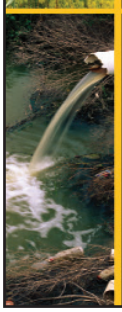
Eureka Umbrella
European Assistance R&D Projects

EuroEnviron 2010

EUREKA



EuroEnviron
Action Plan
2008-2010

Green Innovation for the Future

January 2008
Reference: EE/AP1

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EuroEnviron is managed by the Environmental Knowledge Transfer Network

www.environmental-ktn.com

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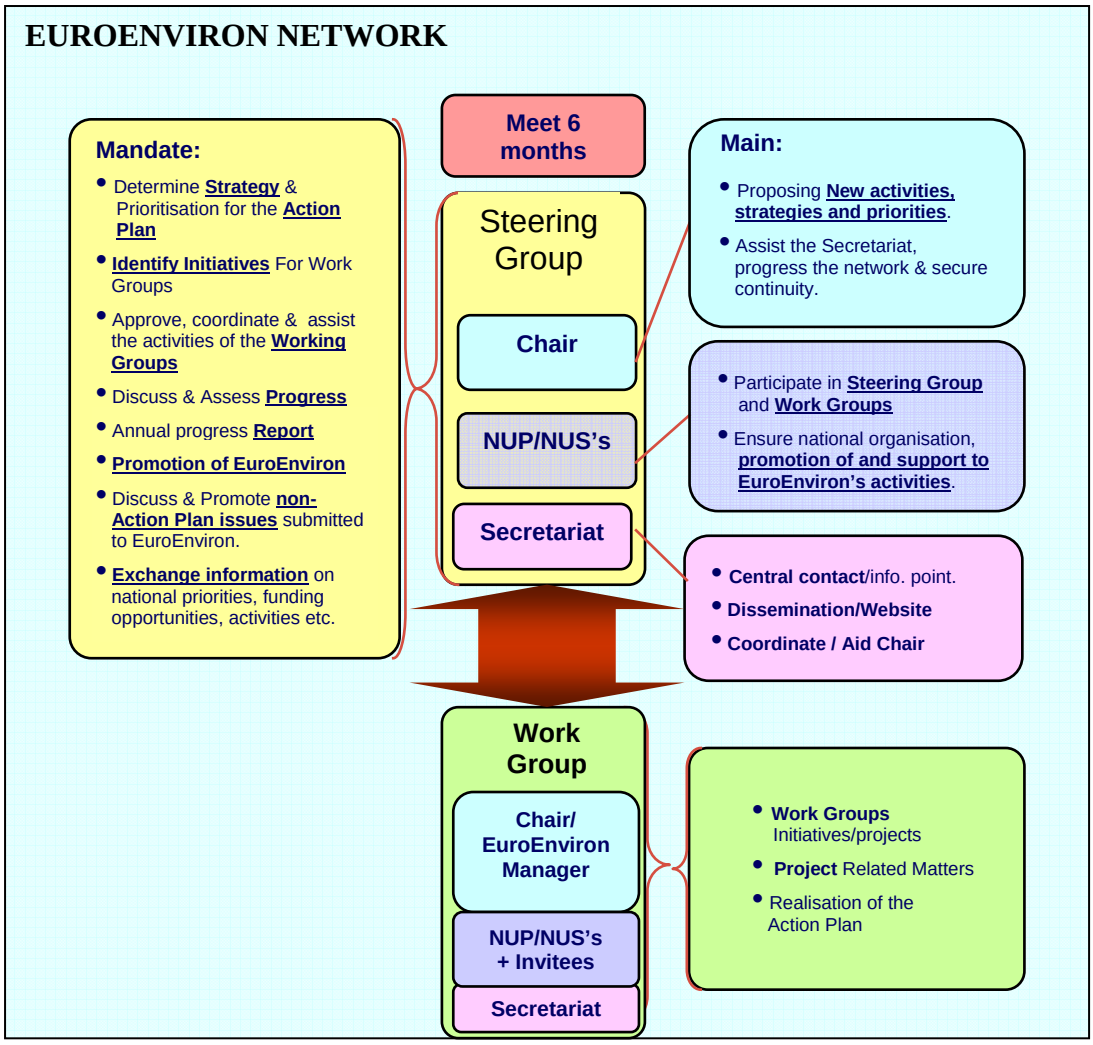
EXECUTIVE SUMMARY

The EuroEnviron Umbrella Network comprises of an executive Steering Group Committee with a Chairman supported by a Secretariat. The Steering Group consists of 25 representatives from public bodies and the industrial sector (National Umbrella Public (NUP) and Sector (NUS)). The main role of these members is to facilitate generation of innovative, market driven, pan-European, collaborative R&TD projects for the purpose of exploitation. Working Groups will be established through the project to support and promote EuroEnviron initiatives.

The EuroEnviron Secretariat was transferred from Denmark to the UK in 2006. A Steering Group and Strategy Group meeting was held in Oxford, UK to revise the EuroEnviron Strategy. This Action Plan describes the new strategy and mode of operation for 2008 - 2010.

The network and operation of EuroEnviron is shown below in figure 1.



A number of 'Thematic Work Groups' and 'Initiatives' were identified and prioritised. These will be undertaken by volunteering working groups to proactively facilitate the generation of EUREKA R&TD projects and improve the operation of EuroEnviron.

Thematic Work Groups

It was agreed to commence the first Priority Work Group, the Water and Wastewater Treatment Work Group and hold back on the second, Renewable Energies, until resources and a lead coordinator came forward.

1) Water and Wastewater Treatment Work Group

At the meeting in Cyprus the representatives from The Netherlands agreed to lead and take the Chair of the Water and Wastewater Treatment Work Group. At the meeting the UK also agreed to join the working group. There would be a strong involvement from SenterNovem, an agency of the Dutch Ministry of Economic Affairs who promote sustainable development and innovation, both within the Netherlands and abroad. Also, the UK indicated there would be a strong link with UKWIR (United Kingdom Water Industry and Research) Forum and British Water.

2) Renewable Energies

This second Priority Work Group will commence when a Steering Group Member has the necessary resources to lead for EuroEnviron.

EuroEnviron Initiatives

Three initiatives were agreed.

1) Marketing and USPs for EuroEnviron

This was directly supported by The Netherlands, UK, Finland and Croatia. The UK NPC has agreed to lead this initiative work group as this closely links into the Secretariat activities.

The areas identified to include are : -

a. Marketing
b. Services and Products
c. Branding
d. Communication Tools
e. Unique Selling Point

2) National Programme Contacts

The Secretariat will produce an Action Plan to contact all National Programme Contacts to keep a two way information flow going. This was supported by everybody as a role for the EuroEnviron Secretariat.

3) TGE - Environmental Network for Innovation Relay Centres (IRC's - EEN)

A working arrangement MOU (Memorandum of Understanding) will be made with TGE (Thematic Group Environment) so that the networks can work together at each others events. It was noted that this group was changing under the Enterprise European Network (EEN)

1.0 INTRODUCTION

Why do we need a EuroEnviron Umbrella?

The human race has exploited the earth's 'resources' and disposed of its 'wastes' in the environment without too much concern. Before the 1600's with world population reaching around 500 million man's effects on the environment were minimal, mankind relied on natural products and 'Mother Nature' coped with 'natural wastes' being disposed. Times have changed, in September 2007, the world's population was believed to have reached over 6.7 billion and at current rates this is predicted to increase 50% to 9 billion by 2050 (see Table 1). This 'modern society' demand for resources is increasing and consequently earth's resources are being stretched to the limit and mankind's wastes have increased through time. Overlaying Climate Change on this picture we are faced with major environmental challenges if humans are to survive on this planet.

World Population Growth

World Population	0.5 bn	1 bn	2 bn	3 bn	4 bn	5 bn	6 bn	9 bn*
Year	1600	1804	1927	1961	1974	1987	1999	2042

*Table 1 * Predicted value* *Information Wilkpedia*

In the last 30 years the world powers have recognised this immense problem and with a series of world summits, including Kyoto, have urged worldwide action by setting targets and incentives to make environmental changes to save our planet. These drivers, which encourage the implementation of environmental products and practices, apply to all societies and that includes individuals, businesses and organisations across the world. Continental Europe is recognised as a leader in this field, however there is still a long way to go and this offers a great opportunity for businesses in Europe to develop these environmental products and services. Many of the requirements and solutions needed are identical across Europe, this means that members of EUREKA and EuroEnviron who develop solutions can implement and benefit their environmental technologies throughout Europe and perhaps further a field.

The challenge is to develop solutions that: -

- Develop a Sustainable Society by effective/efficient management of resources and wastes
- Remove and alleviate emissions that cause Climate Change
- Adapt to Climate Change effects
- Remediate where Environmental damage has been done

This plan drawn up by the EuroEnviron Steering Group identifies activities that will be undertaken to facilitate Research and Technological Development Projects that are market driven, collaborative and innovative help make Europe and the world a better place to live.

'Membership of the EuroEnviron Umbrella shows your National Commitment to the Environment.'

2.0 EUREKA

a) What is EUREKA?

EUREKA is a pan-European Research and Technological Development (R&TD) Network, it was created as an intergovernmental initiative in 1985 under the Hannover Declaration, and it aims to enhance European competitiveness through support to businesses, research centres and universities who carry out pan-European projects to develop innovative products, processes and services. Through its flexible and decentralised networks, it offers project partners access to a wealth of knowledge, skills and expertise across Europe and facilitates access to national public and private funding schemes.

Once a project proposal meets a certain standard it is given the EUREKA seal. This is an internationally recognised label, which adds value to a project and gives participants a competitive edge in their dealings with financial, technical and commercial partners. To facilitate commercialisation of a EUREKA project, partners develop new technologies for which they agree the Intellectual Property Rights and build partnerships to penetrate new markets.

b) Strategic Initiatives - Clusters and Umbrellas

EUREKA has established two types of strategic initiatives, 'Clusters' and 'Umbrellas'.

EUREKA Clusters

EUREKA 'Clusters' are long-term, strategically significant industrial initiatives. There aim is to develop and commercially exploit crucially important generic technologies of key importance for European competitiveness. They usually have large number of participants. They bring together large companies – very often competitors – SMEs, research institutes and universities, sharing both the risk and benefits of innovation. Their goal is to ensure that Europe retains its leading position in the world market.

Table 2. EUREKA Clusters

TECHNOLOGY AREA	EUREKA CLUSTER
INFORMATION TECHNOLOGY	**EURIPIDES** (2006-2013) **ITEA** (1998-2009) **ITEA 2** (2006-2014) **MEDEA+** (2001-2008)
MEDICAL AND BIOTECHNOLOGY	**EUROFOREST (IMP)** (1999-2009)
COMMUNICATION	**CELTIC** (2003-2011)
ENERGY	**EUROGIA** (2004-2008)
ROBOTICS	

Initiated by industry in close collaboration with national funding authorities, each Cluster has a technological 'roadmap' defining the most important strategic domains. Specific goals are achieved

through scores of individual projects. A key asset of EUREKA is its flexibility: roadmaps and projects are continuously adapted in response to the rapidly changing technological environment and market demands.

Clusters aim to exploit the technologies developed through existing national and European programmes and play an important role in defining European standards and interoperability.

EUREKA Umbrellas

Umbrellas are thematic networks within the EUREKA framework, which focus on a specific technology area or business sector. The main goal of an umbrella is to facilitate the generation of EUREKA projects in its own target area. Umbrella activities are coordinated and implemented by a working group consisting of EUREKA representatives and industrial experts. The working group meets on a regular basis.

Table 3 EUREKA Umbrellas

BUSINESS SECTOR	EUREKA UMBRELLA
INFORMATION TECHNOLOGY	**ECONTEC** (2005-2008) **EUREKA TOURISM** (2006-2009)
MEDICAL AND BIOTECHNOLOGY	**EUROAGRI+** (2003-2009) **INNOFISK** (2005-2009)
ENVIRONMENT	**EUROENVIRON** (1989-2010)
LASER	**EULASNET II** (2006-2010)
NEW MATERIALS	**EUREKABUILD** (2006-2009)
ROBOTICS	**ENIWEP** (2005-2009) **PRO FACTORY** (2007- 2011)
TRANSPORT	**LOGCHAIN+** (2006-2011)

The Environmental EUREKA Umbrella, EuroEnviron Secretariat, is managed by Environmental - KTN, based at Oxford University, in the UK. EuroEnviron has 25 members across Europe who constitute the Executive Steering Group.

