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<u>Synthesis and Analysis of the ETAP National Roadmaps</u>

SUMMARY

Member States have prepared roadmaps to help with the further planning and implementation of the Environmental Technologies Action Plan (ETAP). The roadmaps of the Member States are currently available publicly. This document presents a synthesis and initial analysis of the extensive material available, also providing some highlights of activities. A number of suggestions for further discussion and further action are made. These can serve as useful input to discussions on how to take the ETAP Agenda forward. Discussions take place in the context of regular meeting between the Commission and Member States.

1. BACKGROUND

1.1. The ETAP Roadmaps

Following the establishment of EU Action Plan on Environmental Technologies (ETAP) the Commission asked Member States to prepare national roadmaps featuring progress, highlights and plans. Many of the ETAP actions are being actively pursued both at EU and Member State level. However, it was felt that there is room to intensify, focus and coordinate these activities. The drawing up of national roadmaps plays a useful role in this respect.

Typically a "roadmap" acts as a planning tool. It maps out current activities; it maps out where one plans to head in the future, and also gives indications of how one can get there. A roadmap can serve to give an overview of all relevant activities and plans and how these are working together towards overall goals. It can help identify the general direction where activities are leading, which activities are particularly important, or which ones may be less relevant, or may need re-adjusting or focussing. An explicit mapping of a broad range of activities with milestones and deadlines helps to drive forward an action plan forward effectively.

Describing and sharing the activities relevant to ETAP offers a practical basis for the exchange of knowledge, experience and good practice across all Member States. Thus, the national roadmaps, offer a tangible basis for reference setting, building up strategic knowledge across Member States and the Commission – all of which can help further drive the ETAP agenda.

Apart from being a tool for reporting on progress on ETAP, there is evidence that the roadmaps have contributed to reporting and the National Reform Programmes of 2005 under the Lisbon Strategy. Annual Progress reports on Lisbon Member States will be due regularly, and "evolving" ETAP national roadmaps could play an important role in providing input to future reporting on Lisbon.

Finally, a synthesis and initial analysis of the national roadmaps, offers an overall, strategic view of "where we are" in Europe with respect to the development, promotion and take-up of environmental technologies and with respect to specific actions of ETAP. The aim of this report is to lay the basis for further discussion between the European Commission and Member States, and can act as input to future planning of ETAP.

1.2.   Roadmap content

Following consultation with Member States, it was decided that exhaustive coverage and reporting by each Member State on each of the original 25 ETAP actions was not necessary. Rather, it was decided that Member States should use national roadmaps to describe those actions, in broad terms, that are most relevant to their national situation.

For the preparing roadmaps the main priorities of ETAP were simplified and grouped along the following broad lines:

- Research and Development (Actions 1-2)

- Verification of technologies (Actions 3-5)

- Performance Targets (Action 6)

- Mobilisation of Financing (Actions 7-15)

- Market-based Instruments and State Aid (Actions 16-18)

- Procurement (Actions 19-21)

- Awareness raising and training (Action 22-23)

- Acting Globally (Actions 24-25)

This grouping provides the main lines of action following the ETAP actions 1-25 and the priority actions. This renders a broad structure for roadmaps that is simple and straightforward. Member States were asked to describe activity along those lines *most relevant* to their particular situation. In some cases Member States decided to describe roadmaps only some of the above, as they correspond to their main activities, in other cases roadmaps correspond to the full range of ETAP actions.

It was left for each Member State to decide exactly what to describe in their roadmaps; however, as an indication, for any main line of action, it was suggested that a roadmap should cover:

- Overview of "state of the art" or "state of play"

- Existing strategies and action plans

- Milestones and measures

- Major achievements and best practice

In addition, to ensure the utility and quality of the roadmaps, the following were also suggested:

- Include specific references project and action (using hyperlinks were possible).

- Include diagrams or illustrations to make texts more understandable.

- A national roadmap does not need to exceed 15 pages.

All these aspects were discussed and agreed upon at the regular meetings between the Commission and Member States.

