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

**on the implementation of the Community Strategy and Action Plan on Renewable
Energy Sources (1998 – 2000)**

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1. INTRODUCTION

In November 1997 the European Commission adopted the Communication “Energy for the Future: Renewable Sources of Energy” a White Paper for a Community Strategy and Action Plan,¹. The purpose of the White Paper on Renewable Energy Sources is to contribute, by promoting renewable energy sources, to the achievement of the overall energy policy objectives: security of supply, environment and competitiveness, and to improve and reinforce environment protection and sustainable development. In order to reach these goals the White Paper proposes to double the contribution of renewable sources of energy (RES) to the European Union’s gross inland energy consumption establishing an indicative Community objective of 12% by 2010. The White Paper also contains a comprehensive Strategy and Action Plan setting out the means to reach this objective.

In the White Paper the Commission undertook to produce every two years a *Communication* to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions evaluating progress made in the Community and in Members States. The Commission should, if appropriate, recommend new guidelines and/or new actions *if sufficient progress in the penetration of RES does not appear to be made*.

Progress on the penetration of RES has also to be analysed taking into account new developments in the EU Climate Change Strategy and the EU commitments in the protocol of Kyoto. EU objectives on reduction of GHG emissions by 8 % in 2008-2012, with respect to the levels of 1990, will not be achieved unless further efforts are undertaken. First, on the demand side to reduce the gross inland consumption. Second, on the supply side to use energy sources which produce little or no GHG emissions, such as renewable energy sources.

As regards this issue, the Commission intends to open a large debate on the basis of the recently adopted Green Paper on security of supply². This Green Paper is the response to an observable fact: Europe’s growing future energy dependence. The recent tripling in the price of crude oil on the international market has served as a grim reminder of the crucial role of energy in Europe's economy. Security of supply does not seek to maximise our autonomy in energy or to minimise our dependence, but to reduce the risks connected to the latter. Energy dependence is not in itself an easy problem to solve, however the concept of security of supply which appears in the Treaty on European Union (Article 100) calls for an exercise of reflection over the diversification of the various sources of supply (in products and by geographical areas).

Ongoing discussions on sustainability at the Community and international level are of paramount importance for the development of RES. The contribution of RES to sustainability is largely accepted.

The present Communication contains the first progress report on the implementation of the White Paper for a Community Strategy and Action Plan on Renewable Energy Sources. An updated version of the Action Plan is provided in **Annex I**.

¹ COM(97) 599 of 26.11.1997 Energy for the Future: Renewable Sources of Energy – White Paper for a Community Strategy and Action Plan

² COM(2000) 769 final of 29.11.2000 Green Paper Towards a European strategy for the security of energy supply

2. REACTIONS TO THE WHITE PAPER

On 8 June 1998 the Council adopted a Resolution on renewable sources of energy³. In this Resolution the Council agreed that there is a need to promote a sustained and substantially increased use of renewable energy sources of energy throughout the Community and welcomed the general thrust of the White Paper as a basis for actions at the Community and national levels. The White Paper's indicative objective of 12% by 2010 was considered as providing useful guidance for increased efforts at Community and national level. The Council confirmed the Community role as a complement to national measures and stressed the importance of the ALTENER programme in developing and promoting support measures at Community level. The Council also noted the important contribution expected from biomass and that, consequently, Community policies on agriculture and waste management should take this into account. The Council welcomed the Campaign for Take-Off and recognised its favourable impact in raising interest among industry, investors and the public.

The European Parliament in its Resolution on the White Paper⁴ welcomed the White Paper and Action Plan considering the objective of 12 % by 2010 as a minimum. The Parliament considered statistical accounting under the substitution principle preferable and called the Commission to quantify the favourable impacts of RES on the environment in terms of GHG emissions and avoided external costs. The EP called on the Commission to introduce legislative proposals in electricity but also in agriculture/biomass and building sectors. According to the Parliament, The third countries policy and programmes of the EU should aim to include RES as a priority. The EP also highlighted the importance of the ALTENER programme, with a clear increase in funding. The EP welcomed the Campaign for Take-Off and proposed new objectives to be added to as well as an "Awards" scheme in the framework of the Campaign. Finally, the European Parliament asked for a Task Force on RES, the incorporation of an energy chapter in the Treaty in any future review, and advocated a charter on RES, "EURENEW".

The Committee of the Regions⁵ welcomed the White Paper and highlighted the role to be played by regions and cities in the implementation of the Strategy. It also stressed the importance of the "100 communities for 100% of RES" action in the Campaign for Take-Off. Finally the CoR asked the Commission to constitute a Task Force on RES and the creation of an "European Agency for Renewable Energy". The Economic and Social Committee⁶ also welcomed the White Paper and highlighted the outcomes for the manufacturing industry, the building industry and agriculture. Industries, associations, agencies and non-governmental organisations have also reacted positively to the White Paper.

3. CURRENT SITUATION AS REGARDS THE COMMUNITY OBJECTIVES

The indicative objective proposed by the Commission was qualified as ambitious but realistic by the Council who recommended Member States to take this objective into account and as

³ Council Resolution of 8 June 1998 on renewable sources of energy, OJ C 198, 24.6.1998, p. 1

⁴ Resolution of 17 June 1998 of the European Parliament on the Communication from the Commission: Energy for the Future: Renewable Sources of Energy – White Paper for a Community Strategy and Action Plan (A4-0199/98)

⁵ Opinion of the Committee of Regions of 16 July 1998 on the Commission White Paper: "Energy for the future: renewable sources of energy" (CdR 57/98fin)

⁶ Opinion of the Economic and Social Committee of 29 April 1998 on the Communication from the Commission on "Energy for the future: renewable sources of energy" (CES 633/98)

guidance. In statistical terms, progress at the Community level is not yet visible in the consolidated statistics which cover the period 1989-1998. Moreover, the impact of new Community (electricity from RES, Structural Funds, etc.), national (electricity, CO² tax, etc.) or regional and local (building, urban planning, etc.) legislation would only be visible two or three years into force. Nevertheless, trends in some sectors are already appearing that can lead to preliminary conclusions.

3.1. THE SHARE OF RES IN THE COMMUNITY

When the White Paper was published the most recent consolidated statistical data on RES development in the EU then available concerned the year 1995. In this year the contribution to the total gross inland consumption of the European Union amounted to 5,4% (5.3% in the consolidated Eurostat data) and the evolution was confirmed at 5.8% in 1997, very close to the 6% estimated for this specific year in the White Paper. For 1998, only provisional figures are available showing at least a 5.9% contribution of RES to the total gross inland consumption. It should be noted that most Member States had little experience in collecting renewable energy statistics in the early 90's. **See table 1.**

The increase of RES-contribution to overall RES production from 1997 to 1998 results only in a very modest increase of RES market share because of the total increase of energy consumption. Current trends in energy consumption highlight the necessity of further measures in demand management and energy efficiency in order to reduce the gross inland consumption and to reduce GHG emissions without compromising economic growth.

The key figures concerning this period 1989-1998 show an increase of 32% on the total RES primary energy production (increases of 2154% in wind and of 138% in solar) and an increase of 29% on the total RES electricity generation⁷. The importance of RES in the various Member States varies considerably depending on their energy policies, and in particular upon specific measures taken to promote renewable energy sources at national and international level. **See table 2.**

An increase of 5.4% in electricity generation took place between the 1997 and 1998 periods, where hydro and wind provided the main contribution. Nevertheless, while the increase in wind is due to new capacities installed, the increase in hydro is due to favourable hydroclimatic conditions (quantity of water). **See graph 3.**

The growth of RES contribution is very heterogeneous amongst the different MS and in different sectors. For some technologies, more recent figures can be obtained from the sectors concerned showing a positive and impressive evolution in some countries. Only wind, biogas and MSW show differences at EU level. The installed capacity of wind energy, for instance, has grown by around 70% from 4541 MW in 1997 to 7660 MW in August 1999⁸. There are, however, indications that not all RES technologies have developed at such a pace.

It has to be highlighted that the main improvements experienced in Member States correspond to those sectors for which an appropriate policy has been implemented. For example, supporting programmes have led to increased market penetration of solar thermal energy in Austria and Germany, in spite of having less potential than southern countries. The same is

⁷ 1998 numbers to be considered provisional: in countries without updated numbers for this year, 1997 figures have been used.

⁸ Source: EWEA

true for wind energy: while Denmark, Germany and Spain have experienced a real take-off, other countries with even higher potential are not developing their wind markets.

3.1.1. Biomass

Bioenergy is a very diverse type of energy with very different sources, processes and feedstock. Energy from biomass and waste encompasses the production of heat, fuels and/or electricity from agriculture, industry and municipal wastes. Because of its potential contribution to security of supply, it has become an important element of energy, environment and agriculture policy. The biomass sector has shown an increase of 13.5% in the EU-15 during the period 1995/1998, although some MS have achieved much greater increases 57% (DE) and 94% (IT) in the same period of time.

Solid biofuels:

Three very important sources of energy from biomass are forest residues, wood industry residues and short rotation energy crops. Traditional uses like fuel-wood for domestic heating are continuing whilst new technologies are being developed to exploit the supply chain from field (energy crops) or forest (trees) to the end-user. In 1998, wood used in households represented 25.6 Mtoe and the wood used by industry was 8.7 Mtoe.