3.0 EUROENVIRON

a) EuroEnviron Umbrella

EuroEnviron is the environmental umbrella for the EUREKA funding mechanism, which promotes Europe-wide "market-driven" collaborative R&D, involving industry and research centres. Projects utilise advanced technologies and are designed to benefit the competitiveness of industry across Europe. Funding for projects is provided to organisations by their own national governments.

The principle of EuroEnviron is to act as a marriage broker and help companies and research organisations find partners to form alliances that will result in new EUREKA EuroEnviron Projects. It also offers improved access to national public financing.

EuroEnviron is currently chaired by Simon Jackman of the Environmental Knowledge Transfer Network on behalf of UK government, and this organisation also acts as the secretariat for this umbrella. The current thematic areas for EuroEnviron include the areas of Climate Change, Water, Waste, Renewable Energy, Soil Protection, Air Quality and Sustainability & Resource Management as well as Cross-cutting Technologies of Biotechnology, Nanotechnology and Information technology. Under its 2 year Chair IPM-Net will be reviewing the strategy, developing a new action plan and taking forward a number of initiatives in this area, working with partners to generate projects focussed on the needs of industry, via partner-searching, workshops and other activities.

b) EuroEnviron Members, Steering Group and Secretariat

There are currently 25 members of EuroEnviron (table 4). All are participating members with the exception of Iceland, who are an observer.

Table 4 EuroEnviron Members

EUROENVIRON MEMBERS			
Austria	Finland	Latvia	Spain
Belgium	Greece	Luxembourg	Sweden
Croatia	Hungary	Norway	Switzerland
Cyprus	Iceland (Observer)	Portugal	The Netherlands
Czech Republic	Israel	Russian Federation	Turkey
Denmark	Italy	Slovenia	United Kingdom
European Union			

Each participating country can appoint two representatives to take part in the international EuroEnviron project. There are national differences in the work division between the two representatives and in some countries all work tasks are placed within one representative/ organisation.

EUREKA member states each have a main contact (EUREKA National Project Coordinator (NPC) or a relevant national ministry). This EUREKA NPC is always a member of the EuroEnviron Executive Committee, although, he or she could delegate this responsibility. The representatives from each nation are a National Umbrella Public Representative (NUP) and a National Umbrella Sector Representative (NUS).

National Project Coordinators (NPCs)

The NPC's are at operational level, running the National EUREKA Offices. They are the direct contact with project participants – and potential project participants - in each member country. NPCs facilitate the setting-up and running of a project and are responsible for project generation, national and international support and follow-up. Given the NPC's role in the core activities of EUREKA, their meetings, four or five times annually, are a good forum for exchange of experiences and discussions on best practice.

The National Umbrella Public Representative (NUP)

The NUP is a representative of the public authorities or a representative designated by the public authorities. In some cases this role is held by the national EUREKA NPC.

The National Umbrella Sector Representative (NUS)

The NUS is generally a representative of the industrial sector concerned and/or a national expert.

At national level the representatives form a team, ensuring the national organisation and promotion of and support to the EuroEnviron activities. The work tasks of the national EuroEnviron Team are outlined below:

1. **Project Proposal Generation, Brokerage and Partner Searching**
    a) Promotes new project ideas and information on EuroEnviron to national interests
    b) Assists in finding international partners for the project proposals
    c) Help projects obtain the EUREKA label (through national EUREKA organisation)
2. **R&D Fund Seeking and Lobbying**
    a) Identifies National Funding
    b) Lobbies Government for National Environmental Funds
3. **National Contact, Promotion and Environmental Awareness**
    a) National EuroEnviron Contact Point
    b) Member of EuroEnviron Steering Group
    c) Promotes EuroEnviron nationally
    d) Is constantly in touch with national and international environmental developments
    e) Provides the network with information on market opportunities
4. **Member of Steering Group and Working Groups**
    a) Sits on Steering Group
    b) Active in Working Groups
    c) Implement decisions from the Executive Committee

EuroEnviron Steering Group - Executive Committee

The Steering Group is EuroEnviron's overall decision making body. The EuroEnviron Steering Group is ideally composed of two representatives from each Member State; this could be the NUS's and NUP's. The Steering Group Representatives meet 2-3 times a year. The meetings focus primarily on: -

- Development of the network
- Project progress
- Presentation of new initiatives
- Future strategies for project generation

The Mandate of the EuroEnviron Executive Committee:

- Outline and approve the EuroEnviron Action Plan (strategy and prioritisation)
- Discuss and approve all major changes within EuroEnviron
- Discuss and assess the progress of the network and if necessary suggest changes and update Action Plan
- Prepare annual progress report and possible specific requests to the EUREKA NPC level1
- Promotion of EuroEnviron – Common activities

Preparatory work may be delegated to dedicated task forces or working groups

The EuroEnviron Network Working Meetings

The EuroEnviron Network Working Meetings focus on project related matters and on the practical realisation of the Action Plan. As per Steering Groups there are usually two per year. The venue for the Network Working Meetings will rotate among the Members. Main activities

- approve, co-ordinate and assist the activities of Thematic Priority Working Groups.
- ensure that all members are involved in calls for proposals within the thematic priority areas
- ensure network wide support for specific activities organised by the Working Groups
- each Working Meeting will focus primarily on one specific Thematic Priority and one specific call, but will also always discuss the progress within all thematic priority areas
- discuss and promote EuroEnviron Projects not falling under the selected priority theme
- exchange information on national priorities, funding opportunities, activities

c) EuroEnviron Chair and Secretariat

The EuroEnviron Chairmanship

The EuroEnviron Chairmanship is rotated on a voluntary basis. A country hosting the EuroEnviron Chair will host the Chairmanship for a minimum of 12 months, but longer Chairmanship periods are possible. The country holding the EuroEnviron Chair is also the EUREKA Main Contact Country for EuroEnviron during the duration of the Chairmanship.

The EuroEnviron Chair will organise, chair and host the annual meeting of the EuroEnviron Executive Committee. The Chair plays a central and active role in proposing new activities, strategies and priorities

to the EuroEnviron Executive Committee. The past, present and incoming Chair(s) will form an informal Troika, assisted by the Secretariat, to support the progress of the network and to secure continuity.

The annual reporting is the formal responsibility of EuroEnviron's main contact NPC, but the contact NPC can ask a representative from EuroEnviron e.g. the Chair or the Secretariat to assist in connection with the presentation.

The EuroEnviron Secretariat

The EuroEnviron Secretariat currently resides with Oxford University UK and it is housed under the UK Knowledge Transfer Network IPM-Net. Its main tasks are to: -

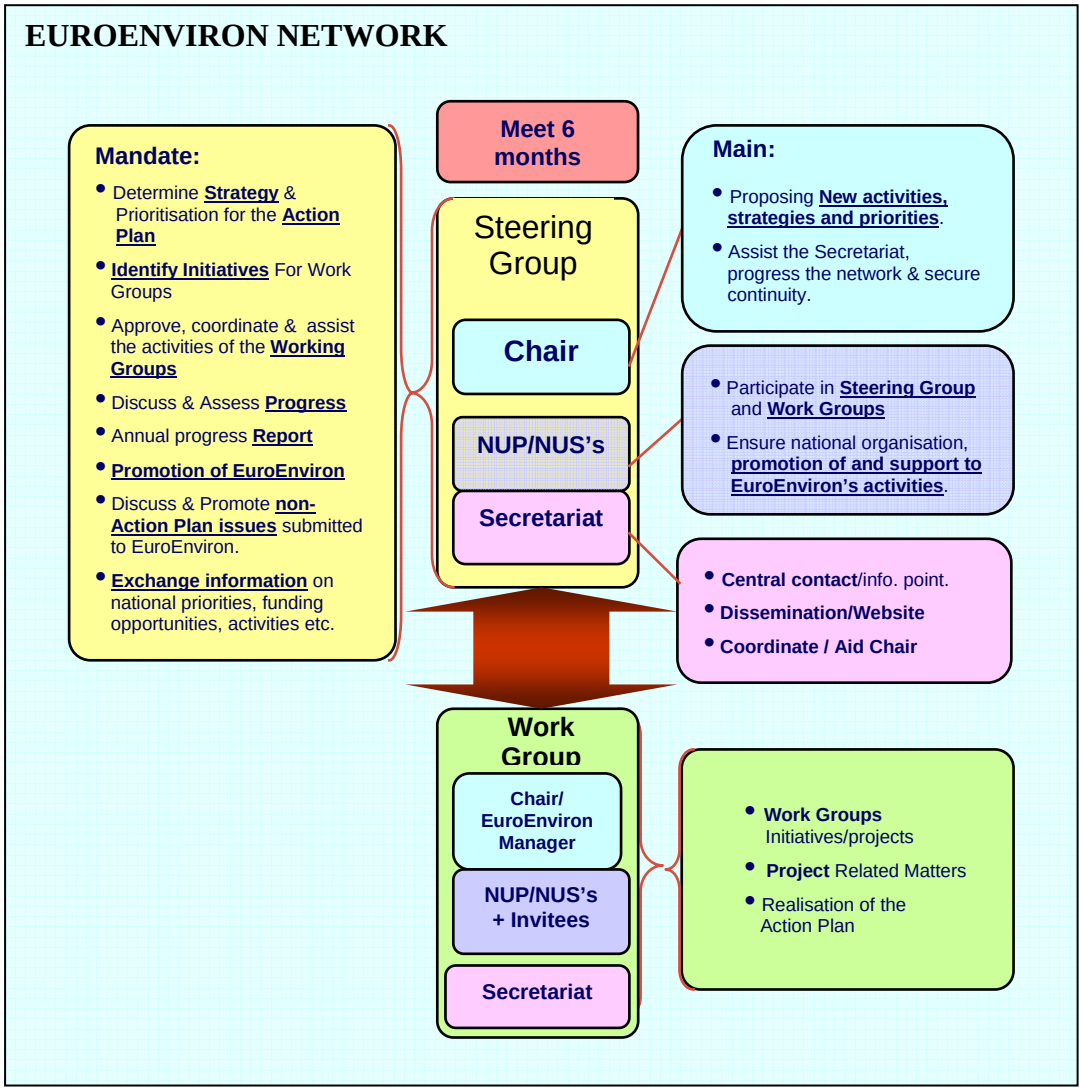
5. Supports the EuroEnviron Organisation
5. Steering Group Management
5. Responsible for the EuroEnviron project database
5. Promotes EuroEnviron
5. General EuroEnviron information point
5. Responsible for the EuroEnviron website

- Secures a close link to the EUREKA Secretariat
- Centralised call facilities

d) EuroEnviron Network Schematic

The figure below (Figure 1) summaries the activities of the EuroEnviron Umbrella. There is a Steering Group with a mandate and activities to be undertaken by the members. There is a Network Group which establishes Working Groups that undertake initiatives incorporated in the Action Plan determined by the Steering Group.

Figure 2 EuroEnviron Network



4.0 EUROENVIRON MISSION STATEMENT, STRATEGY & AIMS

a) EuroEnviron Mission Statement, Strategy & Aims

The overall mission of EuroEnviron is to generate, promote and facilitate the establishment of "market-driven", co-operative, environmental R&TD (Research and Technological Development) projects involving industry and research institutes across Europe.

This is achieved by: -

1) A EuroEnviron Steering Group made up of member representatives who determine the strategic priorities required to meet European Environmental needs and direct policies for members and working groups.

2) National representatives facilitating and promoting R&TD projects across Europe.

3) EuroEnviron Work Groups focused on specific Environmental initiatives.