1.3. Sharing Knowledge about the Roadmaps - the Website

With Member States it was also decided that it would be of mutual benefit to place all roadmaps on a shared public website. Currently all the roadmaps are available on:

http://europa.eu.int/comm/environment/etap/roadmaps.htm

This serves to share knowledge across Member Sates and presents an open and transparent mechanism for this purpose. The information contained in roadmaps can also be of interest for public at large, in particular decision makers, non governmental organisations, etc.

Once roadmaps were received by the Commission and the agreement was gained for the roadmaps to appear publicly, the roadmaps were posted on the ETAP website. It is also hoped that the roadmaps will remain "live" documents that Member States can use to update their main activities and planning.

2. SYNTHESIS AND ANALYSIS

2.1. Current Status

To date, roadmaps have been received from 21 Member States: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Poland, Portugal, Slovakia, Spain, Sweden, United Kingdom. A roadmap from Norway is also available.

These roadmaps appear as a public document on the ETAP website:

http://europa.eu.int/comm/environment/etap/roadmaps.htm

Roadmaps are still being prepared by: Lithuania, Luxembourg, Latvia and Slovenia (4).

2.2. Analysis and Discussion

The roadmaps available contain a large amount of pertinent information about existing projects, activities and actions across Europe. The analysis presented here is an initial one – it aims to overview the main features of the material available and point out some salient features. A full study would have to analyse more deeply the breath and extent of the material at hand.

The roadmaps point to extensive activities promoting eco-innovation and the take-up of environmental technologies across Europe – it is clear that a lot is happening. Activities include Research and Development programmes as well a range of other tasks aimed a improving market conditions. These include for example research and development programmes on "houses and factories of tomorrow", the establishment of thematic parks on renewable energies, the provision of green funds to stimulate investments supervision of environmentally harmful subsidies, mechanisms to coordinate public procurement,

programmes for international cooperation, are but a few examples of the concrete actions taking place.

A welcome diversity of roadmap presentation formats can be found. For example, the Netherlands presents a readable style with images, activities and milestones. Austria chooses an effective modular format with a number of "fiches" that can be updated with time and gives names of contact persons. The UK presents a hyperlink approach that uses with a wide range of links to further information. Poland uses a clear and simple format with examples of best practice. Sweden and Denmark present polished reports of extensive activities. Germany presents actions at Federal level with reference to Länder actions as well.

The descriptions of the various approaches used and the highlights presented, offer tangible examples of work done and achievements to date. There seems to be a spirit of enthusiasm in many Member States in developing their roadmaps – and if followed through, the roadmaps can drivers in promoting eco-innovation and the development and take-up of environmental technologies.

One part of the roadmap analysis consisted in making a summary of activities for each Member State along the ETAP Action Lines. Each of the roadmaps was looked at in detail. A one page summary of the activities in Member States for each of the main action lines was made. Based on this, a summary matrix of a given activity against the ETAP Actions was made. Such a Matrix can serve as a useful point of comparison: for any Action line one can scan down to see what activity is taking place across the Member States. For example, one can scan down the column on Green Procurement and see a summary of the activities being carried out in Member States on this topic.

To gain an overall and simple picture of all activity in all Member States, an activity mapping was prepared. To do this, a very rough estimate was made of the degree of activity that a Member States places on a particular Action Line. This was based on the emphasis given to the topic in the roadmap, the extent and maturity of the programmes and schemes present, and the apparent degree of investment in the domain. Three levels of intensity were attributed, as well as no activity. Although this is a fairy crude representation, it does portray – in one glace – an overall image of where emphasis is being placed across ETAP Actions.

From this material a number of salient features become apparent. Firstly, it is fairly clear that almost all Member States cater for and put emphasis on the *supply side*, namely they all promote research and development on environmental technologies. On the other hand, *demand oriented* activities are carried out – but less consistently. Every country describes a significant R&D activity (with the exception of Cyprus and Malta, who concentrate on the take-up of technology rather than on R&D, because these countries do not have do not have a large R&D capacity). However, only a couple of member States seem to have an even distribution of activity across all the ETAP Actions: Denmark, Germany, Sweden, Finland and UK, and to some extent Italy, are some examples of this. In many cases the demand inducing activities are either in preparation, or in some cases not mentioned.