Liquid biofuels:

Liquid biofuels are used mainly as transport fuels. The two primary types are biodiesel and bio-ethanol, processed from agricultural crops and other renewable feedstock. At present most biodiesel in the EU is processed from oilseed rape and sunflower. Bioethanol is processed mainly from wheat, sugar beet and sweet sorghum. There is an important potential in the EU for increasing the use of biofuels for transport, including alcohols and ETBE, and vegetable oils and esters for biodiesel. To exploit this potential, there is a need for improved framework conditions in the agricultural sector and for a favourable fiscal treatment of RES as well as for an innovative and dynamic marketing campaign.

The initial objective for liquid biofuels in the White Paper was 18 Mtoe, (including liquid biofuels from non-energy crops such as wood residues, used vegetable oils and biogas used as motor fuels). This target is equivalent to 5% of the final energy consumption by the transport sector for 2010, in a base-line scenario. An intermediate target of 5 Mtoe by 2005 for liquid biofuels used in the transport sector was set up in the Altener programme.

The total primary energy contribution from liquid biofuels in 1998 was 452 ktoe. Compared with the total consumption of oil products in that year (excluding the small amount of electricity used in this sector), this represents 0.15%.

The contribution from liquid biofuels to the total diesel used in the transport sector in EU in 1998 was 0.3%.

It must be highlighted that the very disappointing contribution of 452 ktoe coming from biofuels in 1998 reflects the situation that specific policies are adopted in only four Member States: France contributes with 58%, Germany with 21%, Italy with 18% and Austria with 3%. Low oil prices in the second half of the 90s have resulted in reduced interest of industry and politics in liquid biofuels.

Biogas:

Energy is also recovered from landfill gas, and from the biogas produced through anaerobic digestion of sewage, agricultural slurries and the organic components of industrial and urban wastes.

The main ways of obtaining biogas are the following:

- gas obtained from the anaerobic digestion of the organic fraction of municipal solid waste
- anaerobic fermentation of manure from animals
- sewage treatment with anaerobic digestion
- capture of methane from landfill sites (normally named landfill gas)

The main technologies for the production of biogas are already available, although technology advances could contribute to the optimisation of the fuel mix and processes concentrated on the dry part of the waste. Where is the main barrier of this energy? Planning becomes more difficult with energy of a dispersed nature, for which the fuel is a waste from another, different industry. Setting up biogas plants, both farm scale and centralised co-digestion plants, is a complex process which requires planning and co-operation to adapt to the local context. Very different actors with very different skills and objectives like city planners, farmer associations and utilities involved in a biogas project where energy objectives have to be met alongside environmental objectives.

Heat & electricity from biogas can be considered as environmentally friendly and economically feasible forms of CO₂ neutral energy. Soil improvement can also result from the biogas process when the liquid manure after treatment or the compost is used as a fertiliser. Compost produced as part of the biogas process is a good quality fertiliser. Biogas plants can become centres for the management of agricultural manure in rural areas. Also biogas plants will play a role in the recycling of organic waste products from households in cities.

Thus, while the production of biogas under controlled conditions from organic residues will increase, the collection and use of landfill gas to produce energy remains only a second option. Landfill gas production is expected to become less important in the future, although the emission of gases will continue for more than 10 years after closing the disposal sites.

Heat production, mainly from solid biomass, is facing in some Member States, the competition of natural gas. Efforts are made to introduce in the market suitable solid fuels as chips and pellets to facilitate their use and distribution for central heating in multi-dwellings, etc.

Only 2% of the animal manure potential is used for biogas production in Europe. A big gap exists between the available technologies and the existing market. Cross-fertilisation of the different policies in the EU is needed, including information campaigns addressed to main actors. The target set up in the White Paper of 15 Mtoe for biogas is only realistic if active policies are established.

Landfill numbers from 1997 to 1998 present a growth of 20% in electricity production and 27% in heat production, while primary energy increased by 60%. The numbers of tons of treated waste also provide a useful measure of progress in the biogas sector. Recent EU policy

on waste will create a stronger contribution of biogas in the biomass area and a possible reduction of landfill before the year 2005.

Countries like Denmark and United Kingdom had established important biogas production and landfill recovery policies. About eight MS present important growths of landfill energy production⁹.

Conclusion:

It is vital for renewable energies in general, but even more important in the case of the biomass sector, that those who are aware of successful new technologies should share their experiences with others who are not. A big knowledge gap still exists in the EU between the technology developers and the potential users of the new technologies, which are now available in the biomass and waste area. Promotional campaigns in the biomass sector should take into account the energy, environmental and economic aspects of the technologies, as well as practical experiences and impacts on the local- often rural – economies. Local and regional organisations and infrastructures are very important in the energy crops development.

Best practice results for the current regulation in MS and CAP need to be strongly disseminated.

3.1.2. *Wind energy*

The take-off of wind energy has already happened. In the last 10 years wind energy capacity has been multiplied by a factor of 24. This impressive take-off has been achieved by active policies in mainly three Member States (see below). The capacity installed was 2.515 MW in EU in 1995, and 6.458 MW in 1998 (9.645 MW in 1999, source industry association). This sector shows a 55% growth per year with the European industry leading the world market.

The White Paper proposed 40 GW of installed wind capacity in 2010 as an indicative target; taking into account the spectacular growth presented by this technology. The industry association has set up a new target: a 60 GW objective has been recently set for 2010. **See graph 4.**

A main feature of wind technology, benefiting from an important contribution from the EC RTD programme, has been the increasing average size of the generators: from an average size of 190 kW per wind turbine in 1990 to 780 kW in 1999. The main efforts are currently focused on offshore, bigger machines and grid-connection aspects.

Although the general evolution of the sector is positive, it is a result of the development of very active policies in three MS (DK, DE, ES). As in other RES sectors, a very heterogeneous situation exists in the EU regarding wind energy, with very different policies. As a result, annual growth in EU countries with high wind potential varies between 54% to 6%. **See table 5.**

There is a robust European wind industry, which represents 60% of the world market. The costs of the wind turbines have diminished enormously, resulting in current wind electricity prices, which can be as low as 0.08 €/kWh¹⁰.

⁹ A new questionnaire has been prepared where landfill will be part of a biogas chapter with the rest of digestible wastes. (REF Renewable and waste annual questionnaire, draft April 2000).

3.1.3. Photovoltaic solar energy (solar electricity)

The photovoltaic industry experienced an annual growth of 29% in Europe. The sector has a high potential and is very popular but barriers still exist. When electricity demand is 1 km from the grid, PV solar energy becomes competitive, but the extension of the grid is subsidised in many areas of EU, inhibiting potential markets for PV. A similar situation exists in islands, where 0.6 €/kWh is normally the cost of both PV and electricity generated with conventional fuel (including transport), but the existing schemes, copied from the mainland, do not favour the penetration of PV.

Advances have occurred in the simplification of connection to the grid. Several MS have recently established a policy pushing this technology. Big advances have taken place in building integration, where system costs have been reduced by 40% in the last five years. About 60% of the photovoltaic power installed in Europe is grid-connected. The nominal installed capacity of demonstration projects has passed from 40 to nearly 100 MW over the last 4 years in the EU, and the size of a typical demonstration project is now in the range of 0.5MW for grid-connected systems.

MS with active policies have attained higher expansion rates than the EU average. This is for instance the case in NL, which exhibited a 62% increase of installed PV capacity in 1998 compared to 1997.

The 3GW objective for 2010 set up in the White Paper is realistic, and a higher number can be achieved if simplification of administrative procedures is accompanied by a system cost reduction down to 0.1 €/kWh. The involvement of both utilities and municipalities is critical for the take off of this technology.

3.1.4. Solar thermal (solar heating)

The total installed area of solar thermal collectors in the EU was 9.019.000 m² in 1998.

A modest increase of 14% in the installed area of solar thermal collectors occurred from 1997 to 1998. Countries with active policies in solar thermal represent 75% of the European capacity: about 28% of the total area is installed in DE, 26% in GR and 21% in Austria.

Solar water heating has an important market in the building sector, one of the fastest growing sectors for energy consumption, which represents 40% of final EU energy consumption. The energy demand for water and space heating in a building corresponds (both residential and commercial) to 61% to 82% of the total consumption depending on uses. There is an unexploited European market for solar water heating in buildings, but also for the following uses of solar thermal energy: swimming pools, drying in agriculture, and space heating and cooling in buildings. Active promotion is needed together with distribution networks and market innovation.

3.1.5. Hydro

Hydropower is a proven mature technology and its operation has been competitive with other commercial energy sources for many years.

¹⁰ Average costs of kWh are : 0.04 €/kWh for gas and 0.037 €/kWh for coal. For nuclear and hydro average costs are unlikely to be used due to extreme differences between countries, plants or hydrolicity regimes.

In 1998, the total hydroelectricity production was 304 295 GWh with an installed capacity of 98 410 MWe. The production of hydroelectricity still represents 12% of the total electricity production, by far the biggest RES electricity producer (86%). However the capacity is progressing very slowly at 1,8% per year. The evolution of the production is very much linked to the hydrolicity of the year (quantity of water) and consequently trend analysis is inadequate.

A distinction has to be made between large hydro and small hydro (less than 10 MWe); large hydroelectric installation being in general competitive and not needing particular support. Consequently, large hydro is not part of ALTENER program but integrated in the RE statistics.