More specifically the EuroEnviron Network aims to: -

- Carry out networking activities emphasising the new environmental focus as outlined in EU and national environmental policies and directives.
- Generate and promote 'bottom up', market driven, collaborative R&TD projects aiming to produce environmental products and services
- Encourage the co-operation on environmental R&TD between companies and research organisations in different regions of Europe.
- Promotion of an open dialogue between the different stakeholders from industry, research, governments and other interested parties within and across the different industrial sectors and countries of the EUREKA EuroEnviron network.
- Co-operation with relevant European and international organisations and research programmes (other EUREKA umbrellas, EU Framework Programmes, COST (European Cooperation in the field of Scientific and Technical Research), CEN (European Committee for Standardization), UNEP (United Nations Environment Program), etc.).

b) Determination of a Market Driven Strategy

The strength of EUREKA Networks is that their strategies and projects are driven by industrial, business and commercial needs. They are market driven and this complements traditional Government or 'Top Down' approaches often found in EU or National R&TD Programmes.

EuroEnviron needed to update its Strategy and so as a first step in the process it organised a Network meeting in Oxford in March 2007. A selected group of delegates from major industries, businesses, commerce, universities, institutions and the EuroEnviron Steering Group Members set about identifying environmental technological market needs needed to bolster the European Environmental Market.

Three groups were asked to identify and discuss environmental needs they believed were priority

areas for their countries and affiliations. This included a whole spectrum of requirements many based on issues such as Climate Change, waste management, water quality, water scarcity, air quality and energy. The results are shown in the tables Appendix 4.

Following this meeting, as a second step in the process requests were made from non-attending Steering Group Members for input. Finally, the Secretariat prioritised and grouped these themes and issues into a priority listing shown below.

Environmental Themes & Sub-Areas/Technologies: -

1. **Climate Change**
   a. Carbon Management
   b. Adaptation to Climate Change
2. **Water**
   a. Water Treatment
   b. Water Scarcity
   c. Wastewater Treatment
   d. Flooding and Sustainable Urban Drainage
3. **Waste**
   a. Municipal Waste Management
   b. Construction/ Industrial Waste
   c. Waste to Energy
4. **Renewable Energy**
   a. Biofuels
5. **Soil Protection**
   a. Remediation Technologies
   b. Erosion
6. **Air Quality**
   a. Industrial Emissions/Particulates
7. **Sustainability & Resource Management**
   a. Resource Efficiency and EcoDesign
   b. Sustainable Production and Consumption
8. **Cross-cutting Technologies**
   a. Information Technology
   b. Biotechnology
   c. Nanotechnology

5.0 ENVIRONMENTAL PRIORITY THEMES AND TECHNOLOGY AREAS

a) Priority Themes and Sub-Areas/Technologies

Innovative environmental technologies are required across the world to: -

- Develop a Sustainable Society by effective/efficient management of resources and wastes
- Remove and alleviate emissions that cause Pollution and Climate Change
- Adapt to Climate Change effects
- Remediate where damage has been done

As well as solving environmental problems and providing sustainable development they will provide new jobs and economic growth in a number of ways. They will increase the effectiveness of environmental protection and very often reduce overall costs. With the vast manufacturing activities and supporting services occurring in countries such as China and India there are great opportunities for export trade. Trade in advanced technologies can be good both for Europe and for other countries that need such technology to help them tackle their own environmental problems. By developing better and more cost effective technologies we open up a wider range of options to countries that are experiencing the same environmental constraints that we are facing.

It is clear that when we talk about environmental technologies we mean far more than 'end-of-pipe' devices to clean up pollution. Environmental technologies include 'integrated' technologies that prevent pollutants being generated during the production process, as well as new materials, energy and resource-efficient production processes, environmental know-how, and new ways of working. In short, we should take a broad view of environmental technologies as, from a policy perspective; our concern should be for the use and potential of environmental technologies throughout the economic system. In particular, the enlargement of the EU and the investments needed to comply with the environmental standards and regulations provide a great opportunity for the old EU Member States, the new Members and the Candidate Countries to increase their uptake of environmental technologies and contribute to sustainable development. The Environmental technologies industry is already growing rapidly. Rising demand for a better environment has led to an expanding supply of environmentally friendly technologies, products and services in both the industrialised and developing countries.

The production of environmental technology is spread across the economy and includes both low and high-tech applications. To find new and better solutions will help us to contribute to growth while at the same time improving the environment and protecting natural resources. The overall goal will be to increase Europe's share of the global market for environmental technologies.

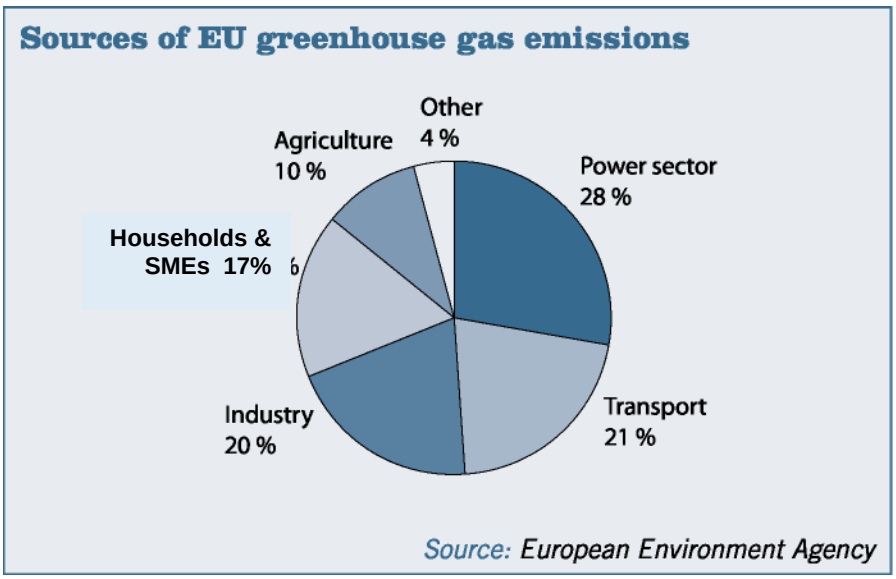
The Steering Group has identified seven specific Environmental Themes and a cross-cutting theme which includes three technology areas that are seen as crucial to environmental progress. These include more specific sub-areas that are a priority for technological development.

b) The Market Opportunities - Priority Thematic Areas

1. CLIMATE CHANGE

Scientific consensus is that climate change is happening and that its main cause is the emission of greenhouse gases (GHG) from human activity. The source of these Green House Gases is shown in figure 3. Since 1991 we have had the ten hottest years on record and because of this climate change has moved up the international and European political agenda.

Figure 3 Sources of Green House Gases August 2005



In the short term Europe has opted for the 'market pull' approach to bring clean technologies into the market. Also, in the absence of a viable alternative fuel (e.g. hydrogen), a spread of solutions, including energy efficiency, alternative fuels and nuclear power is required.

In the longer term a 'technology push' for innovative technologies is needed if substantial emission cuts are to be achieved and this requires large-scale R&TD programmes.

Objectives

- Technologies identified to mitigate the effects of global warming.
  - energy efficiency
  - renewable energies
  - alternative fuels for transport
  - cleaner cars
  - carbon management - capture and storage (CCS)
  - hydrogen and fuel cells
  - nuclear

- Adaptation technologies are required for the consequences of climate change that can avoid (floods, heat waves, drought, rising sea levels etc.),:
  - o infrastructure design (of cities, rural areas)
  - o early warning and monitoring systems (e.g. earth observation systems such as the EU's Global Monitoring for Environment and Security - GMES)

Legislative Drivers

There are a host of legislative drivers and instruments to facilitate Climate Change measures. A major step was made in May 1992 when the United Nations adopted the UN Framework Convention on Climate Change. Five years later governments adopted the **Kyoto Protocol** which puts in place legally binding targets to reduce greenhouse gas emissions It also created **'Three Flexible Mechanisms'** , the "Clean Development Mechanism", the "Joint Implementation" and the "Emissions Trading", all aimed at lowering the costs of reducing emissions. The EU, in the context of the Kyoto Protocol, committed to reducing its greenhouse gas emissions to 8% below "base year" 1990 levels before 2012. However, the EU-15 member states have struggled to meet their Kyoto targets and the new member states are below their Kyoto targets mainly due to the restructuring of their economies. On 27 October 2006, the **European Environment Agency** warned that, with existing measures, only two Sweden and UK would reach their reduction targets. With these existing policies only, the EU-15 is on track to reach only a 0.6% reduction by 2010. Additional policies and measures in the context of the Kyoto flexible mechanisms and actions related to carbon sinks, will be needed to reach the 8% reduction goal by 2012.

Other major steps in combating Climate Change have seen:

- June 2000: Launch of **European Climate Change Programme** (ECCP);

ECCP identified and implemented around 30 measures: e.g. the emission trading scheme, the "linking directive", and the directive on the promotion of electricity from renewables or the voluntary agreement with car producers to reduce CO2 emissions from cars.

- January 2005: Start of the EU's greenhouse gas Emission Trading Scheme(ETS);
- October 2005: Launch of second European Climate Change Programme (ECCP II);

ECCP II started in 2005. It will review what has been achieved with ECCP and focus furthermore on carbon capture and storage, inclusion of the transport sector into the ETS and adaptation policies.

- January 2007**:** Commission presents its "**Energy-Climate Change Package** " and a new Communication "**Limiting Global Climate Change to 2 degrees Celsius The way ahead for 2020 and beyond**". The Commission proposes to reduce GHG emissions unilaterally by 20% by 2020 (compared to 1990).

The EuroEnviron focus areas are: -

a) Carbon Management

b) Adaptation to Climate Change

2. WATER

Water is a fundamental economic and environmental resource and water management is a key quality of life issue for sustainable development. Mankind cannot survive without water. This should not be a problem because we have more water (70% water) than land. However, water shortage is a serious problem all around the world. We are continuously polluting at the same time as the amount of people on earth is growing. This cannot go on forever. We have to be more careful about the water resources we have. We should also remember that most of the water is undrinkable salt water.

Member states will have to reduce water pollution from industries, households, tourist areas, from agriculture, and particularly diffuse pollution if the demanding standards in the Water Framework Directive are to be met.

Current environmental technologies include far more than end-of-pipe devices to reduce pollution of the environment. For example integrated technologies that prevent pollutants being generated during production processes are being introduced. There is a need to find more energy-efficient measures including re-use of water, nutrients, chemicals and other substances. This includes all types of water, from rainwater and greywater to industrial wastewater with a high content of, for example, steroid oestrogens.

Another water problem is connected to the increasing incidence of flooding in Europe. This results in severe problems that must be minimised in the future.

Water pricing often does not take into account the resource costs and the external environmental costs, which results in either unnecessary waste or pollution of water. This must be changed in the future.

Objectives

- More **energy efficient** water treatment processes.
- New innovative **water treatment processes**
- More **cost-efficient sewage wastewater treatment solutions** for small villages, hotels and households.
- **Better re-use of water** and also for **recycling of by-products**
- Better **water resources management**
- Resource efficient **solutions for diffuse pollution.**
- Better **river management** plans.
- Innovative technologies for prediction, prevention and mitigation concerning the growing **flood problem.**
- Improved **Integrated** and **Sustainable Urban Drainage** Systems

Legislation Drivers

- **EU Urban Waste Water Treatment Directive 91/271/EEC**

Council Directive 91/271/EEC concerning urban waste water treatment was adopted on 21 May

1991 to protect the water environment from the adverse effects of discharges of urban waste water and from certain industrial discharges. On 27 February 1998 the Commission issued Directive 98/15/EC amending Directive 91/271/EEC to clarify the requirements of the Directive in relation to discharges from urban waste water treatment plants to sensitive areas which are subject to eutrophication.

- **EU Water Framework Directive. 2000/60 EC (WFD):**

The key objectives of the WFD are:

- to protect and enhance the status of aquatic ecosystems (and terrestrial ecosystems and wetlands directly dependent on aquatic ecosystems)
- to promote sustainable water use based on long-term protection of available water resources
- to provide for sufficient supply of good quality surface water and groundwater as need for sustainable, balanced and equitable water use
- to provide for enhanced protection and improvement of the aquatic environment by reducing / phasing out of discharges, emissions and losses of priority substances
- to contribute to mitigating the effects of floods and droughts
- to protect territorial and marine waters
- to establish a register of 'protected areas' e.g. areas designated for protection of habitats or species.

