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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Report of the Environmental Technologies Action Plan (2005-2006)

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(Text with EEA relevance)

The scientific evidence is now overwhelming: climate change is a serious global threat, and it demands an urgent global response…if we don't act, the overall costs and risks of climate change could rise to 20% of GDP or more[1]

The Stern Review, 2006

Human activity is putting such strain on the Earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted…60% of world ecosystems services have been degraded or used unsustainable…[2]

UN Millennium Ecosystem Assessment, 2005

Humanity's Ecological Footprint now exceeds the world's capacity to regenerate by about 25%....we have been exceeding the Earth's ability to support our lifestyles for the past 20 years, and we need to stop. We must balance our consumption with the natural world's capacity to regenerate and absorb our wastes. If we do not, we risk irreversible damage[3]

WWF, Living Planet Report, 2006

1. ECO-INNOVATION FOR GROWTH, JOBS AND ENVIRONMENT

Environmental threats are advancing

Environmental threats are advancing – more rapidly than originally expected. We can still counter these threats if we act now. Systematic and cohesive action is needed at European and global level. The question is: "How can we act most effectively and in time?" We *can* do this in a way that sustains economic growth. In using the right tools to promote *innovation* we can meet the challenges facing us. Europe is in a position to lead the way.

Eco-innovation offers solutions and opportunities

To advance we have to turn around our industrial processes, products and business practices. We need eco-innovation and environmental technologies[4] to make the leaps and bounds.

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1 Stern Review: the Economics of Climate Change

2 Millennium Ecosystem Assessment

3 Living Planet Report 2006

4 Eco-innovation means any innovation that benefits the environment – embracing technological innovation, process innovation and business innovation

Technology can now contribute to the solutions. Our ultimate aim: that eco-innovation becomes pervasive across all industries. In this way we can meet many of the environmental challenges facing us today. Through appropriate measures, e.g. financial support or regulation we can support eco-innovation and steer market forces towards a world-leading economy that is both competitive and green.

Eco-innovation is now a cornerstone of EU strategy

The renewed EU Lisbon Strategy identifies environmental technologies as having "significant economic, environmental and employment potential"[5]. The 2006 Spring Council endorsed "strong promotion and diffusion of eco-innovations and environmental technologies"[6]. The renewed EU Sustainable Development Strategy identifies ETAP as necessary for addressing climate change, clean energy, sustainable consumption and production[7]. The planned European Institute of Technology, is expected to give high priority to environmental challenges[8].

Presidencies highlight need for eco-innovation

Eco-innovation has also been recognised by the Council Presidencies. The UK and Austrian Presidencies established eco-innovation and environmental technologies as instrumental to growth and jobs. The Finnish Presidency promoted "a new generation of environmental policy", based on eco-efficiency and eco-innovation[9]. The current German Presidency urges a "new deal" on environment, economy and employment[10].

Reporting on progress and priorities for the future

ETAP is the EU Environmental technologies Action Plan[11] **to stimulate eco-innovation and the take-up of environmental technologies on a broad scale**. Launched in 2004, the plan maps out action at European level, by Member States, and stakeholders. A first report was published in 2005[12]. The present report:

- Sketches trends and developments
- Outlines progress on implementation of the Plan
- Recommends priority areas for future action

5 COM(2005) 330 final
6 Council 7775/06
7 Council 10117/06
8 ec.europa.eu/education/policies/educ/eit/index_en.html
9 Presidency Conclusions, July 2006 Turku, Finland
10 Ecological Industry Policy, Memorandum for a "New Deal" German Ministry for the Environment (2006)
11 COM (2004) 38 final
12 COM(2005) 16 final

2. TRENDS AND DEVELOPMENTS

Eco-innovation and eco-regulation

The potential of European business to eco-innovate is underestimated. Evidence shows that well designed legislation does act as a driver for innovation and environmental technologies which in turn can help companies in significantly reducing costs.[13] Full implementation of EU legislation such as Eco-design, IPPC, WEEE and RoHS will further enhance eco-innovation in the future.

