

Introduction

The effects of Global Warming have gained much publicity in recent years and the UK government is taking the issue very seriously. This paper does not cover the effects of global warming but rather focuses on the impact of measures that are being introduced to help reduce the impact of "greenhouse gasses" such as CO².

The Stern Report (economist Sir Nicholas Stern) takes a global look at the impacts of climate change and makes some recommendations on action that needs to be taken. In summary taking action now will cost about 1% of the worlds GDP per year, the impact of not taking action could permanently shrink the Global economy by 20% by 2050.

Key Actions

The key actions recommended by Stern relate to the Global economy but some of the actions can be seen to be taking place in the UK, Europe, parts of the USA and Japan. The remainder of this paper considers the key actions in relation to the UK, its impact on customers in the public sector and possible opportunities for EnTech.

Carbon Pricing - Establishing a "price" for carbon emissions and control measures. This could include **Taxation, Trading and Legislation**, in the UK this includes all three as follows:-

- ***Taxation***, Climate Change Levy (CCL) is effectively a Tax on carbon and affects all business including local government. It does not currently affect domestic users and registered charities. Charges are levied on supply (like a sales tax) current charges are:
 - electricity 0.43p/kWh (pence per kilowatt-hour), natural gas 0.15p/kWh, liquefied petroleum gas 0.96p/kg, coal 1.17p/kg. The rate for LPG is equivalent to 0.07p/kWh while that for coal is nominally 0.15p/kWh, although the true figure depends critically on the calorific value and how wet the coal is.
 - CCL Charges are fed back to the organisation by way of a decrease in National Insurance. This should encourage employment but is a problem for companies who use a lot of energy but few staff, (typical of organisations who used to be labour intensive but now use a lot of robotics)
 - CCL Charges can be reduced by 80% by the use of a Climate Change agreement. This mainly affects industry, the agreement shows a reduction in primary power usage and the introduction of sustainable energy sources (wind, CHP, Geo Thermal, Photo Voltaic etc). Siemens can help in the area of reducing power consumption by the use of Integrated buildings that use less power for lighting, heating, Air conditioning, and power socket usage.
- ***Legislation*** - Changes in building regulations to improve energy efficiency and sustainability. These include:-
 - Part H drainage and waste disposal
 - Part J Combustion appliances
 - Part F Ventilation
 - Part L Conservation of fuel and energy

Though EnTech is involved with sustainability in these areas, its presence in the UK market is low with the exception of products and services that that have an impact on Part L. Drainage and waste disposal will be covered separately, combustion devices such as CHP are not really present in the UK whilst Ventilation is primarily architectural issue. Part L covers Heating, Lighting, Cooling, Ventilation, Solar gain, and other construction issues including U-Values (Insulation) etc. Importantly Part L also covers Energy performance which includes the use of Building Management Systems that can monitor and control the use of energy.

These directives affect all buildings in the UK though there are different Part L requirements depending on whether the building is a new or existing dwelling other than dwelling (non domestic). They will affect buildings used by Local Authorities. The energy efficiency of buildings has a direct impact on CO² and therefore on CCL and Carbon trading. It may be noted that many Government buildings including Local Authorities, Hospitals etc are in a poor state of repair and could end up having to purchase carbon credits.

Carbon Trading - Emissions trading (or cap and trade) is an administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants. The UK government sets a limit or cap on the amount of a pollutant that can be emitted. Companies or other groups that emit the pollutant are given credits or allowances which represent the right to emit a specific amount. The total amount of credits cannot exceed the cap, limiting total emissions to that level. Companies that pollute beyond their allowances must buy credits from those who pollute less than their allowances. This transfer is referred to as a trade. In effect, the buyer is being fined for polluting, while the seller is being rewarded for having reduced emissions. The more firms that need to buy credits, the higher the price of credits becomes -- which makes reducing emissions cost-effective in comparison.

- The Emissions Trading Scheme (ETS) is that largest trading scheme in the world. It is based on Europe's commitment to the Kyoto agreement and seeks to provide a basis for trading Carbon based on stock exchange principals.
- Stern report sees global carbon trading as key to reducing emissions but this requires global commitment.
- Main focus is on industry but affects government projects as the government is driving Kyoto based initiatives.
- Carbon pricing via ETS have fallen by about 50% over the past year, this is bad news for Europe.

Technology Policy – This section call for more investment in Research and development and is highly reliant on the private sector. Over the past 10 years government has reduced its own spending on R&D by about 50%.

- Investment in R&D and implementing high efficiency buildings and sustainable energy will be highly dependent on the carbon issues highlighted above. For example it may be cheaper to buy carbon credits on the open market that spending more on energy and sustainability.
- Local Government Association (LGA) is supportive of actions that reduce the impact of climate change but put the onus on the Government to spend on R&D, provide guidance etc etc, before they can do anything.

Conclusion and observations

Though there is significant emphasis on climate change it is unlikely that this will have significant impact on the way public sector carry out business. Beca0use Public Sector is politically oriented the key issues are related to votes. This may seem a cynical view but key issues (especially for local government) relate to Transport issues and Waste management. These have major focus from both politicians and the local community (the voters). From a sustainability and energy view point, Siemens opportunities would fall in the following areas:-

- Environmentally friendly new or refurbished buildings.
- Waste Management (separate paper)
- Transport Separate paper)