In the EU, the existing technical and economic potential for large hydro power plants either has been used, or is unavailable due to environmental constraints.

In contrast, there is still a good potential for the development of small hydroelectricity especially for low head sites. In addition many existing Small Hydro Plants that are out of operation can be refurbished with a relatively modest outlay.

In 1996, the installed capacity for Small Hydro sites was 9675 MW with an increase of 2.5% compared to the previous year. The White Paper quotes that an additional installed capacity of 4500 MW of small hydro plants by 2010 would be a realistic contribution, which could be achieved given a more favourable regulatory environment. For the small hydro industry non-technical barriers remain the main factor which hinder its development.

The specific cost of installed kW is very site specific and depends on the head of the fall and the installed capacity but can be around 1200 Euro/kW. The reliability and the long lifetime of the installation combined with low maintenance costs is well known. However long payback times affect the economic situation of the projects.

The EU hydro electricity is leading the world market. Its business is essentially outside Europe.

3.1.6. *Geothermal*

In 1999, nearly 1 million dwellings are geothermally heated. Installed capacity for electricity generation is about 1000 Mwe. New geothermal plants are developed, mainly, in southern Germany and in Austria.

3.2. Renewable energy in Member States

In the White Paper it was emphasised that, in order to reach the Community indicative objective, *Member States had to encourage the increase of RES according to their own potential*. Furthermore, as far as Community measures need to be complemented by national, regional and local measures, Member States have a key role to play in taking the responsibility to promote renewable energy through national strategies and programmes.

It has to be highlighted that, while the promotion and support to RES, both at Community and Member States level, had already started when the White Paper was published, public support

to RES projects¹¹ through national programmes has been clearly encouraged and fostered by the White Paper. The White Paper is now a reference not only to Member States, including regions and cities, but also at international level.

Moreover, a number of Member States have recently introduced national strategies for the development of RES, as called for in the White Paper. Such strategies typically include targets and multiannual Action plans addressing capacities of RES systems to be installed, as well as administrative, legal and other promotional measures and activities. An overview of national strategies and objectives in Member States is contained in **Annex II**.

3.3. Co-operation between the Commission and Member States

To ensure more effective co-operation between Member States, called for in the White Paper, a renewable energy working group made up of Member States and the Commission was set up, on the initiative of the Commission. The working group has met in March 1998, May 1999 and October 2000 and it was agreed that it would be used as a forum to exchange information on national policies and programmes and follow the implementation of the White Paper Strategy and Action Plan. The group took the initiative to launch a survey on measures and programmes related to RES in Member States in order to improve communication and co-ordination. The group also invited its members to update the information on a regular basis.

4. REGULATORY MEASURES

In the White Paper a number of priority actions in the regulatory sectors were identified aimed at overcoming obstacles and redressing the balance in favour of renewable energy, in order to reach the indicative objective of 12% penetration by 2010. New developments in key policy fields have been the following¹²:

4.1. Electricity from renewable energy sources

The Commission on 10 May 2000 adopted a proposal for a Directive on the promotion of electricity from renewable energy sources in the internal electricity market¹³. This initiative of the Commission is a response to the Energy Council's invitation of 11 May 1999¹⁴ to submit a concrete proposal for a Community framework on access of electricity from renewable energy sources to the internal market. The European Parliament likewise in its resolutions on electricity from renewable energy sources of 26 May 1998¹⁵ and of 30 March 2000¹⁶ called for a Commission proposal in this area.

The strategic objective of the proposal was to create a framework for the medium-term significant increase of electricity from renewable energy (hereafter "green electricity")- in the EU and to facilitate its access to the internal electricity market. The proposal aims to create regulatory certainty for stakeholders, while at the same time respecting the principle of

¹¹ On the basis of information received from Member States the annual expenditure for RES promotion in Member States in the period between 1997-1999 is estimated to be at least 1,7 Bill. €.

¹² See also the "Green Paper Towards a European strategy for the security of energy supply" COM(2000) 769 final of 29.11.2000

¹³ Proposal for a Directive of the European Parliament and of the Council on the promotion of electricity from renewable energy sources in the internal electricity market COM(2000) 279 final.

¹⁴ Council conclusions of 11 May 2000, 8013/99

¹⁵ A4-0199/98

¹⁶ A5-0078/2000

subsidiarity by providing for a wide degree of autonomy to each Member State to allow their particular circumstances to be taken into account. It is based on the following principles:

National Targets:

Member States are obliged to establish national targets for the future consumption of green electricity. Indications for these targets are set out in an Annex to the proposal. If they are all met, around 22 % of the EU's electricity will be provided from renewable energy sources in 2010, compared to 14 % today.

The Commission will monitor the compliance of national targets with Community objectives and will have an obligation to propose amendments to the national objectives if they are inconsistent with the Community objectives.

Support Schemes:

The proposal abstains from proposing a harmonised Community-wide support scheme for green electricity. This is in order to allow Member States to gain further experience with the application of their national support schemes. The Commission will follow closely the developments in Member States to gain further insights into the practical merits of each support scheme.

However, the proposal obliges the Commission to make *if necessary* a proposal for such a harmonised support system. This will be done on the basis of a Commission report assessing the various support schemes in favour of electricity production from renewable as well as from conventional energy sources. The report should give a clear picture of the different public support measures in the electricity sector as a whole. This in turn will allow the Commission to assess the type of support system needed to establish a level playing field between renewable and conventional energy sources.

Technical issues:

The proposal tackles a number of technical issues, which are fundamental to the further development of green electricity. It thus obliges Member States:

- to introduce accurate and reliable certification of green electricity,
- to assure priority access for green electricity to the electricity grid,
- to check how administrative procedures applicable to the installation of generation plants for green electricity could be streamlined and simplified,
- to assure that the calculation of costs for connecting new producers of green electricity to the electricity grid is transparent and non-discriminatory.

The proposal is currently discussed in the different institutions of the European Union and is scheduled for the Council's meeting of Energy ministers in December 2000.

4.2. Fiscal and Finance measures

Environmental taxes and charges can be an appropriate way of implementing the "polluter pays" principle by including the environmental costs in the price of goods and services and by this means internalising external costs. The White Paper emphasised that the environmental

benefits of renewable energy justify favourable financing conditions, e.g. through tax exemptions or reductions on products from RES.

Most Member States have in recent times introduced environmentally motivated taxes on energy, or are seriously discussing the issue. These national tax schemes provide in most cases for a favourable treatment of renewable energy.

In the White Paper reference was made to the 1997 Commission proposal for a Directive on the taxation of energy products. This proposal enlarges the scope of the Community minimum rate system beyond mineral oils to cover all energy products providing an internal market framework within which Member States can use taxation as an instrument of environmental policy. The draft directive provides for exemptions for renewable energy. The adoption of the Directive would be of particular importance for biofuels since under the current Community legislation de-taxation of biofuels is only possible in the framework of pilot projects¹⁷.

However, the discussions on the Commission proposal to harmonise the taxation of energy products have proven to be difficult, unanimous agreement in the Council required in tax issues could not be achieved so far.

Consequently, potential trade distortions stemming from different tax regimes throughout the EC can still constitute a serious impediment to the introduction and/or operation of energy taxes at the national level. Further progress towards a common basis for energy taxation in the EC would therefore facilitate an appropriate use of tax instruments for the promotion of RES.

4.3. New Bio-energy initiative for Transport, Heat and Electricity

The production of liquid biofuels for transportation uses is being developed in some Member States without surpassing the pilot phase. Much efforts have to be done in this sub-sector including a more stable production of liquid biofuels in the agricultural sector, the development of the use of liquid biofuels in fixed engines and the development of blended fuels combined with efforts to increase the number of transport vehicles, that are certified for the use of biofuels.

The production of heat and electricity from biogas by a controlled anaerobic digestion process, using biodegradable residues and wastes, can be developed following new ACP regulations which provide the possibility to transform food-industry and farms residues, such as manure, etc. in situ.

There is also scope for development following the new regulations on waste and landfill gas under certain conditions regarding environmental protection. The Communication from the Commission "*EU Policies and Measures to Reduce Greenhouse Gas Emissions: Towards a European Climate Change Programme (ECCP)*"¹⁸ states that one of the proposed measures in the area of waste is the promotion of the biological treatment of biodegradable waste.

As regards landfill gas the Community Strategy on Waste states that measures should be taken to enhance prevention and recycling, so that the amount of waste, which is sent for landfilling, will be reduced : land-filling of waste being the last option in the hierarchy of

¹⁷ Council Directive (EC) 92/81, OJ L 316, 31.10.1992, as modified by Directive (EC) 94/74, OJ L 365, 31.12.1994, p. 46);

¹⁸ COM(2000) 88 final

waste management. Accordingly, the *Directive on the landfill of waste*¹⁹, which came into force on 16 July 1999 and must be transposed into national law by 16 July 2001, lays down specific requirements on the construction, operation and after-care of landfills.

The overall objective of the Directive is to prevent or reduce as far as possible negative effects on human health or the environment from the landfilling of waste. Negative effects from landfilling arise mainly from uncontrolled emissions of landfill gas and leachate to the surrounding environment. To minimise such emissions, the Directive provides as one of its main objectives that Member States draw up strategies to reduce the amount of biodegradable waste going to landfills; it also sets precise targets for the reduction of the amount of biodegradable municipal waste going to landfills. To achieve these targets Member States will have to increase in particular the recycling, the composting of biodegradable waste, the production of biogas and other forms of recovery.