Eco-industries contribute to EU economy and jobs

European eco-industries are a significant but quickly growing portion of the EU economy representing 2.1% of EU GDP[14]. Eco-industries include for instance: air pollution control, waste water management, solid waste management, soil remediation, renewable energies, and recycling. Eco-industries and services sustain 3.5 million full-time jobs. Around 75% of these are in labour intensive sectors such as water and solid waste management.

Strong Growth

There is strong growth in a number of sectors Europe and worldwide. Wind power installation has grown 20-25% in the last five years[15]. The worldwide photovoltaic market is expected to grow at 25-35% in the future[16], and water management is expected to grow 6% annually in the next ten years[17]. The solid waste recycling sector has been growing at 4.5% annually in the period 2000-2004[18].

Strong Global position

European businesses involved in eco-industries are in a strong position worldwide. The EU is estimated to have 1/3 of world market share in eco-industries[19]. The Dow Jones Sustainability index shows that European companies are the most sustainable in 13 out of 18 major economic sectors[20].

Financial investments are on the increase

Close to €2 billion venture investments were made in clean technologies in 2003-2006, corresponding to 10% of venture capital in Europe[21]. Investments increasingly come from established firms[22]. In the banking sector, sustainable and socially-responsible investments

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13 Innovation Dynamics Induced by Environmental Policy (2006) and Ex-post estimates of costs to business of EU environmental legislation (2006)
14 Eco-industry, its size, employment perspectives and barriers to growth in an enlarged EU. (2006)
15 *Wind Force 10* GWEC (2005)
16 *Solar Generation* EPIA (2006)
17 Environment, Innovation, Employment. German Ministry for the Environment 2006
18 European Business Facts and Figures 2005
19 Analysis of the EU Eco-industries, their employment and export potential. ECOTEC (2002)
20 Dow Jones Sustainability Indexes Annual Review (2006)
21 European Cleantech Investment Report (2006)
22 Cleantech goes global, Environmental Finance (June 2006)

have increased significantly in recent years[23]. At EU level, the European Investment Bank (EIB) has launched the €1 billion Climate Change Financing Facility (CCFF).

<u>However,</u> we need to do much more to make environmental gains on the scale required

All these positive indications contrast sharply with those of the state of the environment. These give rise to serious concern and include:

- Threats of climate change and the levels of greenhouse gas emissions and the difficulties of reaching the Kyoto targets in the EU[24]
- Even though air quality in Europe has been steadily improving[25], air pollution contributes to 750,000 years of life lost each year in Europe[26].
- Eco-systems are being eroded at unsustainable rates due to over-consumption of natural resources[27].

There is a pressing need for immediate and systematic action on a broad scale

To start making a significant difference in environmental terms – over a relatively short timescale – ***much greater levels of deployment and take-up of environmental technologies are required at EU and global level***. Eco-innovation has to be the mainstream of Europe's innovations and be the required norm across the whole economy***. There is no time for complacency.***

3. PROGRESS ON IMPLEMENTING THE PLAN

Progress is described against the main lines of the Plan.

3.1. GETTING RESEARCH TO MARKETS

Increase and focus research and demonstration

Since the launch of ETAP, about €1.4 billion has been awarded to environmental technology projects under the 6th Framework Programme. Under the 7th Framework Programme it is estimated that up to 30% of the €32 billion budget will address environmental technologies. This includes: hydrogen and fuel cells, clean production processes, alternative energy sources, CO_2 sequestration, bio-fuels and bio-refineries, energy efficiency, information technologies for sustainable growth, clean and efficient transport, water technologies, soil and waste management, and environmentally friendly materials.

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23 European SRI Study – 2006. European Social Investment Forum
24 Greenhouse gas emissions trends and projections in Europe 2006. EEA (2006)
25 LRTAP Convention Emission Inventory 1990-2004. EEA (2006)
26 Health Aspects of Air Pollution WHO (2004)
27 COM(2006) 216 final

Establish technology platforms

More than 30 Technology Platforms have been launched; a number include environmental technologies as part of their agendas[28]. Some platforms intend to implement part of their aims through joint technology initiatives (JTI) by creating public-private partnerships.

