

## **THE SECURITY OF ENERGY SUPPLY**

### WHAT IS THE PROBLEM ?

The EU imports 50% of its energy and if no measures are taken within the next 20 to 30 years this figure will rise to 70% (EU, 2000). Currently the majority of oil and natural gas is provided to the EU from the Middle East and Russia. Oil, gas and coal reserves worldwide are being depleted so there is a need for a reduction in the amount of energy used and/or an increase in alternative energy produced in order to ensure that the necessary supply of energy is maintained.

The opportunity to reduce energy demand in the EU is significant. This includes increased energy efficiency particularly in the residential and tertiary sectors which account for 40% of final energy consumption (EU, 2002). This directive also states that 'construction works and their heating, cooling and ventilation installations are to be designed and built in such a way the amount of energy required in use will be low'. Opportunities to reduce energy demand can be implemented both on new buildings and also in existing building stock.



***Figure 5.2 Installation of hemp insulation***

Tools need to be available to provide advice on how to incorporate the most appropriate energy mechanisms available. These should utilise opportunities available in a particular location and context, Opportunities for energy to be utilised from existing infrastructure including incinerators or waste heat from industrial processes and renewables that are currently not being exploited. For example, the use of Combined Heat and Power (CHP) system in an area where adjacent properties can be beneficial to each other.

By increasing the amount of energy produced in the EU from renewables and improving energy efficiency, dependence on other nations for the provision of energy and the environmental, social and economic risks associated with it will be reduced.

### GEOGRAPHICAL AND TIME SCALE IMPACTS

Reducing energy demand is mainly applicable at a building level and can be implemented at all time stages of an urban infrastructure project. By educating actors involved in urban infrastructure together with the general public, energy efficiency reduction benefits, particularly financial savings can be seen.

Energy supply from existing infrastructure is mainly applicable on a neighbourhood scale. And can be applied at any time scale although greatest savings will be made if incorporated at the design/ construction stage, particularly of the source of energy, to minimise disruption. The scale of impact will depend on the renewable energy source, for example individual wind turbines and solar panels will be an issue at the neighbourhood scale. Developments such as on and off shore wind farms will be an issue of regional and in some cases national concern.

<b>Stage of project related to key problem</b> Please mark arrow/s for time period when tool can be used						
	inception of project idea	Design	Design assessment	Construction	operation	demolition

Scale of project related to key problem	Component	Building	Neighbourhood	City	Region
		X	X	X	X

### CONFLICTING PROBLEMS

The additional cost of incorporating new/alternative energy supply technologies when compared to available current resources can be an economic problem. Also energy generated from widely available sources compared to energy from diminishing fixed location resources.

### CASE STUDIE(S) LINKED TO THIS ISSUE

Three PETUS case studies are associated to this sector issue

- Zuidas city district heating and cooling, the Netherlands;
- Graz Municipal Energy Strategy, Austria;
- Middlegrunden Offshore Windfarm in Denmark.

### WHAT WILL IMPROVE SUSTAINABILITY?

Dependency on diminishing resources particularly from other nations could be reduced by increasing the confidence of project managers and project funders to take the initiative to utilise alternative technologies for energy supply. Practical information that would provide confidence include:

- provision of financial incentives to encourage the uptake of energy efficiency/energy supply measures at all scales of development,
- provision of reliable and obtainable benchmark figures that can be realistically achieved,
- tools to assess positive and negative impacts of including energy efficient measures/ alternative energy supply systems,
- provision of clear and easy to understand information to the public and to urban infrastructure actors to ensure that all energy efficiency/energy supply technologies can be incorporated at all stages of development.

This information would be consolidated by the provision of case studies that provide knowledge and reliable information as to why it needs to occur and the financial savings that can be made.