4.4. Improving building regulations

As anticipated in the White Paper, *total energy consumption in the domestic and services sectors can be reduced by 50% in the European Union by 2010, and half of this could be achieved by introducing passive and active solar technologies in buildings*. Heating, cooling and lighting constitute the lion's share of the energy demand in this sector. Appropriate legislation is slowly being introduced in Member States, mainly through local regulations, both promoting the use of renewable energy sources and introducing energy efficiency measures. Energy conservation measures are of paramount importance when planning to introduce renewable energy sources in residential, professional and service buildings. This is why energy efficiency measures are included in this chapter, together with typical renewable energy initiatives.

In April 2000 the Commission presented an Action Plan to improve Energy Efficiency in the European Community COM(2000)247.

In this Action Plan a wide range of measures aimed at energy efficiency in buildings was put forward.

There is a close link between energy efficiency and the use of renewable energy sources in buildings. In fact some advanced building projects have demonstrated both commercial and residential buildings in cities do not require any external conventional source of energy (e.g. electricity, gas or fuels) if best technologies in EE and RES are combined.

Both the Commission and Member States have implemented policies and programmes to substantially improve the energy efficiency of end-use electrical equipment and to reduce the energy consumption in existing and new buildings.

At Community level actions have been undertaken to introduce both minimum efficiency requirements and mandatory energy labelling for domestic appliances and lighting equipment. In particular, minimum efficiency requirements have been introduced for domestic refrigeration appliances, the single most consuming domestic appliances (Directive 96/57/EC)²⁰, while labelling has been implemented under the framework Directive

¹⁹ Directive 99/31/EC, OJ L 182, 16.7.1999, p. 1-19, Corrigendum OJ L 282, 5.11.1999, p. 16

²⁰ Directive 96/57/EC, OJ L 236, 18.9.1996, p. 36-43

92/75/EC²¹ for domestic refrigeration appliances, washing machines, dryers, washer-dryers, dish washers and lamps.

Another important contribution to the reduction of energy consumption in buildings is Directive 93/76/EEC²², which requires Member States to develop and implement measures in six programme areas in the residential, tertiary and industrial sectors. This Directive aims at encouraging new actions by Member States, in particular in the areas of energy certification of buildings, thermal insulation of new buildings and billing of energy usage according to consumption. However, implementation of this directive by MS has been rather unsatisfactory and the Commission has started a number of infringement procedures regarding the implementation and reporting of this directive.

In addition, a major voluntary programme for energy savings in lighting has been introduced in the Community: The Green Light Programme. This programme calls on the use of day lighting, among other measures to reduce energy consumption for lighting. If successful, this programme could be extended to include the whole building's electrical consumption, including the need for heating, cooling and ventilation (HVAC systems). Here the interaction between efficiency and renewable energy sources is very close.

Concerning the building sector as a whole, the Commission is currently implementing the Action Plan contained in the Communication on "*Competitiveness in the Construction Industry*"²³. This Action Plan includes a priority action *to develop a European strategy for the use and promotion of environmentally friendly construction materials, energy efficiency in buildings and waste management, in order to contribute to sustainability*. For this purpose a working group on "sustainable construction" has been created. The working group involves representatives from Member States, industry and the Commission services. After the first meeting held in October 1999 three task groups have been established: TG1 on "environmentally-friendly construction materials", TG2 on "energy efficiency" and TG3 "construction and demolition waste". A first report to the working group is expected to be presented by October 2000.

Under the auspices of the European climate change Programme (see ch. 5.1 below), a number of working groups have been established for the purpose of providing the Commission with proposals intended to help meet EU Kyoto commitments. One of these groups, WG3, on energy consumption, is designed to prepare proposals for the building sector, including energy efficiency and renewables in buildings.

In addition, the Commission prepares currently a proposal for Community legislation on improved energy efficiency and increased use of renewables in buildings, especially public buildings.

4.5. Standardisation

Community wide standardisation is important to facilitate the commercialisation and market penetration of RES. Therefore, the Commission has taken initiatives on standards for solar thermal, solar PV and wind equipment. Concerning biomass, the Commission has taken two initiatives namely, three standards for biodiesel and seven standards for solid biomass. Through the involvement of the European Standardisation Committee (CEN), these standards

²¹ Directive 92/75/EC, OJ L 297, 13.10.1992, p. 16-19

²² Directive 93/76/EEC, OJ L 237, 22.9.1993, p. 28-30

²³ COM (97) 539 final – 4.11.1997

aim to reinforce traditional markets and to develop new competitive markets. Commission mandates to CEN/CENELEC are contracted and financed under the ALTENER programme and under the former 4th RTD FP for solid biomass standards. Results can be expected in 2000 for solar and wind standards, and from 2002 for biomass, (see **Annex I**).

5. INTEGRATION INTO OTHER COMMUNITY POLICIES

5.1. Environment

The Commission in its Working Paper on “*The EU Climate Change Strategy: A Set of Options*”²⁴, preparatory to the Berlin “Klimakonferenz” (CoP-1) of March 1995, contemplated the integration of renewable energies into the energy market as a major strategic goal.

The Commission Communication of 14 May 1997²⁵ on “*The Energy Dimension of Climate Change*” was part of the Community preparations for the Third Conference of the Parties (CoP-3) under the UN FCCC (United Nations Framework Convention on Climate Change). The Conference met in Kyoto through 2-11 December 1997 to negotiate the adoption of a protocol whereby developed countries would agree on a legally binding timetable and quantified reduction objectives to address their collective emissions of greenhouse gases (GHG). The objective of the Communication was to identify policies and measures relevant to that goal. It listed actions that could achieve GHG reductions in a cost-efficient manner within the E.U., e.g. accelerating the promotion of renewable energy sources through Community programmes, research, tax incentives and discussion with energy producers. As for the global facet of Climate Change, it also proposed expanding the focus on energy projects, particularly those relating to renewable energy sources, for international co-operation initiatives.

Shortly after the presentation of the White Paper on RES, the Kyoto Protocol on the reduction of greenhouse gases was signed. The Community as a whole undertook to reduce greenhouse gases by an annual average of 8% compared to the level in 1990 in the period between 2008-2012.

Article 2 paragraph 1. (a). (iv) of the “Kyoto Protocol” (KP) –the legal text approved at CoP-3- requires each Annex-I country to “*implement and/or further elaborate policies and measures in accordance with its national circumstances, such as: Research on, and promotion, development and increased use of, new and renewable forms of energy*”.

The Communication adopted on the 19th of May 1999 on “*Preparing for Implementation of the Kyoto Protocol*”²⁶ provided the European Commission’s input to the Cologne European Council on the 4th and 5th of June. It takes a sector view of those policies and measures that may contribute to curb GHG raising emission trends. This Communication stresses CO2 reduction potentials and sustainability aspects of the renewable energy sources (RES). Within the context of the UN FCCC, electricity generation from RES is singled out as an important element in project-related flexibility mechanisms under the Kyoto Protocol. The future development of RES has been incorporated within the 5th RTD Programme.

²⁴ SEC 95/288/final – 1.3.1995

²⁵ COM(97) 196 final – 14.5.1997

²⁶ COM(99) 230 – 19.5.1999

The Commission has adopted on 8th March 2000 the “*Green Paper on greenhouse gas emissions trading within the European Union*”²⁷ and a Communication on “*EU policies and measures to reduce greenhouse gas emissions: Towards a European Climate Change Programme (ECCP)*”²⁸.

The 6th Conference of the Parties (COP6) to the United Nations Framework Convention on Climate Change in November should deliver decisions on the issues left unfinished in Kyoto.

The EU intends to start the political process on ratification of the Kyoto Protocol immediately after COP6. This discussion will have several dimensions, but at least two are of major importance:

- The burden sharing agreement that was agreed by the Council in 1998 will have to be incorporated into a legal instrument. The –8% target for the EU as a whole has been shared amongst Member States so as to allow for different economic development patterns. The legal translation of the burden sharing agreement will allow the ratification of Kyoto jointly by the Member States as well as by the EC.
- An implementation strategy will be needed to accompany the ratification instrument. It will be necessary to spell out which policies and measures will have to be undertaken, and how the so-called flexible mechanisms will be implemented within the EU and with other Parties from industrialised as well as developing countries.

The Environment Council in its conclusions of October 1999²⁹ urged the Commission to put forward in 2000 a list of priority actions on climate change and to prepare appropriate proposals in due course. In this context, the Council stressed the need to take forward those policies and measures already identified by Council in its conclusions of June 1998³⁰.

In response to these requests the Commission has brought forward the European Climate Change Programme (ECCP). This programme will bring together all relevant stakeholders to co-operate in the preparatory work of common and co-ordinated policies and measures to reduce greenhouse gas emissions.

The programme is structured around 6 working groups and the development of renewable energy sources plays a prominent role. A final report of the ECCP is scheduled for March 2001.

5.2. Growth, Competitiveness and Employment

The development of endogenous energy resources such as renewable energy contributes to improve sustainable growth, especially in rural areas, creating more business opportunities and more jobs. RES technologies deployment in certain areas contributes both to produce energy and to reduce pollution (i.e. depolluting waste treatment, RES integration in buildings, etc.).