Many argue that Europe is weak on the take up of innovation in the market. One of the blocks to innovation in Europe is said to be due to placing too much emphasis on technology supply rather than on creating opportunities for demand for innovation (for example, as pointed out in the recent Aho report on "Creating an Innovative Europe"). Good R&D is carried out in Europe but taking it to market and making a success on the market is difficult and often underestimated. Overall, the mapping obtained from the roadmaps seems to reflect the general

view that R&D is well developed across Member States; however the demand-side and market opening activities are in a number of instances not yet introduced.

Significant and rapid environmental advantage can be gained by simply promoting the take-up and diffusion of environmental technologies already existing on the market. Many of these are in niche positions and need to move to mainstream. Encouraging more coordinated and coherent demand-side activity in Member States is important for the take-up of environmental technologies. Based on the roadmaps it is evident that there is a clear opportunity to implement more coherent market-pull approaches, or to strengthen and coordinated existing activities.

Outstanding features – the highlights of achievements – provide interesting examples of "best practice". Typically, these include for example:

- Highlights of R&D Projects and Programmes

- Innovative environmental products

- Financing Schemes to help SMEs

- Examples of Green Procurement Initiatives

- Examples of local or national laws passed in Member States

- Initiatives taken at international level

A selection of highlights is presented in the next section. These are not exhaustive and many more highlight examples can be found in the material; however, it does at least give a flavour of the richness and diversity of the material at hand. Again, there is also clear opportunity to build on a number of effective schemes being implemented in Member States, which have the potential of being learnt from, adapted and applied in other national contexts. The problem is that there is not enough awareness about of such schemes across Member States and regions; neither is there an understanding of which of the schemes are the *most effective*. Developing a better understanding of the effectiveness of the various schemes and a developing a way of spreading the knowledge of how the set up the best, needs to be spread in a dynamic and effective way.

Another feature of the roadmap material is that few roadmaps really aim to plan into the future – what activities should or will take place in a Member State, how will they be organised, how do they relate to current plans? These questions are less frequently addressed. Some exceptions to this included the Czech Republic which supplies a one page overview of the timing of actions; Austria which mentioned start dates along side actions; the Netherlands with explicitly mentioned ongoing plans and milestones; and Hungary which describes which internal offices should take care of future tasks. In principle, roadmaps should not only be a report of what has been done, but can help plan what needs to be done in the future and how such plans can work together to deliver a unified result. In the future it could be of benefit to have a better balance of current actions with plans *for the future,* and how these could be realised.

Another aspect of roadmaps is the *organisational change* they encourage. Developing national roadmaps takes both effort and coordination – across the relevant ministries,

governmental departments, as well as the various other stakeholders, such as the business and research communities. In many cases the *organisational* structures designed to develop roadmaps (task forces, committees, etc) have been evolving into more formal or longer-term structures (such as national councils, links to Prime Minister's office, etc.) In addition, formal government approval of the national roadmaps has been (or is being) gained. Moving towards longer-term organisational structures and gaining government backing and approval are important, as they can help pave the way for more permanent commitment to deal with planning for eco-innovation and environmental technologies in the future.

There has been enthusiasm for the sharing of information across Member States. The website has helped the initial diffusion of information about the details of roadmaps across ministries in Member States, and there is evidence that the web-site has been useful in this respect. In addition, a special workshop was organised to enable Member States to describe and share their views on roadmap development. It will be important in the future to build on this momentum and to further facilitate knowledge sharing, for example sharing the highlights and best practice of roadmaps, could be of benefit to all in the future.

As a final point it is considered that Roadmaps will continue to be used as a tool to map activities and plans, and can usefully be updated on a periodic basis. The spirit of enthusiasm evident in many Member States in developing the roadmaps, now needs to be followed through to see tangible how the roadmaps can act as *drivers of change* in promoting eco-innovation and the development and take-up of environmental technologies.