The directive rationalises and updates existing water legislation by setting common EU wide objectives for water. It is very broad in its scope and relates to water quality in rivers, lakes, canals, groundwater, transitional (estuarine) waters and coastal waters out a distance of at least one nautical mile.

- **Directive on the Assessment and Management of Flood Risks.**

The proposed Directives aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive requires Member States to carry out a preliminary assessment by 2011 to identify the river basins and coastal areas at risk of flooding. For each zone they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive will apply to inland waters and all coastal waters across the whole of the EU and will be carried out in coordination with the Water Framework Directive.

The EuroEnviron focus areas are: -

a) Water Treatment

b) Wastewater Treatment

c) Water Scarcity

d) Flooding and Sustainable Urban Drainage

3. WASTE

According to European Environment Agency statistics, each year the EU disposes of 1.3 billion tonnes of waste – some 40 million tonnes of it hazardous – representing about 3.5 tonnes of solid waste for every man, woman and child. With an additional 700 million tonnes of agricultural waste, the environmentally responsible management of treatment and disposal is a significant and growing challenge. Most disposal is via incineration or landfill, both of which have environmental impact. Landfilling consumes valuable land space and if not properly managed can cause air, water and soil pollution, with potential impact on human health, as well as to plants and animals.

The first consideration with waste is to be aware of the **Waste Hierarchy.**

The European Commission presented the Thematic Strategy and a proposal for a related Waste Directive in December 2005. The new strategy was presented in tandem with the new Thematic Strategy on the Sustainable Use of Natural Resources. The Council of Environment Ministers adopted the Council Conclusions concerning the Thematic Strategy in June 2006 during the Austrian presidency. These two strategies will be also linked by a new Integrated Product Policy

The first step was the revising the 1975 Waste Framework Directive to set recycling standards and to include an obligation for Member States to develop national waste prevention programmes. This revision will also merge, streamline and clarify legislation, contributing to better regulation. The waste and resources strategies are two of the seven 'thematic' strategies required under the 6th Environment Action Programme (2002-2012).

Waste Directive

In addition to types of materials defined as waste, the Directive defines a number of activities that are waste-related activities, dividing them into different "disposal" (e.g., dumping, landfill, or incineration activities) or "recovery" activities (e.g., recycling and reuse). The categories of waste material under the Directive are:

- Production or consumption residues not otherwise specified below
- Off-specification products
- Products whose date for appropriate use has expired
- Materials spilled, lost or having undergone other mishap, including any materials, equipment, etc., contaminated as a result of the mishap
- Materials contaminated or soiled as a result of planned actions (e.g. residues from cleaning operations, packing materials, containers, etc.)
- Unusable parts (e.g. reject batteries, exhausted catalysts, etc.)
- Substances, which no longer perform satisfactorily (e.g. contaminated acids, contaminated solvents, exhausted tempering salts, etc.)
- Residues of industrial processes (e.g. slags, still bottoms, etc.)
- Residues from pollution abatement processes (e.g. scrubber sludges, baghouse dusts, spent filters, etc.)
- Machining/finishing residues (e.g. lathe turnings, mill scales, etc.)
- Residues from raw materials extraction and processing (e.g. mining residues, oil field slops, etc.)
- Adulterated materials (e.g. oils contaminated with PCBs, etc.)
- Any materials, substances or products the use of which has been banned by law
- Products for which the holder has no further use (e.g. agricultural, household, office, commercial and shop discards, etc.)
- Contaminated materials, substances or products resulting from remedial action with respect to land
- Any materials, substances or products which are not contained in the above mentioned categories.

The aim of the Waste Directive is not prevent, but actually to foster, progressive treatment and recovery activities for waste. The Waste Directive replaces two older Directives on Waste, Council Directive 75/442/EEC and Council Directive 91/156/EEC.

Construction and Demolition Waste

Construction and demolition waste arises from the construction, repair, maintenance and demolition of buildings and structures. It mostly includes bricks, concrete, hardcore, subsoil and topsoil, but it can also contain quantities of timber, metal, plastics and occasionally special (hazardous) waste materials. Given the scale of the construction industry across Europe and the quantity of waste produced, it has great potential to lead the way in waste minimisation, re-use and recycling.

Waste to Energy

Waste to Energy appears to solve two current issues. Incineration and co-incineration plants are now covered under the Waste Incineration Directive, 2000/76/EC (WID). The WID incorporates and extends the requirements of the 1989 municipal waste incineration (MWI) Directives (89/429/EEC and 89/369/EEC) and the Hazardous Waste Incineration Directive (94/67/EC), forming a single

Directive on waste incineration. A plant will only be an incineration plant or a co-incineration plant if it burns waste as defined in the Waste Framework Directive.

Landfill

The EC Landfill Directive (99/31/EC) has set mandatory target to reduce the amount of biodegradable waste going to landfill by 25% by 2010, 50% by 2013, and 65% by 2020. This has been a very successful economic driver to divert 'wastes' away from landfill disposal.

Objectives

- **Recycling and reuse –** reduction of waste by recovery of as many of the materials as possible, preferably by recycling. Priority 'waste streams' include packaging waste, end-of-life vehicles, batteries, electrical and electronic waste. EU directives now require Member States to introduce legislation on waste collection, reuse, recycling and disposal.
- **Improving final disposal and monitoring –** where possible, waste that cannot be recycled or reused should be safely incinerated preferably with energy recovery or landfilled, although the potential environmental impact of both methods requires that they be monitored.
- **Landfill management –** to include the sorting and pre-treatment of waste, leachate treatment and reduction of gases (methane, etc.) which contribute to global warming.
- **Agricultural waste management –** including the use of contaminated agro-forestry wastes in an environmentally sound and economic way and similar approaches to the safe disposal of agricultural waste by other means than landfill (e.g. pre-treatment and incineration with energy recovery) as for other wastes.
- **Sludge management –** addressing both volume reduction by dewatering and pretreatment to remove pathogens and contaminants, in particular heavy metals and endocrine-disrupting compounds.
- Recycling and Re-use of **Construction waste**
- Extend **Energy from Waste** and **Resources from Waste** technologies.

Legislation Drivers

The following three pieces of legislation constitute the backbone of EU's waste management policy:

- The **Directive on Waste (75/442/EEC)** which requires Member States to take all necessary steps to prevent waste generation, to encourage reuse and to ensure safe disposal.
- The **Directive on Hazardous Waste (91/689/EEC)**, which sets more stringent requirements to the management of hazardous waste.
- The **Regulation on the supervision and control of transfrontier waste shipments (93/259/EEC)** which sets out stringent requirements to the control of waste shipments, taking into account the principles of self-sufficiency and proximity for waste for disposal.

There are also a number of more specific directives, some focusing on specific waste streams and others aimed at reducing the impact of treatment and disposal. These directives variously cover

measures for prevention, common rules for separate collection and treatment and technical standards for operating treatment facilities. They include:

- Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) and Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive (2002/95/EC) (see also Sustainable Production and Consumption).
- Directive on Packaging Waste (94/62/EC). This Directive aims to harmonise national measures in order to prevent or reduce the impact of packaging and packaging waste on the environment and to ensure the functioning of the Internal Market. It contains provisions on the prevention of packaging waste, on the re-use of packaging and on the recovery and recycling of packaging waste.
- Directive on batteries and accumulators (91/86/EEC) introduces measures for the upgrading and controlled disposal of spent batteries and accumulators.
- Directive on end-of life vehicles (2000/53/EC) which aims at making vehicle dismantling and recycling more environmentally friendly, sets clear quantified targets for reuse, recycling and recovery of vehicles and their components.
- Directive on the Incineration of Hazardous Waste (94/67/EEC) and the Directive on the incineration of waste (2000/76/EC) aims are to prevent or - where that is not practicable - to reduce as far as possible negative effects on the environment caused by the incineration and co-incineration of waste.
- EU Landfill Directive (1999/31/EC) - bans certain types of waste, such as used tyres, and sets targets for reducing quantities of biodegradable rubbish. This will lead to requirements for pre-treatment technologies and soil treatment centres.
- Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances.
- Council Directive 89/369/EEC on the prevention of air pollution from new municipal waste incineration plants.
- Amended proposal for a European Parliament and Council Directive on the incineration of waste (12/07/99).
- Council Directive 1999/31/EC on the Landfill of Waste.

The EuroEnviron focus areas are: -

a) Municipal Waste Management

b) Construction/ Industrial Waste

c) *Waste to Energy*

4. RENEWABLE ENERGY

Renewable energy includes the following: -

- Bioenergy
- Geothermal Energy
- Ocean Energy
- Small Hydropower
- Solar Electricity
- Solar Thermal
- Wind Energy

The development of renewable energy from wind, water, solar power and biomass is a central aim of the European Commission's energy policy. There are several reasons for this:

- Renewable energy has an important role to play in reducing Carbon Dioxide (CO_2) emissions - a major Community objective.
- Increasing the share of renewable energy in the energy balance enhances sustainability. It also helps to improve the security of energy supply by reducing the Community's growing dependence on imported energy sources.
- Renewable energy sources are expected to be economically competitive with conventional energy sources in the medium to long term.

The need for Community support for Renewable Energy is clear. Several of the technologies, especially wind energy, but also small-scale hydro power, energy from biomass, and solar thermal applications, are economically viable and competitive. The others, especially photovoltaic (silicon module panels directly generating electricity from the sun’s light rather than heat), depend only on how rapidly increasing demand and thus production volume to achieve the economy of scale necessary for competitiveness with central generation. In fact, looking at the various sector markets in early 2003, it is probably not over-optimistic to conclude that the lion’s share of remaining market resistance to Renewables penetration relates to factors other than economic viability. This should be seen against the rapidly improving fiscal and economic environment being created in the EU both by European legislation itself swinging into full implementation and the Member States’ own programmes and support measures, which despite the short-term macro-economic background, are accelerating rapidly at the time of publication.

The European Commission's White Paper for a Community Strategy sets out a strategy to double the share of renewable energies in gross domestic energy consumption in the European Union by 2010 (from the present 6% to 12%) including a timetable of actions to achieve this objective in the form of an Action Plan. The main features of the Action Plan include internal market measures in the regulatory and fiscal spheres; reinforcement of those Community policies which have a bearing on increased penetration by renewable energies; proposals for strengthening co-operation between Member States; and support measures to facilitate investment and enhance dissemination and information in the renewables field.

The **Intelligent Energy - Europe programme** is the EU's tool for funding action to improve these conditions and move towards a more energy intelligent Europe.

Biofuels

The continuing increase in the price of petrol has favoured the rise in importance of green oil. 3.9 million tons of biofuel were produced in the European Union in 2005, marking a 65.7% growth in production.

Biodiesel Sector

In 2005, biodiesel remained the leading biofuel in the EU, representing 81.5% of production. 3184000 tons of biodiesel were produced in the EU, i.e. 1250600 tons more than in 2004 (+64.7%). Germany alone represents 52.4% of this production, with 1669000 tons produced in 2005, i.e. 61.3% growth with respect to 2004. This spectacular growth in the German market is the result of a very favourable legislation granting a total tax exemption for biofuels, and this whether it's in pure or mixed form. However, this legislation was modified on 1st August 2006. Emphasising the strong rise in the price of petrol, the German government introduced a 0.10 € tax for biodiesel used in pure form, and a 0.15 € tax for biodiesel when mixed in refineries.

In 2006, the excise tax on petroleum products, from which biofuels benefit, was reduced and re-established at 25 €/hl (33 €/hl in 2005) for biodiesel, and 33 €/hl (38 €/hl in 2005) for bioethanol intended to be transformed into ETBE.

Two new member States, Poland (100000 tons) and the Czech Republic (133000 tons) have emerged among the big European Union producer countries.