²⁷ COM(2000) 87 – 8.3.2000

²⁸ COM(2000) 88 – 8.3.2000

²⁹ Council conclusions on a Community Strategy on Climate Change, doc. 11654/99, Luxembourg 12 October 1999

³⁰ Council conclusions on a Community Strategy on Climate Change, doc. 9702/98, Brussels 19 June 1998

Concerning competitiveness, recent developments in oil and oil derivatives prices enhance the approximation of RES and fossil fuel prices as far as unit costs in more RES technology are decreasing dramatically. Nevertheless, competitiveness analysis regarding energy prices without taking into account energy external costs are unlikely to be favourable to RES. How external costs are to be internalised or compensated in the future still is an open debate that should lead to a better balanced competitiveness analysis in the energy sector³¹.

Europe is a world market leader in RES technology. For instance, EU wind industry represents the 60% of the world market. EU hydro and PV industries are well introduced in growing markets as Latin America or Asia. EU biomass related industry is more focussed in the domestic market. EU industry development is due both to an increasing domestic demand and new export possibilities favoured from cost reduction and good expertise. Calculating the impact on RES development in domestic and export markets on employment has been a hazardous exercise since real figures for a long period were not available. Actual data from some industry sectors related with RES allows now more accurate estimates.

From a study carried out for the Commission³², and only considering the domestic market, the impact of the White Paper objectives' on employment can be calculated according to expected individual penetration rates by sector. **Table 6** summarises employment effects on the 15 MS in net operation and maintenance (O&M), construction and installation (C&I) and total employment taking into account the jobs displaced from employment in conventional energies.

The results suggest that around 530,000 jobs may be created between 1999-2010 across the 15 EU Member States within the renewable energy sector. In order to provide more accurate information to decision-makers on job creation generated by RES investments, further work should now concentrate on developing and expanding information directly related to the types of technologies discussed in the White Paper.

5.3. Competition and State Aid

The White Paper spoke about the guiding principles for the Commission in assessing aid for RES laid down in the Community Guidelines on State Aid for Environmental Protection and the Commission's intention to consider appropriate modifications in favour of RES during the revision of these Guidelines. The Council in its Resolution on RES welcomed this approach.

The Commission is currently discussing drafts for revised guidelines together with Member States. The revision aims at clearer, more comprehensive structure and at increasingly integrating environmental issues into energy and state aid policies.

The new guidelines should facilitate the operation of national state aid schemes for RES by providing clear and favourable rules while at the same time ensuring compliance with the state aid rules of the Treaty³³.

³¹ External costs of energy production have been calculated and analysed in the framework of the project EXTERNE lead by the DG Research

³² Impact of Renewable Energy Sources on job creation. The purpose of the study was to develop a methodology in order to calculate job creation in RES technologies by capacities installed and € million of investment. Estimates will be updated on a regular basis and job creation data included in the monitoring scheme

³³ See also the "Green Paper Towards a European strategy for the security of energy supply" COM(2000) 769 final of 29.11.2000

5.4. Research, Technological Development and Demonstration

The White Paper spoke about the still great scope for RTD&D to improve technologies, develop suitable materials for producing, storing, transporting and using energy, reduce cost and gain user experience in demonstration projects. The 5th framework programme offers the possibility to finance RTD efforts in the field of RES.

The fifth RTD Framework Programme (1998-2002)³⁴ was launched in February 1999. Activities focused on energy developments and applications are grouped into the sub-programme ENERGIE within the thematic programme “Energy, environment and sustainable development”³⁵. One of the two key actions under ENERGIE deals with cleaner energy systems, including renewable energies. Following the first Call for proposals launched in March 1999, about 60% of selected projects were related to the development and market deployment of renewable energy technologies. Community support granted was around €135 million, representing 67% of the available budget. Information on projects results is available in the CORDIS database.

Calls in 2000 included specific target actions on RES reflecting strategic goals of the White Paper: integration of RES in Communities, bio-energy, biogas, etc. For 2001 and 2002 new target actions have been proposed in a revised work programme (see **Annex I**).

5.5. Regional Policy

As pointed out in the White Paper, the reform of the Regional Policy under AGENDA 2000 presented a good opportunity to extend, consolidate and clarify the aid opportunities available for RES and to increase the weight given to RES within the energy programmes.

In fact, the new basic regulation on the ERDF adopted in the framework of AGENDA 2000³⁶ now expressly states that the ERDF should foster the development of renewable energy sources and the definition of the scope of the fund includes action in support of RES.

Part financing of programmes under the Structural Funds requires that account be taken also of Community priorities. These priorities were defined by the Commission in a Communication “The Structural Funds and their Co-ordination with the Cohesion Fund; Guidelines for programmes in the period 2000-06”³⁷. In the Guidelines, promotion of RES was highlighted within the strategic priority “regional competitiveness” as favouring, among others, the development of local resources and reducing import dependency. Reference was made to the White Paper in which Member States were called on to guarantee that at least 12% of the global budget of the energy sub-programmes is used to support RES.

Currently Member States are preparing the operational programmes for the next programming period of the Regional Fund. It will be of crucial importance that Member States make use of the new opportunities in terms of RES promotion for which the basic Regulation has laid down the foundation.

³⁴ Decision No 182/1999/EC of the European Parliament and the Council of 22 December 1998 concerning the Fifth Framework Programme of the European Community for research, technological development and demonstration activities (1998-2002), OJ L 26, 1 February 1999, p. 1

³⁵ ENERGIE has been allocated a budget of €1, 042 million in the financial perspective.

³⁶ Regulation (EC) No. 1783/1999 of the European Parliament and of the Council of 12 July 1999 on the European Regional Development Fund, OJ L 213, 13.8.1999, p. 1

³⁷ COM (1999) 344 final

5.6. Common Agricultural Policy and Rural Development

The White Paper emphasised that agriculture is a key sector if the goal to double the share of RES from 6% to 12% is to be achieved, in view of the expected substantial contribution of biomass.

The reform package introduced under AGENDA 2000 was therefore of crucial importance for the White Paper Strategy as a whole. In fact, the result of AGENDA 2000 provides some encouraging signals in the right direction.

Under the *support regime for arable crops* the compulsory set-aside rate was fixed at 10% until 2006/2007 and Member states have the opportunity, in the framework of voluntary set-aside regime, to fix a higher rate on their respective territory.

Since the production of energy crops is allowed on set-aside land and eligible for set-aside payment, these rules will provide opportunities for developing energy crops and thus improve the availability of raw material. However, the structure of set-aside payments give no specific encouragement to grow energy crops and do not ensure the required long term commitment of the agricultural sector in the energy crop growing sector.

On the other hand, Member States are allowed to pay national aid up to 50% of the costs associated with establishing multiannual crops intended for biomass production on set-aside land.³⁸

As regards biogas exploitation, the new Commission Regulation detailing the rules of application of the above support regime for non-food production constitutes an important improvement of the situation in that the production and use of biogas is now possible on the farm itself.³⁹

As regards the opportunities for RES within the rural development policy, the new Council Regulation on support for rural development from the European-Agricultural Guidance and Guarantee Fund (EAGGF) and amending and repealing certain Regulations⁴⁰ expressly provides for encouragement of non-food production. Therefore, when establishing their development plans, national competent authorities can decide to put emphasis on the non-food sector. For instance, investments in agricultural holdings linked to the production of bio-energy are eligible for support. In addition, support can be provided in the framework of afforestation of agricultural land by granting support for planting costs in the case of fast growing species.

In its Communication "Forestry Strategy"⁴¹ the Commission emphasised that the potential of forests as a source of energy, either by short rotation plantation or by the use of forest residues, should be favoured. Furthermore, the Commission in its Communication "Directions toward sustainable agriculture"⁴² stressed the role of biomass for combating climate change

³⁸ Council Regulation (EC) No. 1251/1999 of 17.5.1999 establishing a support system for producers of certain arable crops, OJ L 160, 26.6.1999, p. 1

³⁹ Commission Regulation No 2461/1999 laying down detailed rules for the application of Council Regulation (EC) No 1251/1999 as regards the use of land set aside for the production of raw materials for the manufacture within the Community of products not primarily intended for human or animal consumption, OJ L 299, 20.11.1999

⁴⁰ OJ L 160, 26.6.1999, p. 80

⁴¹ COM(98) 649 final

⁴² COM(1999) 22 final, 27.1.1999.

and made a reference in this context to the objectives of the White Paper on renewable energy, thereby introducing the climate change considerations into the concept of sustainable development. It was also underlined that increased biomass exploitation from forest residues would at the same time constitute a means to prevent forest fires, often caused by non removed residues. The above Communications also provide useful guidance for the selection of projects to be supported in the field of biomass under Community programmes in the framework of Rural Development.

From an operational point of view, the creation, on the initiative of the Commission, of an "Advisory committee on Non-food and Textile crops", including a "Permanent Group on renewable energy", constitutes a helpful tool. The Committee will facilitate a more effective participation of the parties involved in the issue of agriculture and renewable energy, in particular biomass.

In conclusion, it can be said that progress has been made in improving the conditions for biomass under Agricultural policy and related fields. However, if the biomass objectives of the White Paper are to be achieved and given the importance of the biomass sector within RES, considerable additional efforts are necessary to further improve these conditions.

5.7. External Relations

Enlargement policy is devoted to accession candidate countries, with specific measures and funds. Enlargement policy emphasises the harmonisation of legislation, including Community energy policy legislation. In addition, accession candidates can join Community programmes on the basis of bilateral protocols.

