA (2007) Climate Change and Energy,
http://www.sustainable-development.gov.uk/publications/pdf/strategy/SecFut_complete.pdf

DTI, (2006) Review of Sustainable Construction
<http://www.berr.gov.uk/files/file34979.pdf>

Her Majesty's Government (2000) A Better Quality of Life - Strategy for
Sustainable Development for the United Kingdom
www.sustainable-development.gov.uk/publications/uk-strategy99/index.htm

Kersey, J. R., (2004) Sustainable Construction: Targets and Indicators,
London: CIRIA
www.ciria.org.uk/environment_rp609.htm, Sustainable

The Rio Earth Summit (1992), The Rio Declaration, Principle 10,

UN (2002), Report of the World Summit on Sustainable Development ,
Johannesburg, South Africa, 26 August - 4 September 2002, New York, UN

Websites

<http://www.ukheca.org.uk/documents.php?page=uk&folder=2006-09-29%2010:36:31>

http://www.opsi.gov.uk/ACTS/acts1995/Ukpga_19950010_en_1.htm

<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>

<http://unfccc.int/resource/docs/convkp/kpeng.html>

<http://www.cse.org.uk/pdf/pub1075.pdf>