Technology Verification

Work on an *Environmental Technologies Verification System* is progressing. There is evidence that lack of verification continues to hamper access to new environmental technologies[29]. A number of research projects[30] are currently defining the basis of a scheme in the areas of water treatment, soil remediation and air pollution. Among the planned outputs are protocols for the testing of these technologies. A market survey is being carried out to identify appropriate application areas[31]. A pilot scheme by the LIFE Programme will test a verification system based on 10-15 technologies.

Towards a European Strategic Energy Technology Plan

The recently adopted Strategic Energy Technology Plan[32] aims to lower the cost of clean energy and to put EU industry at the forefront of the rapidly growing low carbon sector. The plan identifies those technologies for which the EU has to mobilise resources and accelerate development and deployment.

3.2. IMPROVING MARKET CONDITIONS

Performance Targets

Studies have been carried out to set up a performance target scheme in the EU. This includes analysis of the Japanese Top-Runner programme[33], performance targets for processes[34], and a pilot project on the following product groups: cement, windows, tyres, manure treatment and textiles. Based on this work a public consultation will identify the best operational settings for the scheme, including the role of eco-labelling, energy labelling[35], and the benchmarking of products.

Mobilising Financial Instruments

Important sources of financing now include:

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28 cordis.europa.eu/technology-platforms

29 *Environmental Innovation - bridging the gap between environmental necessity and economic opportunity* (DTI 2006)

30 www.promote-etv.org; www.est-testnet.net; www.eurodemo.info

31 A market survey of companies on the potential of an EU wide verification system IPTS (forthcoming)

32 COM (2006) 847. COM (2007) 1 final

33 The Top Runner Programme in Japan – its effectiveness and implication for the EU, The Swedish Environmental Protection Agency (November 2005)

34 Performance Targets in Production Processes, IPTS (not yet published)

35 Directive 92/75/EC and 2005/32/EC

- Competitiveness and Innovation Programme (CIP)

  €433 million has been allocated to promote eco-innovation, under the Entrepreneurship and Innovation pillar.

  Approximately €228 million will be allocated to financing instruments in particular the **Growth and Innovation Facility**, managed by the European Investment Fund (**EIF**) who will co-invest money into risk capital funds in eco-innovation, with €205 million on market replication projects and networks. €728 million will be on energy efficiency and renewable energies.

- European Investment Bank (EIB)

  The EIB and the Commission are developing a joint **Risk Sharing Finance Facility** (RSFF). The objective is to improve access to debt financing, for private and public sector research that has a high risk profile. €2 billion will be available for projects falling within the FP7 themes and the mechanism will allow the European Investment Bank to grant loans up to €10 billion.

- Leverage Cohesion policy

  Currently around 21% of the Structural funds have been allocated to innovation, and the Commission has called on Member States to raise this share in the new programming period. Eco-innovation, renewable energy, energy efficiency and clean urban transport are priorities in the Cohesion policy (2007-13). The Community Strategic Guidelines on Cohesion highlights that business should invest in eco-innovation to be in a strong position in the future[36].

- LIFE

  The LIFE environment programme has co-financed some 2,750 innovative pilot demonstrations projects since 1992, with a total investment of over €2.6 billion. Around two-thirds of the investment supported projects promoting environmental technologies[37].

Market-based Instruments

The Commission has recently adopted a Green Paper on market-based instruments[38]. This reviews cost-effective instruments (such as taxes on energy, transport and other pollutant sources, and the broader use of emissions trading schemes) that could be used alongside regulation and financial incentives. The paper aims to stimulate a debate on the use of these instruments at Community and national level.