Concerning Third Countries, the Lomé Convention is being replaced by a Partnership Agreement between the African, Caribbean and Pacific States and the European Community and its Member States⁴³. The EDF financial resources will be channelled through two instruments: grants and risk capital and loans to the private sector. Poverty reduction is the central objective of the new Partnership.

The need for fostering RES development in industrialised and developing countries has being highlighted during the last G8s 68th Summit in Okinawa on the 23rd July 2000. The "G8 Communiqué Okinawa 2000" contains an Environmental chapter. Point 66 of the Communiqué is devoted to RES in the following terms: *"Working together and with existing institutions to encourage and facilitate investment in the development and use of sustainable energy, underpinned by enabling domestic environments, will assist in mitigating the problems of climate change and air pollution. To this end, the increased use of renewable energy sources in particular will improve the quality of life, especially in developing countries. We therefore call on all stakeholders to identify the barriers and solutions to elevating the level of renewable energy supply and distribution in developing countries. We invite stakeholders to join in a Task Force to prepare concrete recommendations for consideration at our next Summit regarding sound ways to better encourage the use of renewables in developing countries."* The Commission participates in the Task Force.

⁴³ Proposal for a Council Decision concerning the conclusion of the Partnership Agreement between the African, Caribbean and Pacific States on the one part, and the European Commission and its Member States, on the other part. COM(2000) 324 final, 23.5.2000

6. SUPPORT MEASURES

During the 1980s non-technical EC support to RES was concentrated in accompanying measures under RTD programmes, mainly, the JOULE and THERMIE programmes. At the beginning of the 90s the Commission proposed the adoption of non-technical programmes in order to foster RES and EE market penetration. In 1993 the Council adopted the Decision concerning the first ALTENER to promote RES in the Community.

6.1. The ALTENER Programme

The White Paper highlighted the crucial role of the ALTENER II programme and the subsequent programme included in the Energy Framework Programme as a basic instrument for the Action Plan.

The first five-year ALTENER programme ended on 31.12.97. In May 1998 the Council adopted its successor 'ALTENER II'⁴⁴ which ran two years from 1998 to 1999. The stated overall aim of ALTENER II is to make an essential contribution to the White Paper Strategy and Action Plan, including the Campaign for Take-Off. It continues the approach of the earlier ALTENER programme focussing on non-technical barriers (RES legislation, market opportunities, environment benefits, employment, standards, training structures, planning, monitoring, etc.) but in addition stresses targeted actions in order to reduce the gap between innovative projects and large scale applications. Around 200 projects providing direct support for the Action Plan including the Campaign for Take-Off were selected and approved under the 1998/1999 project round.

In May 2000 the ALTENER II programme⁴⁵ was extended until 2002 under the new Energy Framework Programme⁴⁶. Priority will be given to the continuation and reinforcement of the support to the White Paper process, in particular the Campaign for Take-Off. The financial resources provided for M€ 77 (over the five years 1998-2002) will allow for a modest but useful increase in activity, the effect of which will be optimised by a greater specialisation/targeting of projects. Under the 2000 project round around 400 proposals were received.

ALTENER II allows in principle for co-operation with the Associated Countries of Central and Eastern Europe and Cyprus, under the conditions for their pre-accession participation in EU programmes to be stipulated in individual Council Decisions.

Community programmes oriented to overcome non-technical barriers and, in particular the ALTENER programme, have played, and still have to play, a mayor role in supporting projects and actions for preparing and fostering the implementation of the Community Strategy for RES, including the preparation of legislation and subsequent implementation. Their role has also been of paramount importance for catalysing national, regional and local efforts across the EU.

⁴⁴ Council Decision 98/352/EC of 18 May 1998 concerning a multiannual programme for the promotion of renewable energy sources in the Community (ALTENER II), OJ L 159, 3.6.98, p. 53

⁴⁵ European Parliament and Council Decision of 23.2.2000 concerning a multiannual programme for the promotion of renewable energy sources in the Community (ALTENER II), OJ L 79, 30.3.00, p. 43.

⁴⁶ Council Decision of 14 December 1998 adopting a multiannual framework programme for actions in the energy sector (1998-2002) and connected measures (1999/21/EC, Euratom), OJ L 7, 13.1.1999 p. 16-19

6.2. The AGORES database

To facilitate the dissemination of relevant information on RES the virtual centre “AGORES” was created and funded under the ALTENER II programme. AGORES constitutes the first one-stop-shop to provide information on Community and national strategies, regulations and programmes, to disseminate project results and to facilitate contacts between the main actors. For this purpose AGORES provides also automatic links with public bodies, agencies, industry associations, universities and any kind of organisation acting in the field of RES.

6.3. Other support measures

Several accompanying measures in the framework of other Community programmes such as 5th RTD FP (see point 5.4) are focussing in the implementation of the White Paper and the Campaign for Take-Off.

Such accompanying measures are normally funded jointly by the Commission and either private or public sector organisations in the Member States. They typically include the drafting and publication of brochures, Best Practice Stories, and other reports, as well as conferences, seminars and workshops. In addition, the 5th RTD FP supports a number of networks, which contribute their shared experience to stimulate RES markets and to accelerate their growth, for example the OPET network and the Wave Energy Network.

7. THE CAMPAIGN FOR TAKE-OFF

7.1. Challenging objectives for 2003

In the White Paper, an outline for a Campaign for Take-Off was included, aiming to promote and accelerate the implementation of large projects in the different RES sectors as well as to send clear signals for the greater use of RES.

The Council welcomed the idea of the Campaign inviting the Commission to bring forward more detailed proposals. The European Parliament, the Committee of Regions and the Economic and Social Committee also welcomed the Campaign for Take-Off, proposing additional objectives. In response to Community Institutions resolutions and as announced in the White Paper, the Commission services published a working document which includes new objectives for the Campaign and outlines details of its implementation⁴⁷.

The Campaign will run from 2000 to 2003 and is focussed on quantitative objectives in different key sectors of RES. In addition to the key energy sectors, a stated goal of the CTO as presented in the White Paper is the identification of “100 communities” aiming at 100% of RES supply. The “100 communities” action as initially proposed in the White Paper has already aroused much interest across the EU. The “100 communities” action could also be a benchmark for the implementation of decentralised energy supply. As part of this “100 communities” action, a number of pilot communities, regions, cities and islands are being identified which can reasonably aim at 100% power supply from renewable energy sources.

The Commission’s role will be to establish the framework, to provide technical and financial assistance, where appropriate, and to co-ordinate actions. Community funding, which could

⁴⁷ Commission staff working paper – Energy for the future: Renewable Sources of Energy (Community Strategy and Action Plan) – Campaign for Take-Off, SEC (1999) 504

be made available to promote RES within the different financial instruments (Structural Funds, the 5th RTD FP and support programmes such as ALTENER) was estimated to be € 987.5 million for the 1999-2003 period and according to financial perspectives⁴⁸. The Campaign promotional instruments are funded under the ALTENER programme.

The role of Member States will be crucial in this concerted action by promoting the aims of the Campaign and co-ordinating actions at national level. Nevertheless, although the role of the public sector is essential, the Campaign's main promotional objective is to help and support the private sector and to involve all interested parties in promoting renewable energy sources.

Integration of Renewable Energy in 100 communities

Concerning the objectives of the Campaign, it can be confirmed that the specific objective of "100 communities aimed at 100% of RES supply" will be certainly reached in 2003. RE Partnerships, signed with such communities, are progressing rapidly and more than 100 eventual candidates have been identified.

Target actions on both integrated systems for the urban context and for regional areas will be launched in 2001 under the 5th RTD-FP. Specific actions in the Framework of the ALTENER programme have also been scheduled.

Campaign Key Sectors

Key sector objectives of the Campaign to be reached by 2003 were set at between 15% to 25% of the overall White Paper objectives for 2010. While conclusions, in terms of progress towards 2010 objectives in Chapter 3, obviously apply for the Campaign objectives, the intermediate objectives for 2003 provide a better short/medium term picture of the progress made.

1.000.000 PV systems

This target is equivalent to an installed capacity of 1.000 MWp, only 650 MWp of which are to be installed in the EU. The other 350 MWp are to be realised in Third Countries. The installed capacity in the EU was more than 100 MWp in 1998.

New national programmes -Germany, Italy, etc.- can foster PV market penetration. In addition, pioneering projects are taking place like the Hesse project in Germany (1 MW installed in one building) or the HIP-HIP project (an EU consortium installing 3MWp under the 5FP). Cities like Barcelona have included an obligation of installing PV systems in new buildings and a 3-4 MWp is planned. A target action will be launched in the frame of 5th RTD-FP on ECO- buildings where both PV and solar thermal are prioritised.

15 million m2 solar collectors

About 9 million square meters had been installed in Europe by 1998.

National and regional programmes are ongoing or planned in MS -Austria, France (islands), Italy (Commune solarizzato) and Spain (Andalucia and cities) and appropriate legislation has

⁴⁸ See SEC(1999)504, p 26, Table 2 "Public support scenario".

been adopted in some European cities. Nevertheless further promotional and market actions are needed.

10,000 MW of wind turbine generators

9.645 MW were installed by 1999. The objective has therefore been achieved three years in advance.

10,000 MWth of combined heat and power biomass installations

Not sufficient data available.