3.   HIGHLIGHTS

This section presents some of the highlights of the roadmaps. These are taken from the many examples or the "best practice" examples described in the roadmaps. They include, recent environmental technologies and products, programmes to promote research and development; initiatives to improve market conditions and help with financing and investments; through to actions taken on a global level.

More information can be found in the roadmaps documents themselves as indicated below.

A number of highlights are also featured in detail on the ETAP website, either as short news articles, labelled as ETAP Highlights, or as interviews with relevant persons concerned; for more detail see: http://ec.europa.eu/environment/etap/news_en.htm; they have also been grouped together as a collection of "ETAP highlights" on the page: http://ec.europa.eu/environment/etap/showcase_en.htm

Bio-plastics from potato waste

Bodegradable polymers from the potato industry are used to make a range of degradable utensils. A range of products for packaging, garden and outdoor use are currently marketed. [Netherlands page 5]

Potable solar water purification unit

A new company product won the European Business award with a mobile water purifier, especially for developing countries. [Netherlands page 4]

Cleaner Greener Production Programme

Programme to prevent and reduce environmental impacts from industrial activities [Ireland page 18]

Building of Tomorrow

This programme aims to reduce energy and encourage renewable raw materials. It has helped Austria reach a leading position in Europe in terms of passive house technology. [Austria page 6]

Thematic Park on Renewable Energies

Plans for a thematic park featuring laboratories, lecture rooms, company products and demonstration facilities are planned to be set up by the Ministry of Commerce and Tourism [Cyprus page 2]

Towards 100% re-cycling scheme

Re-cycling of tyres has reached almost at 100%, due a range of technological, economic and legal measures that have worked effectively together. [Finland page 21]

Green and White Certificates to promote eco-efficiency

Market-based mechanisms to increase energy efficiency [Italy page 5]

Capital Investments to boost development of SMEs.

Run by Sitra under the Clean Tech Environment Programme [Finland page 12]

National Laws to promote Green Procurement

National decree in Italy issued in 2003 requires public administrations to 30% of good purchased based on re-cycled materials [Italy page 10]; [Czech Republic page 12]

Coordinating Green Procurement

The setting up of a foundation (GRIP) for cooperation and knowledge resources across Norwegian municipalities on 'green procurement' linked to the Norwegian Procurement Act. [Norway Page 6-7]

Regional laws to promote Green purchasing

Autonomous Regions, such as La Rioja, Valencia, Aragon Murcia, have established environmental criteria in tendering procedures. [Spain page 17]

Municipal and National Decrees to stimulate solar energy

Spain's national and regional policies that have spurred the deployment and business in solar energy in regions such as Barcelona, through a number of coordinated measures. [Spain page 11]

Feed-in tariff scheme

Germany's feed-in tariff scheme which has been instrumental in boosting use of renewable energy – a number of Member States have adopted similar schemes [Germany page 17]

Promoting water reduction technology with market instruments

[Poland page 14]

Various financial schemes to promote eco-innovation

A range of financing actions aimed at promoting eco-innovation, for example those established in Netherlands, Denmark, Germany, Finland and Sweden. [Netherlands (pages 13-14); Denmark (page 11); Finland (pages 12-15) and Sweden (pages 15-21)]

Consultancy to help Green SMEs

Consultancy services to help SMEs transform their working practices; results in economic and environmental savings. [Germany page 17-18]

Brokering waste as a resource

The National Industrial Symbiosis Programme is a business-led to create commercial opportunities for waste from one to become a resource for others The National Industrial Symbiosis Programme which aims to 1000,000 tons of waste per region per year, through a form of a brokerage scheme. [UK page 10]

REEEP partnership

International partnership promoting clean energy markets and financing for renewables worldwide. [UK page 20]

It is very clear that a number of effective schemes for promoting eco-innovation are being put into place by Member States. There is significant potential to share and build on some of the best of these. The question is how to identify, learn from and adapt schemes that effectively promote eco-innovation.