Bioethanol Sector

Bioethanol is the second biofuel in the European Union (18.5% of biofuel production). We estimate its 2005 production level at 720927 tons, i.e. an increase of 70.5% with respect to 2004. While Spain continues to be the biggest producer country in the EU (240000 tons in 2005), it’s Germany that’s had the most significant growth (+500%, i.e. a total of 120000 tons). Sweden's growth (+130%, i.e. 130160 tons) can be explained by the transformation of wine alcohol purchased by the European Union. The overall increase in bioethanol production is explained by the arrival of new producer countries like Hungary (11840 tons), Lithuania (6296 tons) and the Czech Republic (1120 tons). No growth in this sector is expected for 2006 in France. In 2005, the national agricultural alcohol producers union (SNPAA) established bioethanol production at 99780 tons vs. 102000 tons in 2004.

Objectives

- Several of the technologies, especially **wind energy**, but also **small-scale hydro power**, **energy from biomass**, and **solar thermal applications**, are economically viable and competitive
- Focus on improving efficiency of **Photo Voltaic**
- Optimise and make sustainable the **biofuels production process** and

Legislative Drivers

- **Treaty of Accession Annex II Chapter 12(A) 8:** accession of 10 new Member States
- **Directive 2006/108/EC**: accession of Bulgaria and Romania
- **Directive 2001/77/EC** on the promotion of the electricity produced from renewable energy source in the internal electricity market (legislation in force).

The main means of supporting renewables at a European Union (EU) level is through the Directive on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market (2001/77/EC), also called the Renewables Directive, which requires each country to commit to specific targets for renewable energy.

The Directive follows on from the European Union White Paper, *'Energy for the Future: Renewable Sources of Energy 1997'*. The promotion of electricity from renewable sources of energy is a high priority in the EU for several reasons in addition to combating climate change. These include security and diversification of energy supply, environmental protection, and social and economic development.

Under the Renewables Directive, member states are required to adopt national targets for renewables that are consistent with reaching the Commission's target of 22 per cent of electricity from renewables by 2010. The indicative target that the proposal sets for the UK is 10 per cent of electricity by that date.

The directive also requires that Member States ensure that a guarantee of origin is issued on request in respect of electricity generated from eligible renewable energy sources, as defined by the directive. In Great Britain this part of the directive has been implemented through the Electricity Regulations 2003 (Statutory Instrument 2003 No. 2562). These guarantees of origin are called REGOs and a guide to the Statutory Instrument has been produced. Under the regulations Ofgem is responsible for issuing GB REGOs and has set out its administrative procedures which are available at Ofgem website.

The EuroEnviron focus area is: -

a) Renewable Energies

1) Biofuels

5. SOIL PROTECTION

Soil is a precious resource, providing minerals, organic matter, water and energy, acting as a water filter, a transformer of gases and a gene pool for a huge variety of organisms. However soils are coming under increasing threat from human activities, reducing their ability to perform their functions.

Some threats, such as erosion by water or wind, are well known historically – parts of Europe are affected by erosion and desertification, with the Mediterranean region the most affected. The slow build-up of contaminants through air emissions from industry, transport and some farm practices can result not only in soil pollution but also in the contamination of water and food. Other soil problems are linked to industrial sites, to declining organic matter in some agricultural soils, to the sealing of soil for infrastructural and housing purposes, the compaction of land and the effects of floods and landslides.

Following the political changes in the 1990s in Eastern Europe and the withdrawal of the military troops from the region, the abandoned military sites have left a number of environmental problems. One of the most serious of these is the saturation of soil by kerosene. These contaminated sites endanger the drinking water supply; in many cases the fuel spill is dangerously close to the ground water. Extensive research is needed to find suitable soil bioremediation technologies.

The available data indicates that about 16% of the European Union land area, over 50 million hectares, is affected by land degradation including contamination, erosion, desertification, salinisation and creeping urbanization. If the 12 Eastern and Southern European countries joining the EU are brought into the equation, the extent of soil degradation more than doubles, affecting 35% of the continent. It is also estimated that there are approximately 1,400,000 sites in the EU that are contaminated. These need either clean-up or risk reduction techniques in order that they can be either re-utilised, or simply to ameliorate the pollution.

Objectives

- **Risk assessment** of soils – in particular where there is a potential risk to human health – with different end-points for clean-up depending upon proposed use, e.g. industrial, agricultural.
- Requirement for **sustainable remediation technologies –** e.g. monitored natural attenuation using low-cost biological processes for remediation – with less environmental impact.
- **Pre-treatment technologies** such as bio-remediation or stabilisation – necessary for the reduction of contamination in soil prior to landfill.
- Problem of **diffuse pollution** over large areas, especially from agricultural use – e.g. pesticides or nitrates. This is difficult to avoid and difficult to remediate.
- Approaches to enhancing and maintaining **soil quality –** particularly reducing erosion and desertification and the impact of flooding.
- **Ecosystem health –** the impact of pollution on biodiversity and ecosystem health.

Legislation

- EU Soil Protection Strategy. The strategy on soil protection consists of legislation on Community

information and monitoring system for soil as well as a set of detailed recommendations for future measures and actions.

- EU Water Framework Directive (2000/60/EC) – places soil contamination within the context of the management of water resources.
- EU Landfill Directive (1999/31/EC) – tightens the classification of waste going into landfill and will lead to the requirement for the pre-treatment of contaminated soils prior to landfill.
- Proposed Environmental Liability Directive (COM (2002) 17) – aims to make provisions across the European Community for the prevention and restoration of environmental damage. A public law approach that applies to water pollution, damage to biodiversity and land contamination, it will seek to put into place the 'polluter pays' principle whereby operators of risky activities will pay for the prevention or restoration of environmental damage.

The EuroEnviron focus areas are: -

a) Remediation Technologies

b) Erosion

6. AIR QUALITY

A clean air supply is essential to our own health and that of the environment. However, since the industrial revolution, the quality of the air we breathe has deteriorated considerably – mainly as a result of human activities. Rising industrial and energy production, the burning of fossil fuels and the dramatic rise in traffic on our roads all contribute to air pollution in our towns and cities which, in turn, can lead to serious health problems. For example, air pollution is increasingly being cited as the main cause of lung conditions such as asthma – twice as many people suffer from asthma today compared to 20 years ago.

The issue of air quality is now a major concern for many European citizens. It is also one of the areas in which the European Union has been most active. Since the early 1970s, the EU has been working to improve air quality by controlling emissions of harmful substances into the atmosphere, improving fuel quality, and by integrating environmental protection requirements into the transport and energy sectors.
As a result of EU legislation, much progress has been made in tackling air pollutants such as sulphur dioxide, lead, nitrogen oxides, carbon monoxide and benzene. However, despite a reduction in some harmful emissions, air quality continues to cause problems. Summer smog – originating in potentially harmful ground-level ozone – exceeded safe limits somewhere in Europe on two out of three days during summer 2001. Fine particulates also present a health risk, which is of increasing concern. Clearly, more needs to be done at local, national, European and international level.

Objectives

EU actions to improve air quality are described in CAFÉ, Clean Air for Europe, a programme of technical analysis and policy development which will lead to the adoption of a thematic strategy on air pollution under the Sixth Environmental Action Programme in 2004, as follows:

- Developing limit or target values for **ambient air quality**
- Developing integrated strategies to combat the effects of **transboundary pollution** (in particular acidification, ozone and eutrophication) through the adoption of national emission ceilings
- Identifying **cost-effective reductions** in targeted areas through integrated programmes such as Auto-Oil I and Auto–Oil II.
- Introducing specific measures to **limit emissions** or raise product standards

Legislation Drivers

- **Directive 80/779/EEC** on air quality limit values and guide values for sulphur dioxide and suspended particulates, as last amended by **Directive 89/427/EEC**
- **Directive 82/884/EEC** on a limit value for lead in the air
- **Directive 85/203/EEC** on air quality standards for nitrogen dioxide, as last amended by Directive 85/580/EEC
- **Directive 96/61/EC** concerning integrated pollution prevention and control
- **COM/2000/177:** Proposal for a Council Decision on the conclusion on behalf of the European Community of the 1998 Protocol to the 1979 Convention on Long Range Transboundary Air Pollution on Heavy Metals

- **Framework Directive 96/62/EC** on ambient air quality assessment and management.

The EuroEnviron focus areas are: -
a) Industrial Emissions/Particulates

7. SUSTAINABILITY & RESOURCE MANAGEMENT

The life-cycle of a product is often long and complicated. It covers all the areas from the extraction of natural resources, through their design, manufacture, assembly, marketing, distribution, sale and use to their eventual disposal as waste. The development of intelligent product design / eco-design reduces the environmental impacts of products and services through their entire life cycle. By encouraging consumers to demand innovative goods, which use cleaner processes and less resources

European economic development is strongly connected to the use of natural resources. Mines (metals and coal), oil, forests, farm lands, tourist areas (near the sea and the mountains) are all examples of resources that must be managed in a better way if we are to reach a more sustainable situation. In the tourist season a lot of people will visit the same places. This puts the area under pressure to produce and distribute water and food to all the people while at the same time handling wastewater and wastes. This means that many sensitive coastal zones and mountain areas will be put under extreme pressure.

The EuroEnviron focus areas are: -

a) Resource Efficiency and EcoDesign

b) Sustainable Production and Consumption

8. CROSS CUTTING TECHNOLOGIES

The integration of cross-cutting technologies Information Technology, Biotechnology and Nanotechnology will be paramount to promoting the required sustainable solutions. The challenge lies not only in developing new technologies, but also in assisting and motivating companies to implement them in new production processes. These technologies are essential in the technological evolution that seeks to improve the sustainability of industrial systems, products and services.

i) Biotechnology

The molecular biology revolution occurred some 20 years ago, and has now had time to impact upon the application of biotechnology to environmental sciences.

For soil and water, we are able to understand more accurately the processes involving complex chemical mixtures and consortia/whole populations of micro-organisms, so we are closer to the optimisation of clean-up processes. This impacts upon wastewater treatment, landfill leachate treatment and soil bioremediation. Biological pre-treatment of landfill material will be important to meet EU Landfill Directive needs.

Biotechnology-based products are showing the most rapid growth in the pharmaceutical industry. However, biotechnology is also expected to be the key innovation driver in non-pharma industries over the next decade, as chemical and agricultural companies look to improve products and processes, trim costs and make manufacturing more environmentally friendly (Chemical Market Report, 3 March 2003).

The incorporation of biotechnology into production processes (white biotechnology) has the potential to improve overall environmental impact through reduction in energy consumption, increased specificity of biological reactions and reduced waste materials. There is also the potential for new products synthesised through biotechnology and for the use of a wide range of feedstocks for the production of bulk chemicals.

Objectives:

- Biotechnology to create **new products**
- Improved **use of resources (e.g.** new use of byproducts from production processes that would otherwise be residues)
- **Energy from biomass –** development of biofuels, the potential for the generation of biological fuel cells and use of plants to generate energy from biomass.
- **White biotechnology –** the application of biological processes to industrial production.
- **Waste minimisation –** composting/biodegradation of waste prior to landfill.
- **Wastewater treatment –** use of biotechnology tools to optimise treatment of complex waste streams from both industrial and municipal sources.

- **Recalcitrant xenobiotics –** use of molecular techniques to isolate, identify and optimise the performances of micro-organisms in degrading recalcitrant compounds such as PCBs, chlorinated solvents, tars and high molecular weight PAHs.
- **Soil bioremediation –** understanding soil processes and the organisms involved in bioremediation, optimising performance through use of nutrients, surfactants, co-metabolites. Also, gaining an understanding of the strategies used by micro-organisms to enhance degradation (e.g. biosurfactant production), and stimulating these.

ii) Information Technology

In a modern society which strives to satisfy a lot of service requirements it is a challenge to use all the available data and to translate it into information to arrive at sustainable solutions. However, there is frequently confusion between the "data" society and the "information" society. For example, large volumes of data that have their origin in complex supply chain systems are hardly informative unless we structure and evaluate the data in a proper way. Typically it can be difficult to evaluate whether a product is environmentally friendly just by looking at its chemical composition. One has to consider all stages of production from source to disposal to get the correct picture. Modern information technology can also be used to achieve direct environmental savings, such as replacing physical meetings by using phone and video equipment instead. Transport and consumption are two main sectors, which are strongly related to economic growth (welfare) and environmental impact.