1,000,000 dwellings heated by biomass

Not sufficient data available.

1,000 MW of biogas installations

Landfill recovery together with sewage sludge, farm slurries and agro-food industry added up to an installed capacity of about 700 MW in EU in the year 1998. Biogas production is intended to grow, mainly, following new specific agricultural and waste regulations.

5 million tonnes of liquid biofuels

This objective is equivalent to 5 Mtoe. 0.45 Mtoe existed in 1998 in EU. In spite the low rate of market penetration, liquid biofuels production can be expected to grow under the high oil price and an improved agricultural legislation, mainly, on the use of land set-aside for the production of raw materials.

In conclusion:

- wind objective has already been achieved;
- solar PV and thermal are peaking in some restricted areas with appropriate regulatory and promotional measures, mainly at regional and local level;
- biomass objectives, which need a specific survey in order to complete statistical data, have to be closely monitored. Biogas is clearly peaking. In space heating, biomass has to compete with natural gas. Secondary biomass for combined heat and power depends on the success of specific agricultural measures - forest residues, non-food, etc-;
- Promotional action is to be launched focussing on success stories, mainly, in the regulatory field by local public authorities.

7.2. The Renewable Energy Partnership

Under the CTO investment opportunities have to be highlighted by promotional and public relations activities. Therefore, a Renewable Energy Partnership scheme with public authorities, energy agencies, industry and other key players has been created.

The lion's share of the total investment necessary to realise the targets of the CTO and the White Paper is expected to be contributed by the private sector and the balance will have to be provided under public programmes and schemes, triggering the private investment, together

with the package of promotional actions forming an essential part of the CTO. Both the promotional measures and the complementary public funding focus on key sectors (solar, wind and biomass and integration of RES in 100 communities), in order to increase the impact and visibility of the concerted efforts.

Actors involved in the Campaign for Take-Off become “Partners” at the Community level by signing a Renewable Energy Partnership Declaration, describing the actions, programmes or initiatives which form their contribution to the CTO. The RE Partnership is intended to promote investments and to highlight the European dimension of both public and private initiatives in the key sectors of the CTO. Potential partners are: national, regional and local authorities, energy agencies, industry (including utilities, oil companies, and manufacturers), and farmers associations, etc.

By July 2000, more than 30 RE Partnership Declarations have already been signed. This includes regional programmes, oil and RES manufacturing industry, national agencies, and cities with programmes in the “100 communities aiming at 100% of RES supply” action. This action has been very successful which confirms, on one hand, the dynamism of European cities and, on the other hand, the high potential for a greater use of RES in the urban context.

Renewable Energy Partnerships signed by July 2000

- National: 4 RE Partnership signed (ES, FR, FI, SW);
- Regional: 4 RE Partnership signed (ES, DE, EL);
- Local: 15 RE Partnership signed (SW, DE, DK, IT, ES, EL);
- Industry: 5 RE Partnership signed (BE, ES, IT, FR);
- EU-Dissemination: 2 RE Partnership signed (DK, NL);

Of which:

- 100 communities aimed at 100 % of RES supply: 11 RE Partnership

A number of promotional instruments accompanying the RE Partnership have already been launched :

- A logo identifying the Campaign has been created.
- The First CTO Awards will be granted to actors contributing to the CTO with their initiatives.
- A RE Partnership Catalogue describing all the RE Partnerships is to be published on a yearly basis.
- Videos.
- A Communication Plan for EU-wide promotional activities is in process.

Promotional instruments and activities are funded under the ALTENER programme.

8. CONCLUSIONS AND RECOMMENDATIONS FOR THE FUTURE

Since the publication of the White paper, important policy developments have underlined the key role of renewable energy in ensuring sustainable energy supplies for the Community, reinforcing social and economic cohesion, developing European industry and contributing to job creation. The signature of the Kyoto protocol, and the process of integrating the environment into other Community policies, including energy, are the two major initiatives in this respect. A renewable energy contribution to sustainability is broadly accepted at international level.

Progress has been made in key policy fields highlighted in the White Paper and its Action Plan, both at the Community and national level.

Encouraged by the White Paper, public authorities in Member States are developing or reinforcing strategies, objectives and, in some cases, appropriate legislation with regard to RES development. In the last three years, the White Paper has become a well-established reference, and has catalysed the setting up of policies at local, regional and national level.

Community support instruments have begun to enhance cross-fertilisation between Member States on successful policies, legislation, measures, programmes and innovative pioneer projects related to RES. Those instruments are the Campaign for Take-Off, the 5th RTD Framework Programme, and the ALTENER programme. In the Renewable Energy Partnership scheme, the Community has been joined in this EU-wide promotional effort by leading actors from industry, associations, NGOs and public authorities. Particularly remarkable is the participation of cities and other communities.

Although these developments have already led to an increase of the share of RES in the Community's total energy supply, their impact cannot be fully assessed at this early stage of the implementation of the Community Strategy.

RES market penetration is, on average, growing in the EU-15 but it is not yet sufficient. The available statistics contain two main features: first, the undeniable take-off of wind energy and, second, the expansion rates, higher than the EU average, reached by those MS with proactive renewable energy policies. In addition, the deployment of RES in communities (regions, islands and cities) is directly related to the presence of proactive local policies.

However, at this stage, it is far from sure that the indicative target of the White Paper of 12 % RES contribution to the EY gross inland consumption will be achieved in 2010. In particular, this objective will never be achieved if the gross energy consumption continues to increase in line with the current trend and demand management and energy efficiency measures are not implemented vigorously. The analysis in the Green Paper⁴⁹ sets out to show, as objectively as possible, that the European Union has very limited scope to influence the energy supply side. It also sets out to show, without bias, that the major efforts required to promote renewables will in fact have a limited impact in the face of the growth in demand. Efforts will have to focus on orienting the demand for energy in a way which respects the EU's Kyoto commitments and is mindful of security of supply.

⁴⁹ See also the "Green Paper Towards a European strategy for the security of energy supply" COM(2000) 769 final of 29.11.2000

Though progress has been made, considerable further efforts will be necessary to achieve the objectives of the White Paper, at the Community level and in the national policies of the Member States.

Future Community and Member States efforts should concentrate on:

The definition of individual RES strategies and objectives by Member States, as called for in the proposal for a Directive on electricity from RES. However, the definitions of these objectives should address not only electricity, but also the heating, cooling and transport sectors.

Member State responses to Community measures, mainly in the field of structural funds for the period 2000-2006, should be proactive with respect to building new RES capacities in Member States.

The biomass sector represents the largest potential in RES. Therefore, while the impact of new regulations under the Common Agricultural Policy is not yet known, specific attention needs to be attached to biomass and the framework conditions should be further improved. For instance, production of energy crops should be more encouraged and energy taxation revised to favour biofuels.

Concerning the building sector, which represents more than a third part of the overall EU energy consumption, measures will therefore be proposed by the Commission in order to improve and multiply at an EU-wide level experiences made in specific demonstration sites.

At an international level, the Community should show the way to sustainable and environmentally friendly energy schemes for supporting and financing RES development programmes. One building block in that context is the G8-RES-Task created after the last G8 summit in Okinawa.

Concerning support measures, the Community RES related programmes should address: the consolidation of proactive measures in MS by the cross-fertilisation of good and successful practices between MS, the inclusion of energy in urban planning, the elaboration of appropriate standards, codes and guidelines and the launching of targeted campaigns.

In addition, the removal of legal and administrative barriers should be accompanied by innovative market instruments at Community level. This relates particularly to the fiscal sector. Since the nature of RES is to be decentralised and locally available, equal importance must be given to both technology improvements and non-technical barriers. Community support should be maintained and reinforced in key areas.

Progress between 1997-2000 shows a modest growing deployment of RES in global terms and an impressive increase in some specific sectors and countries. Further, the Community Institutions have confirmed that the objective of 12% of RES in the energy mix by 2010, proposed in 1997 in the White Paper "Energy for the future: Renewable Energy Sources", remains ambitious but realistic, provided that appropriate measures are taken and consolidated at an EU-wide level. It is clear that considerable extra efforts are needed in order to achieve this objective.