4.   CONCLUSIONS

The roadmaps demonstrate that there is *a lot of activity* in Member States taking place to promote eco-innovation and the take-up of environmental technologies. The spirit of enthusiasm evident in many Member States in developing the roadmaps, now needs to be followed through to see how the roadmaps can be used to act as tangible *drivers of change*.

Based on the observations and analysis described, a number of conclusions readily emerge. Five suggestions are proposed for further consideration.

Suggestion 1: All EU-25 roadmaps need to be completed

The overall response to the preparation of roadmaps is positive. With 21 Member State roadmaps available, as well as one from Norway, a meaningful analysis can be made that reflects current developments in Europe. However, this still does not give a complete picture and coverage of *all* Member States. All Member States need to complete their national roadmaps in order to gain a full picture of activity in EU-25. Those Member States that have not yet prepared and need to have their roadmaps approved at national level should do so as soon as possible. Individual contact between the EC and Member states may help identify specific issues.

Suggestion 2: Roadmaps should be active documents with strategic planning

Most of the roadmaps submitted gave a lot of detail about existing actions but much less on planning and strategic orientation. It is a natural first step to describe existing work. However, it is important to also describe the *plans* that are being put into place to bring about more effect: more eco-innovation and more take up of environmental technologies.

The next round of roadmap development should include planning and strategic elements, including specific targets and milestones as appropriate. Furthermore, roadmaps should be "live" documents that are used for planning updated on a periodic basis.

It is suggested that a next milestone for roadmap development should be agreed upon. This will allow current roadmaps to be updated and improved. As part of this procedure it is suggested that roadmaps should be updated directly on Member States web sites, thus allowing the regular updating. The ETAP site would simply link to the national site. A target date for updated roadmaps could be suggested for 2007.

In addition, Member States should take advantage of better linking in to the Lisbon and the Sustainable Development strategy areas. In particular improved coordination of outcomes of the ETAP roadmaps and the Lisbon Annual reporting is recommended.

Suggestion 3: More coordinated activity on the demand-side is needed

The analysis indicates that almost all Member States put emphasis on the supply side of environmental technologies, namely research and development. Demand oriented activity is carried out – but less consistently. Only some Member States seem to have an even distribution of activity across all the ETAP Actions. Encouraging more activity on the demand side and better coordination of demand side actions is key to enabling the rapid take-up and diffusion of technologies. Member States should be encouraged to actively pursue and intensify those Actions that further create demand in a systematic coordinated manner. Examples of demand creating activities include: Green Public Procurement, Promoting investments, effective subsidies and incentives, Awareness and training in business. One way of furthering this is proposed under suggestion 4.

Suggestion 4: Build on Best Practice

It is clear that a number of effective schemes for promoting eco-innovation are being put into place by Member States. There is potential to share and build on some of the best of these.

The question is how to identify, learn from and adapt schemes that effectively promote eco-innovation. In particular, such an approach could be used to promote those schemes that actively promote demand, as mentioned in suggestion 3.

To do this one would have to identify which are the most effective schemes (in both economic and environmental terms) in each Member State. Probably this could be done on the basis on national selection. Then, there is also a need to put into place mechanisms to share the knowledge of running the best schemes with other national or regional institutions. In this way, each Member State can learn from, adapt and apply similar schemes in their own context, so as to create a multiplier effect across Europe.

Suggestion 5: Carry out a fuller analysis of roadmaps in a systematic fashion

The roadmaps contain a large amount of material. The current analysis is relatively light. In the future an in-depth study of all the material available now and in the future (given that roadmaps should be updated on a regular basis) would be very useful. Such a deeper analysis should aim to produce detailed comparisons and trends, as well as statistics when possible. Such a study could develop a fuller picture by also looking into the many references that are made in the individual roadmaps.

There is a very real need for more data, and statistics about this domain in Europe. Such a further and deeper analysis could make a significant contribution towards this need, possibly contributing to a form of a "Networked Observatory" of eco-innovation and environmental technologies across Europe.