Modern information technology can provide solutions in complex relations between needs, social behaviour and manufacturing. One of the main sectors for employment in Europe is the industrial sector covering manufacturing, the chemical industry and others. To stay competitive in the market the industry has continuously to improve economic, environmental and quality performance. Thus, there is a challenge for future information technology to develop process-control systems that can handle this integrated approach for process optimisation. Having this information will help stakeholders to choose sustainable solutions and at the same time maintain or improve the market strength.

Objectives

- To develop a methodology to compute huge amounts of data covering economic, environmental and quality performance for both supply chains and process control and optimisation for industrial processes
- **Modelling**
- **Integrated Management Systems** (GIS etc.) (Management of waste disposal etc.)
- **Decision Support Systems**
- To initiate **demonstration projects** to disseminate results and identify the bottlenecks and new areas for development of information technology e.g. logistics, communication, process control, decision making etc. to provide more sustainable solutions.
- **E-learning** for environmental purposes

The EuroEnviron focus areas are: -

a) Information Technology

b) Biotechnology

c) Nanotechnology

6.0 WORK GROUPS

a) Thematic Priority Work Groups

The Steering Group (including NUP and NUS) will start working in the Work Groups identified as a priority by the different members, according to the resources available within the umbrella. The Steering Group will strengthen the participation of NUS in the Work Groups playing an active role.

Priority Work Groups will be identified by the Steering Group Members. For each Priority Working Group, one EuroEnviron Member State will be appointed main coordinator. All EuroEnviron Member States should be active members in a minimum of one thematic priority working group. The main coordinator will chair a working group dedicated to the thematic priority area. The main coordinator will always be either a NUP or NUS, but the working group may be supplemented by experts and stakeholders within the area. The activity level will vary over the period as the focus on the different priorities is launched. The Priority Working Group will meet on ad hoc basis when needed. IT and telephone conferences will be used in between meeting to secure the progress of the agreed activities and initiatives.

In connection with each Priority Work Group the first step is to set up a working group and a main coordinator. Recognising that the primary objective of the umbrella is to produce EuroEnviron projects. The working group will prepare and propose a detailed work plan with the concrete objectives for the specific priority area. The detailed elements in the work plan will vary from working group to working group, but in all priority areas there will be one or more Calls for Expressions of Interest and Calls for Proposals.

- Prepare detailed objectives, activities and work plans for the Priority Work Group
- Prepare and launch dedicated calls for expression of interests and calls for proposals (in co-operation with all members of the EuroEnviron network, and where possible with other initiatives at European level such as ERA-Net, ETPs, etc) only if funds are available in the EuroEnviron members country.
- Address and involve stakeholders – cf. stakeholder overview in connection with each Work Group
- Identify and address possible industry “Kings”
- Prepare and co-ordinate other targeted activities – e.g. workshops, seminars etc.

The main coordinator will present the Working Group’s detailed work programme and objective to the Network Working Meetings for approval and to obtain assistance from the entire network.

In connection with the launch of each Work Group, where appropriate the aim will be to have a minimum one Call for Expressions of Interest and one Call for Proposals. The Priority Working Group will prepare the background material to introduce the Calls. Each EuroEnviron Member will disseminate the Calls nationally. All members of the thematic working group will automatically receive

copies of the Expressions of Interest and the Proposals. The Working Group's Main Coordinator or the EuroEnviron Secretariat will ensure that non-Working Group members receive copies of Expression of Interests/Proposals from their countries.

b) Tasks and Commitment

EuroEnviron's success or failure, in an environment where it is becoming increasingly difficult in many countries to obtain funding for EUREKA projects, is largely dependant on the active participation and commitment of its members. While maintaining a flexible and pragmatic approach that allows for various national activity levels to reflect the available resources in the Member States, the effectiveness of the network is dependant on a certain minimum level of active commitment and shared responsibility from its members.

Membership of EuroEnviron with regard to Work Groups requires commitment to take part in, and contribute actively to, the following activities:

- Membership in a minimum of one Thematic Priority Working Group
- Commitment to nationally distribute Calls for Expressions of Interest and Calls for Proposals for all Thematic Priorities if funds are available
- Regularly participate in network and working group meetings and telephone conferences
- All Member States cover their own expenses in connection with the participation in EuroEnviron (manpower, incl. national experts, promotion, travel experts, etc.)

c) Priority Work Group Plans

The Priority Work Groups will not be launched at the same time, but with a certain time span between each new launch. To avoid overlap and increase the effectiveness of the work, each Priority Working Group will consider the relevance of collaboration with other EUREKA and EU initiatives.

d) Priority Work Groups

At the Steering Group Meeting in Cyprus (Oct 2007), the members agreed the following themes should be addressed in the following order: -

1. Water Treatment (F/CR/H/M/Cy/N/S/UK)
2. Renewable Energy (H/M/N/S)
    a. Energy from Waste (Cy/UK)
    b. Offshore
3. Monitoring Tools (H/Cy/UK)
4. Resource Efficiency (F/M/N)
5. Biorefineries/Biofuels (F/CR)
6. Waste Treatment (Cr/S)

Key:
Interested Countries
Croatia (Cr)
Cyprus (Cy)
Finland (F)
Hungary (H)
Malta (M)
Netherlands (N)

It was agreed to commence the first Priority Work Group, Water and Wastewater Treatment Work Group and hold back on the second, Renewable Energies, until resources and a lead coordinator came forward.

1) Water and Wastewater Treatment Work Group

At the meeting in Cyprus the representatives from The Netherlands agreed to lead and take the Chair of the Water and Wastewater Treatment Work Group. At the meeting the UK also agreed to join the working group. There would be a strong involvement from SenterNovem, an agency of the Dutch Ministry of Economic Affairs who promote sustainable development and innovation, both within the Netherlands and abroad. Also, the UK indicated there would be a strong link with UKWIR (United Kingdom Water Industry and Research) Forum and British Water.

2) Renewable Energies

This second Priority Work Group will commence when a Steering Group Member has the necessary resources to lead for EuroEnviron.

7.0 INITIATIVES, LIAISON & COLLABORATION WITH OTHER GROUPS

a) Links for Initiatives

There is scope to work with other European Networks or Initiatives. The Steering Group and Working Groups will identify these links and set up working groups to establish common objectives, synergies and working relations.

For example: -

1. EUREKA UMBRELLAS
2. EUROSTARS
3. TGE - Environmental Network for Innovation Relay Centres (IRC's)
4. European Technology Platforms (ETP's)
5. European Technology Action Plans (ETAP's)
6. European Research Area (ERA - Nets)
7. EU / EUREKA Joint Technical Groups on Environment
8. Other

b) Collaborative Initiatives

1. EUREKA UMBRELLAS

Umbrellas are thematic networks within the EUREKA framework, which focus on a specific technology area or business sector. The main goal of an umbrella is to facilitate the generation of EUREKA projects in its own target area. Umbrella activities are coordinated and implemented by a working group consisting of EUREKA representatives and industrial experts. The working group meets on a regular basis.

Table 3 EUREKA Umbrellas

BUSINESS SECTOR	EUREKA UMBRELLA
INFORMATION TECHNOLOGY	**ECONTEC** (2005-2008) **EUREKA TOURISM** (2006-2009)
MEDICAL AND BIOTECHNOLOGY	**EUROAGRI+** (2003-2009) **INNOFISK** (2005-2009)
ENVIRONMENT	**EUROENVIRON** (1989-2010)
LASER	**EULASNET II** (2006-2010)
NEW MATERIALS	**EUREKABUILD** (2006-2009)
ROBOTICS	**ENIWEP** (2005-2009) **PRO FACTORY** (2007- 2011)
TRANSPORT	**LOGCHAIN+** (2006-2011)

2. EUROSTARS

A Eurostars project is a European research and development project. It can address any technological area, but must have a civilian purpose and be aimed at the development of a new product, process or service. A Eurostars project is collaborative, meaning it must involve at least

two participants (legal entities) from two different Eurostars participating countries. In addition, the main participant must be a research-performing SME from one of the following 27 countries.

Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, Turkey.

The role of the SME participants in the project should be significant. At least 50% of the project's core activity should be carried out by SMEs. This percentage can, however, include minor contracting. The consortium should be well balanced, which means that no participant or country will be required to invest more than 75% of the total project costs.

A Eurostars project should be market-driven: it must have a maximum duration of three years, and within two years of project completion, the product of the research should be ready for launch onto the market. The exception to this rule applies to biomedical or medical projects, where clinical trials must be started within two years of project completion.

3. TGE - Environmental Network for Innovation Relay Centres (IRC's)

TGE (Thematic Group Environment) is the internal Innovation Relay Centres (IRCs) pan -European network.

TGE develops Regional Development Profiles (RDPs) across the EU. These are environmental technological needs profiles derived at a regional level. The RDPs identify what innovative solutions are required, it does this by analysing what current or forthcoming EU and national legislation simulates demand for. The main objectives are to realise an explicitly demand-oriented approach for searching technology needs, to create an efficient matching between supply and demand relationship which establishes a long-term, stable and economically significant transnational agreements.

An RDP answers the following questions:

- What environmental technology demand will evolve in the region in the next 3-5 years, triggered by legal requirements, new administrative regulations or national environmental policy?
- What supply deficits are there in the region, i.e. for what concrete projects and measures are there no suppliers in the region?
- What players in the region are prepared, as a result of this situation, to enter into technology co-operation agreements with foreign suppliers, under what conditions and what preferences?

In practice, the technology demands are generated mostly by SMEs, which must comply with the environmental legislation. Thus any analysis of technology demand as in TGE must automatically take into consideration the situation of SMEs in the regions.

4. European Environment Technology Action Plan (ETAP)

On 28 January 2004 the Commission adopted the new European Environment Technology Action Plan (ETAP). In 2003 EUROENVIRON was invited to take part in the work to prepare the ETAP through participation in the ETAP Sustainable Production and Consumption Expert Advisory Group. EUROENVIRON is representing EUREKA in the EU / EUREKA Joint Technical Group on Environment. EUROENVIRON will continue to assess if other types of collaboration or co-ordination with the EU are of obvious relevance to the network.

In 2003 EuroEnviron was invited to take part in the work to prepare the Environmental Technology Action Plan through participation in the ETAP Sustainable Production and Consumption Expert Advisory Group.

The EU is currently putting significant emphasis on implementing the ETAP, and within a number of future activity areas EuroEnviron can supply a flexible tool to promote the objectives of the ETAP.
In connection with the thematic priorities, it will be considered if the EU and EuroEnviron may have an interest in launching joint initiatives or activities such as seminars, workshops or brokerage events.
Planned ETAP actions can be found on
http://europa.eu.int/comm/environment/etap/implementing.htm
Some of the main ETAP actions of interest to EuroEnviron are:

- Strengthening research on environmental technologies, supporting demonstration and replication of promising techniques, co-ordinating EC programmes in this field;
- Establishing technology platforms for some complex technologies, so as to coordinate research and improve partnerships and funding; the platforms currently decided are:
  - Hydrogen and Fuel Cells
  - Photovoltaic's
  - Steel
- Water supply and sanitation technologies
- Trying and defining targets for the performance of key products and services;
- Improving the financing of environmental technologies by having the risk of the investment shared by financial institutions;

5. European Technology Platforms (ETPs)

European Technology Platforms (ETPs) provide a framework for stakeholders, led by industry, to define research and development priorities, timeframes and action plans on a number of strategically important issues where achieving Europe's future growth, competitiveness and sustainability objectives is dependent upon major research and technological advances in the medium to long term.