Review of State Aid

The Community Framework for State Aid for Research, Development and Innovation has been adopted. This sets the conditions under which Member States may give state aid to

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36 Council Regulation 1083/2006 Council Decision 2006/702/EC

37 ec.europa.eu/environment/life

38 COM (2007) 140 final

research, development and innovation. The Framework includes a specific mention of eco-innovation[39]. Guidelines on state aid to support risk capital for SMEs have also been adopted. In addition, a review of the Guidelines on Environmental State Aid is currently in progress; this will include conditions for aid for business aiming to invest in environmental technologies.

Green Procurement

A number of Member States have started to implement action plans on Green Public Procurement – others are in progress. The Commission's handbook on Green Procurement is being widely disseminated in all EU languages. A new website features good practice and national green purchasing strategies. A web-based toolkit is being prepared to include legal and financial guidance for purchasing officers[40].

Raising Awareness

A new ETAP website and Newsletter features news items, policy developments, promising practice in Member States, as well as various examples of eco-innovations[41].

3.3. ACTING GLOBALLY

Global financing opportunities

The EU Thematic Programme on Environment and sustainable management of Natural Resources (ENRTP)[42] covers compliance with environmental standards, sustainable consumption and production, and can promote environmental technologies. The Global Energy Efficiency and Renewable Energy Fund (GEEREF)[43] will provide seed capital for renewable energy projects in various regions. The EIB and the Commission are currently exploring how to cooperate on the scheme. The EIB Climate Change Financing Facility (CCFF) will also enable some financing for projects globally.

Responsible investment and trade

In the context of the WTO negotiations on multilateral trade liberalisation (Doha Development Round), the Commission has been at the forefront of pushing for the reduction or elimination of tariffs, as well as the abolition of non-tariff barriers, on trade in environmental goods, technologies and services. It also considering prospects for fast-tracking these issues in the regional Free Trade Agreements that it will be negotiating over the next few years with some of its key trading partners, particularly in Asia.

3.4. COORDINATION

Sharing promising practice: the ETAP National Roadmaps

Twenty-one Member States and Norway have completed roadmaps for implementing ETAP. These are available publicly and represent a significant body of knowledge on programmes,

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39 ec.europa.eu/comm/competition/state_aid/reform/rdi_en.pdf
40 See http://ec.europa.eu/environment/gpp
41 ec.europa.eu/environment/etap
42 ec.europa.eu/development/body/theme/environment/ENRTP.htm
43 COM(2006)583

schemes, and examples of promising practice, in Member States[44]. An analysis of the roadmaps shows that a number of promising schemes are being put into place by Member States, and there is an opportunity to build on and learn from these across the EU (see Annex). Examples include:

- Germany's feed-in tariff scheme has been instrumental in boosting use of renewable energy – a number of Member States have adopted similar schemes.
- Italy's national decree requires that at least 30% of goods purchased by public authorities be of recycled origin.
- Spain's national and regional policies have spurred the deployment of solar energy, through a number of coordinated measures.
- The UK's National Industrial Symbiosis Programme, aims to save 1 million tonnes of waste per region per year, through a brokerage scheme for companies.
- A range of financial schemes to promote eco-innovation, for example those established in the Netherlands, Denmark, Finland and Sweden.

Stakeholder participation: the Forum on Eco-innovation

The Forum on eco-innovation provides a platform where stakeholders can come together, network and propose future action. The first meeting of the Forum took place in Poznan, Poland. The theme of the first Forum was "Financing Eco-innovation". The Forum will take place twice a year on relevant themes[45].