They play a key role in ensuring an adequate focus of research funding on areas with a high degree of industrial relevance, by covering the whole economic value chain and by mobilising public authorities at national and regional levels. In fostering effective public-private partnerships, technology platforms have the potential to contribute significantly to the renewed **Lisbon strategy** and to the development of a **European Research Area** of knowledge for growth. As such, they are proving to be powerful actors in the development of European research policy, in particular in orienting the **Seventh Research Framework Programme** to better meet the needs of industry. They address technological challenges that can potentially contribute to a number of key policy objectives which are essential for Europe's future competitiveness, including the timely development and deployment of new technologies, technology development with a view to sustainable development, new technology-based public goods and services, technological breakthroughs necessary to remain at the leading edge in high technology sectors and the restructuring of traditional industrial sectors

6. ERA-Nets

EuroEnviron will seek to create links to relevant ERA-nets. As a first step, EuroEnviron Members will nationally identify the individuals within the Environmental Agencies who are involved in an ERA-net action, and the network will subsequently assess to what extent there will be a worthwhile basis for collaboration or dialogue. Further assessment of the relevance of establishing collaboration will be made as more details on the ERA-nets – their scope, goals and objectives become available.

7. EU / EUREKA Joint Technical Groups on Environment

During 2003 EuroEnviron joined the joint EU / EUREKA / FACTORY meetings to explore Synergies between the EC Research Framework Programme and EUREKA. These contacts resulted in the invitation to take part in the preparation of the ETAP. The contacts made through the participation in these meetings confirmed that there is a clear potential synergy between the EuroEnviron Action Plan priorities and Priority 3 of FP7.

c) Priority Initiatives

At the Steering Group Meeting in Cyprus (Oct 2007) the following initiatives were prioritised with support as follows: -

- USPs of EUROENVIRON (N/UK/F/Cr)
  - Marketing
- - Services and Products
- National Programme Contacts (All) – Secretariat
- TGE/IRCs (M/UK)
- ETAP (M/UK)
- ETPs (UK/N)
- EUREKABUILD (Cr)
- EUROAGRI (S)
- INNOFISK (S)
- EUROSTARS (N)

Key:
Interested Countries
Croatia (Cr)
Cyprus (Cy)
Finland (F)
Hungary (H)
Malta (M)
Netherlands (N)
Spain (S)
United Kingdom (UK)

- ERA-NETS
    - Inc SME specific (N)
- PRO FACTORY – Energy (UK)

d) Initiatives Agreed

At the EuroEnviron Steering Group Meeting in Cyprus in October 2007, three initiatives were identified.

1) Marketing and USPs for EuroEnviron

This was directly supported by The Netherlands, UK, Finland and Croatia. The UK NPC has agreed to lead this initiative work group as this closely links into the Secretariat activities.
The areas identified to include are : -

- Marketing
- Services and Products
- Branding
- Communication Tools
- Unique Selling Point

2) National Programme Contacts

The Secretariat will produce an Action Plan to contact all National Programme Contacts to keep a two way information flow going. This was supported by all members as a role for the EuroEnviron Secretariat.

3) TGE - Environmental Network for Innovation Relay Centres (IRC's - EEN)

A working arrangement MOU (Memorandum of Understanding) will be made with TGE (Thematic Group Environment) so that the networks can work together at each others events. It was noted that this group was changing under the Enterprise European Network (EEN)

This was directly supported by Malta and the UK. The EuroEnviron Secretariat has been successfully working with TGE (The Environmental - IRCs Group). The Secretariat would develop working relationship with an MOU (Memorandum of Understanding).

8.0 WORK PROGRAMME

a) Working Groups

The Steering Group agreed to commence the following Thematic Working Groups and Initiatives: -

1) Thematic areas

a) Water and Wastewater Treatment

This will be led by the Netherlands

b) Renewables Energies

Lead group to be determined.

2) Initiatives

a) Marketing/Unique Selling Price

This will be led by the UK

b) EuroEnviron Programme 2007 - 2010

EUROENVIRON 2007												
TASK				A	M	J	J	A	S	O	N	D
SG Meetings			Y							Y		
Strategy				SG and WG Determine Strategy								
Action Plan				SG and WG Complete Action Plan								
Website				Updated website								
Thematic WG's								Water & Wastewater Treatment				
Initiatives										Marketing		

EUROENVIRON 2008												
TASK	J	F	M	A	M	J	J	A	S	O	N	D
SG Meetings			Meet							Meet		
Strategy			Rev.									
Action Plan	Marketing		Rev.									
Website	Maintenance											
Thematic WGs	Water & Wastewater Treatment							Renewables To be agreed				
Initiatives		Marketing										

EUROENVIRON 2009												
TASK	J	F	M	A	M	J	J	A	S	O	N	D
SG Meetings				x						x		
Website	Maintenance											
Thematic WGs	To be agreed											
Initiatives	To be agreed											

EUROENVIRON 2010						
TASK	J	F	M	A	M	J
SG Meetings				x		
Website	Maintenance					
Thematic WGs	To be agreed					
Initiatives	To be agreed					

APPENDICES

APPENDIX 1

EuroEnviron Contact Points as of 1st Jan. 2008

An overview of all national EuroEnviron Members/Contact Points is attached in Annex A.

All members will regularly be asked to ensure that the contact details are correct and up to date.

	Country	Contact	
1	**United Kingdom**	**Mr Graham Mobbs,** National Project Coordinator	tel: +44 (0) 1793 442763 graham.mobbs@tsb.gov.uk
2	**Austria**	**Mr. Philippe Loward**, National Project Coordinator FFG/EIP - Austrian EUREKA Office Haus der Forschung, Sensengasse 1 1090 Vienna,	tel: +43 577 55 4901 fax: : +43 577 55 94901 philippe.loward@ffg.at
3	**Belgium**	**Mr. Robert Verbruggen** National Project Coordinator Office of Federal Science Policy, (POD Wetenschapsbeleid, SSP Politique Scientifique)	tel. +32 2 238 3418 fax. +32 2 230 5912 verr@belspo.be
4	**Croatia**	**Ms. Gordana Prutki Pecnik** National Project Coordinator Ministry of Science, Education and Sport Strossmayerov TRG 4 10000 Zagreb	tel. +385 1 4594 364 fax. +385 1 4594 369 gpecnik@mzos.hr
5	**Cyprus**	**Dr. Kalypso Sepou** National Project Coordinator Research Promotion Foundation P.O. BOX 23422 1683 Nicosia	tel. +357-22 205005 fax. +357-22 205001 kalypso@research.org.cy
6	**Czech Republic**	**Mr. Josef Martinec** National Project Coordinator Czech EUREKA Office, Ministry of Education, Youth and Sports Karmelitska 7 118 12 Prague 1	tel. +420 257 193 512 fax. +420 257 193 683 josef.martinec@msmt.cz
7	**Denmark**	**Mr Jens Vittrup** National Project Coordinator Danish Agency for Science, Technology and Innovation Bredgade 40 1260 Copenhagen K	tel. +45 722 655 18 fax. +45 722 655 79 jpv@fi.dk
8	**European Union**	**Ms Stientje Van Veldhoven** Project Officer European Commission Square de Meeus 8 1049 Brussels	tel. +32 2 299 9714 fax. +32 2 299 39 60 stientje.van-veldhoven@ec.europa.eu
9	**Finland**	**Ms Kirsi Vaehae-Pietilae** National Project Coordinator Tekes, Finnish Funding Agency for Technology and Innovation Kyllikinportti 2, Lansi-Pasila 69 001 01 Helsinki	tel. +358 10 605 5730 fax. +358 10 605 5909 kirsi.vaha-pietila@tekes.fi
10	**Greece**	**Mr. Ioannis Zavvos** National Project Coordinator EUREKA Office, c/o General Secretariat for Research and Technology/Ministry of Development 14631 14-18 Messogion Ave 115 10 Athens	tel. +30 210 771 3474 fax. +30 210 771 3810 jzav@gsrt.gr

11	**Hungary**	**Ms. Szonja Csuzdi** National Project Coordinator National Office for Research and Technology (NKTH) Neumann Janos str. 1/c 1117 Budapest	tel. +36 1 484 25 60 fax. +36 1 318 71 98 szonja.csuzdi@nkth.gov.hu
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13	**Israel**	**Mr Israel Shamay** National Project Coordinator Israeli Industry Center for R& D 50364 Industry House, 29 Hamered Street 61500 Tel Aviv	tel. +972 3 511 81 00 fax. +972 3 517 76 55 i_shamay@matimop.org.il
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18	**Portugal**	**Jorge Liz** Acting NPC ADI - Agencia de Inovacao S.A. Campus do Lumiar, Edificio O, 1 Andar, Estrada do Paco do Lumiar 1649 - 038 Lisboan	tel. +351-21-423 2100 fax. +351-21-423-2101 pegadoliz@adi.pt
19	**Russian Federation**	**Mr. Alexander Tkachev** National Project Coordinator Federal Agency of Science and Innovations of the Russian Federation 11 Tverskaya str. 125009 Moscow	tel. +7 495 629 6929 fax. +7 495 230 26 60 alexander.tkachev@gmail.com
20	**Slovenia**	**Petra Zagar** Acting NPC **Mr Erik Potocar** National Project Coordinator	tel.+386 1 478 4756 petra.zagar@gov.si tel.+386 1 478 46 00 erik.potocar@gov.si
21	**Spain**	**Mr. Luis Gonzalez Souto** National Project Coordinator **Mr. Emilio Iglesias** Deputy NPC	tel.+34 91 581 56 07 lgs@cdti.es tel. +34 91 581 5507 eic@cdti.es

22	**Sweden**	**Mr. Tomas Aronsson** National Project Coordinator **Mr Peter Lindberg** Deputy NPC	tel. +46 8 473 3118 tomas.aronsson@vinnova.se tel. +46 8 473 31 93 Peter.Lindberg@VINNOVA.se
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25	**The Netherlands**	**Mr. Taake Manning** National Project Coordinator **Mr. Maarten Schans** Deputy NPC **Mr Lucas Beekman** Deputy NPC	tel.+31 70 373 55 34 t.manning@senternovem.nl tel. +31 70 373 56 47 M.Schans@senternovem.nl Tel. +31 70 37 35 932 l.beekman@senternovem.nl

APPENDIX 2

EuroEnviron Member Organisations

Company	Country	Type	Role
Environmental - Knowledge Transfer Network, University Of Oxford	United Kingdom	University	Secretariat
Dept. Of International Cooperation In Research & Development Ministry Of Education, Youth And Sports	Czech Republic	Governm./Nat. Admin.	Partner
Ministry Of Economy - Sector For Technological Development And Innovation	Slovenia	Governm./Nat. Admin.	Partner
Ivl - Swedish Environmental Research Institute	Sweden	Research Institute	Partner
National Office Of Research And Technology (Nkth) Cost And Eureka Secretariat	Hungary	Governm./Nat. Admin.	Partner
Office Of Federal Science Policy / Pod Wetenschapsbeleid / SSP Politique Scientifique	Belgium	Governm./Nat. Admin.	Partner
Tekes - Finnish Funding Agency For Technology And Innovation	Finland	Governm./Nat. Admin.	Partner
Min.Of Industry, Energy & Technology/Gen.Sec. F.Res. & Tech.	Greece	Governm./Nat. Admin.	Partner
Enea	Italy	Governm./Nat. Admin.	Partner
Norges Forskningsrad (The Research Council Of Norway)	Norway	Governm./Nat. Admin.	Partner
CDTI - Centre For The Development Of Industrial Technology	Spain	Governm./Nat. Admin.	Partner
Vinnova - The Swedish Governmental Agency For Innovation Systems	Sweden	Governm./Nat. Admin.	Partner
Tubitak - Scientific & Technical Research Council Of Turkey (Tubitak)	Turkey	Governm./Nat. Admin.	Partner
The European Commission - Research DG	Belgium	Governm./Nat. Admin.	Partner
Danish Agency For Science, Technology and Innovation	Denmark	Governm./Nat. Admin.	Partner
The Icelandic Centre For Research	Iceland	Governm./Nat. Admin.	Observer
Danish Hydraulics Institute - Water, Environment & Health	Denmark	Research Institute	Partner
Umweltbundesamt	Germany	Governm./Nat. Admin.	Partner
Senternovem - Netherlands Eureka Secretariat	The Netherlands	Governm./Nat. Admin.	Partner
FFG - Austrian Research Promotion Agency Division For International Research And Technology Cooperation (Bit)	Austria	Governm./Nat. Admin.	Partner
Luxinnovation	Luxembourg	Governm./Nat. Admin.	Partner
Krueger A/S	Denmark	Large company	Partner
JRC - Environment Institute Joint Research Centre	Italy	Research Institute	Partner
EuroEnviron Secretariat	United Kingdom	Governm./Nat. Admin.	Partner
Outokumpu Technology Oy (Espoo)	Finland	Large company	Partner