4. ISSUES AND PRIORITIES FOR THE FUTURE

Increase take-up - Increase demand

To start making a difference on the scale required, eco-innovation must become pervasive across all business and industry. To make significant benefits, the rate at which environmental technologies are deployed and taken-up must increase significantly Large environmental gains can be made by taking-up environmental technologies that already exist on the market, but the problem is that many remain in niche markets. One example is the energy efficient light bulb still only accounts for less than 3% of European market share of light bulbs[46]. ***New driving forces have to be put into place to encourage the diffusion and take up of eco-innovations on a broad scale.***

44 ec.europa.eu/environment/etap/roadmaps_en.htm
45 ec.europa.eu/environment/etap/forum_en.htm
46 *Residential Lighting Consumption and Saving Potential in the Enlarged EU* JRC (2006)

The Aho report on creating an innovative Europe[47], the recent Communication on innovation[48] and others[49], urge the use of ***"demand pull"*** to promote innovation. "Lead markets" can also act as a stimulus for demand[50] [51]. The analysis of the ETAP National roadmaps (see Annex) shows that R&D activities on Environmental Technologies are carried out systematically in almost all Member States – however policies to raise demand are still carried out much less systematically.

Systematic and coordinated activity on the demand-side is needed. Green Public Procurement, market based-instruments, financing for business to switch to green technologies, raising awareness in business and with consumers, all need to be intensified. These actions can raise demand at both European and Member State level and help move environmental technologies and products to the mainstream.

The Commission and Member States should actively pursue and intensify those ETAP Actions that further create demand in a systematic, coordinated manner[52]:

4.1. Further Green Procurement

Public and private sector procurement are quite different in nature – but both can lead the way in purchasing behaviour and influence take-up.

- Public sector procurement corresponds to around 16% of EU GDP. Considerable work has been done and now practical implementation needs to start taking place across Europe.

- Private sector procurement is also important, although it is not governed by a set of comprehensive rules. Large companies influence and place demands on their chains of suppliers.

- **Action:** Build on work that already has been done and accelerate Green Public Procurement. Diffuse model tender specifications. Prepare Communication on public procurement in 2007, set (voluntary) *targets*, and give guidance on indicators and benchmarking.

- **Action:** EC, MS, Relevant stakeholders develop strategies for private sector procurement.

4.2. Mobilise greater financial investments

The financial sector (banks, insurance companies, pension funds, investors) can play a greater role in leveraging businesses and industry to take-up environmental technologies. The eco-innovation focus of cohesion policy, the EIB and EIF initiatives, and the establishment of the CIP, are all steps in this direction. Actions aimed at the exchange of best practice and at

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47 *Creating an Innovative Europe*. European Commission, EUR22005 (2006)

48 COM(2006) 502 final

49 A Will to Compete: a competitive, clean and clever Europe (2006)

50 European Competitiveness Report. SEC(2006) 1467/2

51 Competitiveness Council, 15717/06, December 2006

52 Based on the outcomes of the Green Paper on market based instruments, further actions may be undertaken

engaging major financial institutions across Europe, and internationally, could be strengthened.

- **Action:** Implement EU financial instruments. Use Community financial resources to lever further financing commitments. Convene major financial institutions. Encourage guidelines and targets for financial investments on eco-innovation.

4.3. Establish Technology Verification and Performance Targets systems

Standards can set performance levels and provide assurance in the market. Verification Systems provide the market with reliable measures of environmental performance. Setting performance targets for product groups can shift towards better environmental performance. Economies of scale can be gained if performance target systems drive forward products across a sector. Links between the performance target scheme and eco-labelling are currently being explored. There is an opportunity to upgrade current labelling criteria of products and services, such as the Eco-label, Energy label and Energy Star schemes, and to keep abreast of international developments on similar schemes.

- **Action:** Finalise studies for the establishment of both Technology Verification and Performance targets. Run and finalise pilot schemes. Explore links with eco-labelling scheme. Prepare legislative proposals for environmental technology verification (2008) and communication on performance target schemes (2008). Revise and upgrade current labelling schemes. Keep abreast of international schemes.

4.4. Build on promising practice of Member States

It is clear from the ETAP national roadmaps that a number of promising policies for promoting eco-innovation are being put in place. There is a significant opportunity to learn and build on these schemes, particularly those that increase demand. A way of *championing eco-innovation policies* could benchmark and diffuse the most effective national schemes. In this way, Member States could learn from, adapt and apply similar policies, to create a multiplier effect across Europe.

- **Action:** In 2007 establish an initial phase where Member States propose some best practice schemes and exchange experience. Develop rules of implementation for a full scheme in 2008.

4.5. Focus on sectors with high gains

In the short term, large gains can be made by focussing *on sectors* where large environmental yields can be made quickly (a "low hanging fruit" strategy). This involves focussing on those sectors where eco-innovations, environmental technologies, improved products, processes and services can yield high environmental gains. Sectors include:

- Buildings
- Food and Drink
- Private transport
- Recycling and waste water industries

Studies show that the environmental impacts of products are highest in the first three of these sectors[53]. Other studies indicate that these sectors also offer potential for sustainable growth[54]. For example, sustainable construction is now the focus of a joint Member State initiative[55].

The instruments of research funding, green procurement, performance standards, financing, promising national practice and the optimisation of regulatory conditions, could be applied to promote eco-innovation in these sectors. There is also an opportunity to bring these approaches to bear on the formulation of ***lead markets*** as foreseen in the Commission's Innovation Communication where eco-innovation can play a role.

- **Action:** Starting 2007, identify key sectors where EU technology and products could lead worldwide, yielding high environmental and economic gains.

Evolve Support measures

In addition to the five actions to increase demand, support work of a more general nature is needed.

4.6. Ensure a strategic knowledge resource on eco-innovation

There is a real need for reliable analysis of trends in the area of eco-innovation. Bringing together timely and ***strategic knowledge*** for European public organisations, relevant business and financers can enable further growth and investment[56]. Commission services are analysing how to effectively collect, synthesise and share such knowledge, in particular the feasibility of a "networked observatory" on eco-innovation, that would build on a range of existing projects and networks, and which could include some of the key observation institutes across Europe.

- **Action:** Ensure an effective, strategic knowledge resource on eco-innovation that would provide relevant statistics, and identify emerging trends and global business opportunities.

4.7. Promote awareness and active participation

An important aspect of raising awareness is to promote active participation with consumers and business. The establishment of the European Forum on eco-innovation is just one small

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53 Environmental Impact of Products EIPRO, and IMPRO looks at ways of reducing these impacts. The studies are based on life cycle analyses, so for example, "Buildings" include new construction, maintenance, repair and demolition. Here the term "Buildings" is used instead of "Housing". This includes furniture, domestic appliances and energy for purposes such as room and water heating.

54 www.popa-ctda.net; www.ectp.org

55 www.ukswedensustainability.org

56 The ICT Observatory provides a similar service: www.eito.com

step in this direction. Similar activities could be carried out at regional, national and international levels.

- **Action:** Establish actions with MS under the framework of LIFE+. Expand EC level communication. Continue running the European Forum and expand participation. Promote eco-innovation internationally.

4.8. Harnessing Research

Outcomes can be optimised by further channelling and harnessing research under the 7th Framework Programme, by establishing synergies between research themes, technology platforms, emerging lead markets and regulation. Research on the methodology of technology assessment may also contribute to improve future verification and standardisation systems. There is an opportunity to promote more research in environmental technologies at the international level.

- **Action:** Channel future research themes (2007-13) based on ETAP priorities and future lead markets where eco-innovation plays role.

5. SUMMARY AND PRIORITY ACTIONS FOR THE FUTURE

A lot of progress has been made – even more remains to be done. To respond to our global environmental challenges, to make eco-innovation yield large scale environmental and economic benefits, to enable Europe to seize the opportunities – ***all activities have be stepped up and carried out on a new scale, with much more emphasis on demand.*** In summary, the focus is on 5 actions that increase demand and 3 support measures:

INCREASE DEMAND:

- Further Green Procurement
- Mobilise greater financial investments
- Establish Technology Verification and Performance Targets systems
- Build on Promising Practice of Member States
- Focus on sectors with high gains

SUPPORT MEASURES:

- Ensure a strategic knowledge resource on eco-innovation
- Promote awareness and active participation
- Harness Research