INETI (Lisboa) Instituto Nacional De Engenharia E Tecnologia Industrial	Portugal	Research Institute	Partner
Tud - Faculty Of Industrial Design Engineering Technische Universiteit Delft	The Netherlands	University	Partner
Bundesamt Umwelt, Wald Und Landschaft	Switzerland	Governm./Nat. Admin.	Partner
Water Research Centre - WRC Plc	United Kingdom	Large company	Partner
Department Of Trade And Industry (Environmental Unit)	United Kingdom	Governm./Nat. Admin.	Partner
Scientific & Industrial Company - Ekovtormet Ltd.	Russian Federation	Large company	Partner
Aquatest A.S.	Czech Republic	SME	Partner
Russian Ministry Of Science And Technology Policy	Russian Federation	Governm./Nat. Admin.	Partner
Ecolas N.V.	Belgium	SME	Partner
Kvaerner Water Systems A/S	Norway	Large company	Partner
Geo Partner Ag	Switzerland	SME	Partner
Ministry Of Education, R & D Division	Hungary	Governm./Nat. Admin.	Partner
Ministry Of Higher Education, Science And Technology	Slovenia	Governm./Nat. Admin.	Partner
Matimop - Israeli Industry Center For R & D	Israel	Governm./Nat. Admin.	Partner
Omv Istrabenz Ltd.	Croatia	Large company	Partner
Istanbul Technical University	Turkey	University	Partner
Association Lasa	Latvia	Large company	Partner
Research Promotion Foundation European Research Programmes And International Cooperation Unit	Cyprus	Governm./Nat. Admin.	Partner
State General Laboratory	Cyprus	Governm./Nat. Admin.	Partner

APPENDIX 3

Weblinks

EuroEnviron www.euroenviron.com

EUREKA www.eureka.be

Environmental – KTN www.environmental-ktn.com

APPENDIX 4

Strategic Themes, Issues and Technologies

Group 1 Country Themes, Issues and Technologies

	GROUP 1	COUNTRY	
No	Theme	Issue	Technology
1	Renewable Energy	Reduce Energy Consumption/CO_2	Biotechnology
2	Climate Change	CO_2	CO_2 - New Products /Renewable Energy
3	Waste Management	Landfill/Sanitation Construction Waste	Optimal Cost/ Reuse Heterogeneous Materials
4	Sustainable Water Treatment Processes	Spill of Natural Resources, Energy & Waste Production	Integrated/Combined Technologies Separation/Biotechnology & Sensoring
5	Biowaste	Handling	Incineration
6	Climate Change	Saving Energy Resources	Renewable Energies
7	Renewable Energy	Energy from Biomass	Biofuels
8	Climate Change	Temperature Rise	CO_2 Capture & Exploitation
9	Sustainable Waste Management	Landfill	Biotechnology

Group 2 Country Themes, Issues and Technologies

	GROUP 2	COUNTRY	
No	Theme	Issue	Technology
1	Climate Change	Adaptation to Climate change & Extreme Weather Conditions	Transfer of Know-how Between Regions
2	Climate Change	CO_2 Production	Generation Bioethanol Wind Energy Energy Efficient Production
3	Climate Change	CO_2 Production	Low Carbon Economy - Homes - Businesses - Transport
4	Climate Change	CO_2	Non CO_2 producing Technologies
5	Climate Change	CO_2 Reduction	- Renewable Energy - Intermodal Transport Transport Reduction/Biofuels - Passive Houses - Factory of the Future
6	Air	Industrial Emissions	CO_2 Capture
7	Waste Minimisation /Reuse	Energy From Waste Biomass	Advanced Anaerobic Digestion Gasification Pyrolysis
8	Water	Wastewaters	Wastewater Treatment - Heavy metals/Industry - Tourist facilities - Energy efficient treatments

Group 3 Country Themes, Issues and Technologies

	GROUP 3	COUNTRY	
No	Theme	Issue	Technology
1	Sea Water Desalination	High Salt Levels in Water	Removal of Salts from Water Reverse Osmosis
2	Climate Change Global warming	Dependence on Cars etc CO_2 & Other	Alternative Fuels in Industry & Cars
3	Climate Change	Temperature Resistant Plants & Animals (?)	Biotechnology Genetics
4	Global Warming	Energy Efficiency Industrial & Domestic	Sustainable Housing Technologies Insulation/Embedded Energy/Distributed Power Gen.
5	Contaminated Soil & Groundwater	Oil & Oil Derivatives Pollution in Soil & Groundwater	Sustainable Remediation Technology Bioremediation
6	Water Pollution	Arsenic Natural Organic Matter	Drinking Water Technology
7	Climate Change	Less CO2	- Renewable Energies - More Efficient Energy Use in Production and Households - In General – Sustainable Products & Processes - Traffic Management
8	Water - Access to Any/Clean Water	Water Shortage	Desalination Technology Reuse of water

ORGANISATIONAL

Group 1 Organisation Themes, Issues and Technologies

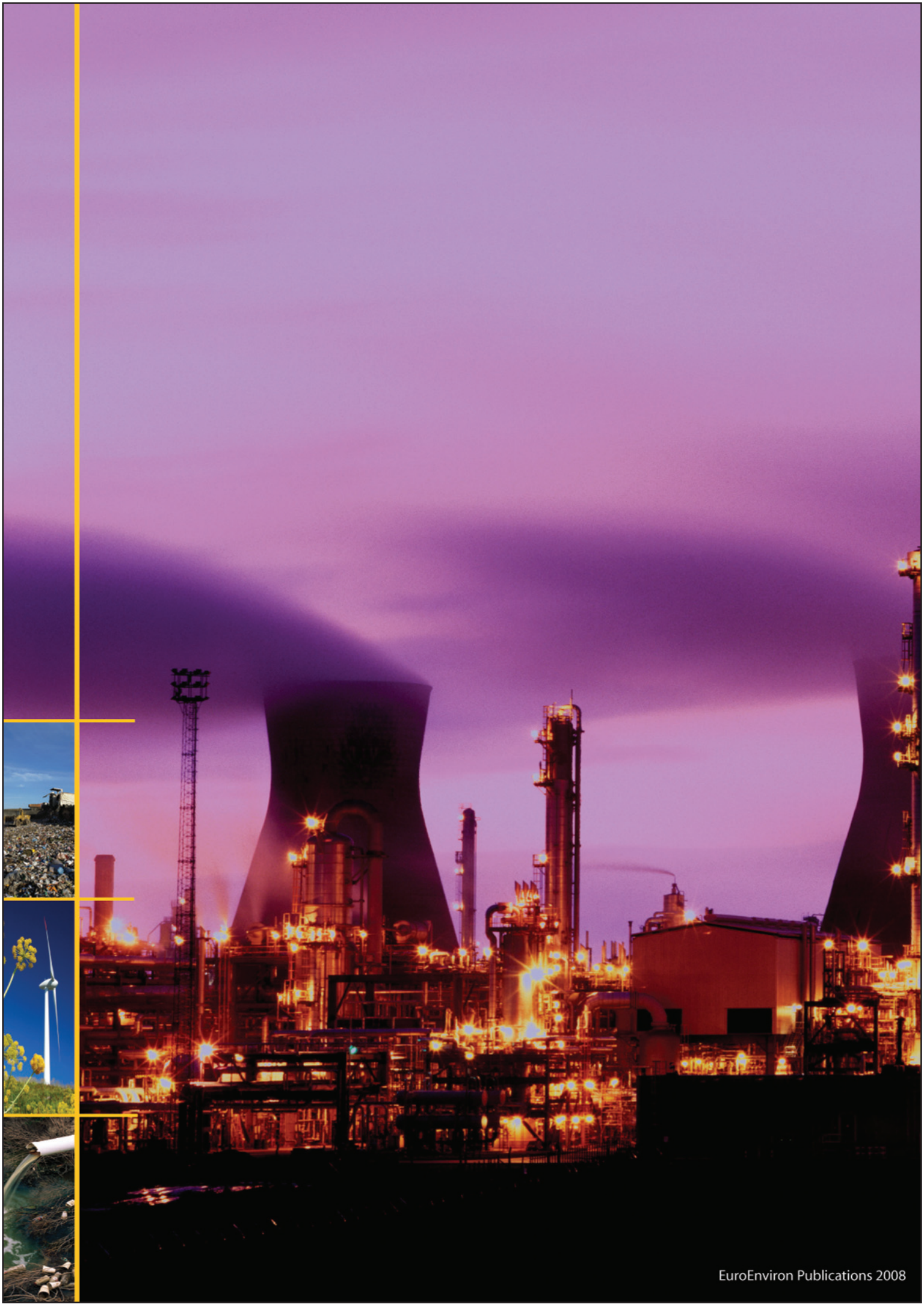
	GROUP 1	ORGANISATION	
No	Theme	Issue	Technology
1	Waste Management Biodegradeable, Non - Biodegradeable & Electonics	Reuse/Recycle New Products	Biotechnology/ Nanotechnology
2	Scarcity of Good Quality Water	Micropollutants in Groundwater & Surface Waters	Passive Treatment Systems
3	Waste Management	Construction Waste	Reuse Added Value
4	Water to Energy	Sustainable Energy	Biofuel Cells Membrane Technology
5	Process Water	Recycling Reuse	Membranes
6	Clean Water	Resource Protection	Bioremediation
7	Soil Contamination	Brownfield Site Clean up	Monitoring/Removal/ Reuse
8	Water	Global Scarcity	Saving/ Reuse/ Desalination
9	Sustainable Water Management	Management of Precipitation/ Flooding/ Drainage	Modelling/SUDS/ Flooding/Storage/Reuse/ Recycle

Group 2 Organisation Themes, Issues and Technologies

	GROUP 2	ORGANISATION	
No	Theme	Issue	Technology
1	Water	Industrial Effluent Treatment. Inc. Pig and Cow Waste	Several
2	Integrated Urban Management	Water Scarcity	Decentralised Wastewater Treatment Industrial Water Management Including Water Technology Development Water Fit For Use
3	Sustainable Consumption	Reduction of Impacts of Consumption	Life Cycle Technology Alternative models
4	Air Pollution	Use of Coal	Gas Technologies
5	Water & Environmental Quality	Diffuse Pollution Nitrate/Phosphates Pesticides	New Technologies Low Cost & Sustainable
6	Water/Wastewater	Sludge	Management Reduction at Source Bioenergy

Group 1 Organisation Themes, Issues and Technologies

	GROUP 3	ORGANISATION	
No	Theme	Issue	Technology
1	Air Pollution in Cities	Fine Dust from Cars PM10 Particulates	Biofuels Filters Biotechnology/Nanotechnology
2	Waste - Industrial/Domestic	Reuse/ Treatment of Waste	Biotechnology Recycling
3	Contaminated Sediments	Heavy Metal Pollution in Water - Canals	Phytoremediation (Other) Safe Disposal
4	Landfill Diversion	Resource Recovery	Segregation & Separation Technologies Collection Logistics Recovery Technology MRF Energy From Waste
5	Environmental Pollution (Soil & Water)	Oil Spills Land	Remediation Technology Bioremediation Sustainable Remediation Techn.
6	Waste Disposal	High Volume of Domestic Waste	Recycling Volume Minimisation Energy Recovery
7	Urban Regeneration & Development	Contaminated Land Clean Up	Sustainable Technologies Not Dig & Dump
8	Efficient Use of Resources Industry SMEs	Cleaner Production Technologies	New Materials Awareness Management Audits New Organisation of Production Less Energy Use



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