TABLE 1**Energy production from RES in EU-15**

General index (%)	1995	1996	1997	1998*	target 2010
Primary production of RES	10.0	10.0	10.8	11.3	-
Share of electricity of RES origin	13.8	13.5	14	14.2	22.1
Gross inland consumption of RES	5.3	5.4	5.8	5.9	12.0

Source: Eurostat

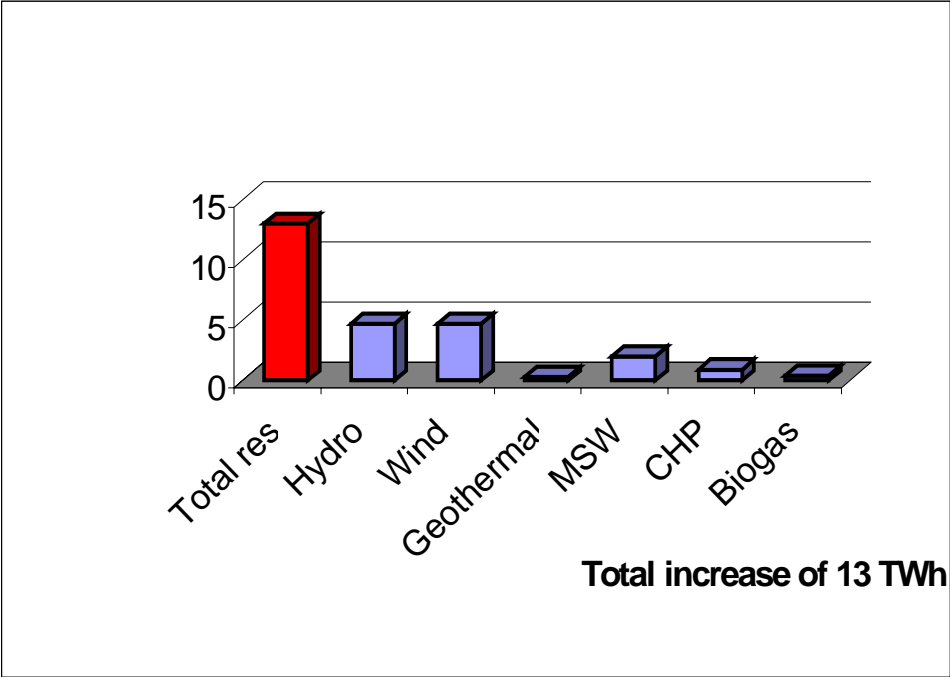
TABLE 2**Energy production from RES in EU-15, by sector**

	1989	1996	1997	1998	Increase 89/98
Wind	46	417	631	1,037	2,154%
Solar	146	294	318	347	138%
Hydro	21,859	24,814	25,452	26,262	20%
Geothermal	2,215	2,747	2,815	2,992	35%
Biomass	39,979	47,777	52,552	54,175	36%
Total RES primary Energy Production (ktoe):	64,242	76,051	81,768	84,813	32%
Total RES electricity generation (GWh)	273,290	321,436	334,642	352,805	29%

Source : Eurostat

GRAPH 3

Differences in electricity generation in TWh, 1997/1998



GRAPH 4

Wind energy projections

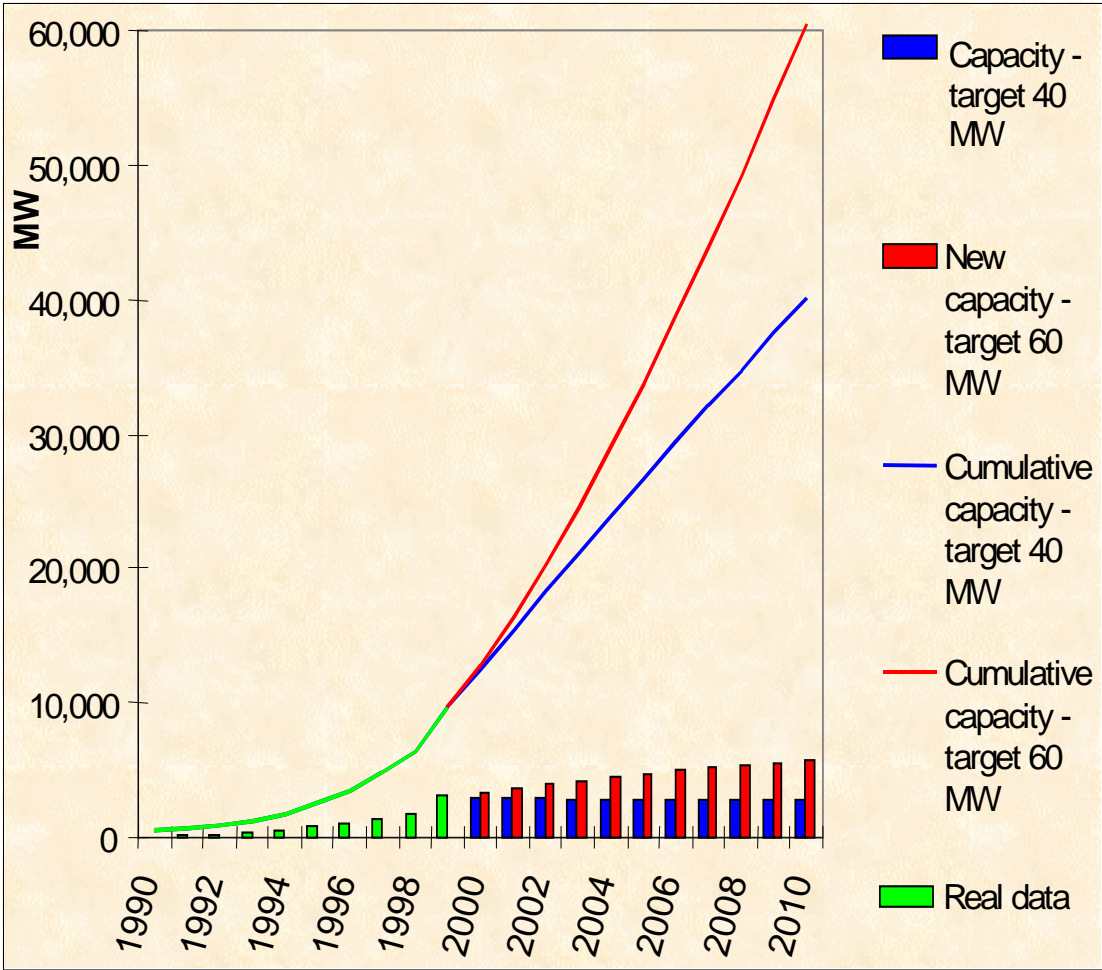


TABLE 5**Wind energy installed capacity in MW**

Country	1995	1996	1997	1998	1999
Denmark	637	835	1148	1448	1738
Germany	1132	1552	2081	2875	4442
Spain	113	249	512	834	1812

TABLE 6**Impact of the objectives of the White Paper on net job creation**

Technology	Net O&M	Net C&I	Total
Bio-mass	150,271	137,257	283,528
Small hydro	2,609	12,436	15,045
Wind	7,390	20,540	27,930
Solar thermal	22,122	129,783	151,905
Solar PV	343	51,864	52,207
TOTAL	182,735	347,880	530,615

Note: Excluding large hydro and geothermal

ANNEX I

ACTION PLAN FOR RES 1998-2010 (Including action taken since the adoption of the White Paper)

ACTION PLAN	Status
1. Objectives and Strategies	
ENERGY FOR THE FUTURE: RENEWABLE SOURCES OF ENERGY - White Paper for a Community Strategy and Action Plan	COM(97)599 final 26/11/97
<i>Commission staff working paper – Energy for the future: Renewable Sources of Energy (Community Strategy and Action Plan) – Campaign for Take-Off</i>	<i>SEC(99)504 14.04.99</i>
Member States setting individual objectives to 2005 and 2010 and establishing strategies	<i>See Annex II</i>
2. Internal Market Measures	
Fair Access for RES to the Electricity Market	
<i>Working Paper of the European Commission – Electricity from Renewable Sources of Energy and the internal electricity market, SEC (1999), 470final</i>	<i>SEC(99) 470 final 13/04/99</i>
<i>Directive of the European Parliament and of the Council on the promotion of electricity from renewable energy sources in the internal electricity market</i>	<i>COM(2000)279 final 10/05/00</i>
Restructuring the Community Framework for the Taxation of Energy Products	Proposal for a revised Directive (COM/97/30)
Start-up subsidies for new production plants. SME's and new job creation	
<i>Draft revised guidelines on State Aids for environmental protection</i>	<i>October 2000</i>
Development or/and harmonisation concerning “golden” or “green” funds	<i>See Proposal COM(2000) 279 final 10/05/00</i>
Promotion of biofuels in transport fuel	Directive 98/69/EEC, OJ L 350, 28.12.1998
Promotion of biofuels in low-sulphur liquid fuels	Directive 98/70/EEC, OJ L 350, 28.12.1998
Extend the scope of the SAVE Directive to passive and active solar systems in buildings to take into account the energy gains for heating and cooling	Proposal for Amendment of Directive 93/76/EC (1998)
Extend the scope of the Directive to building materials with a low intrinsic energy content	Proposal for Amendment of Directive 89/106/EC (1998)
3. Integration into other Community Policies	
Environment:	
Inclusion of Actions on Renewables in the overall strategy for combating climate change	Communication of the Commission COM(97)481
<i>98/C 372/07 Proposal for a Council directive on the incineration of waste OJ 2.12.1998, C 372, p. 11</i>	<i>OJ 2.12.1998, C 372, p. 11</i>
<i>Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste OJ of 16.7.1999, L 182, p. 1</i>	<i>1999/31/EC 26/04/99</i>
<i>Green Paper on greenhouse gas emissions trading within the European Union</i>	<i>COM(2000)87 08/03/00</i>
<i>Communication from the Commission to the Council and the European Parliament on EU policies and measures to reduce greenhouse gas emissions: Towards a European Climate Change Programme (ECCP)</i>	<i>COM(2000)88 08/03/00</i>
Research and Technical Development:	
<i>Decision No 182/1999/EC of the European Parliament and the Council of 22 December 1998 concerning the Fifth Framework Programme of the European Community for research, technological development and demonstration activities (1998-2002), OJ L 26, 1 February 1999, p. 1</i>	<i>182/1999/EC 22/12/98</i>

<p><u>Regional Policy:</u></p> <p><i>Regulation (EC) No. 1783/1999 of the European Parliament and of the Council of 12 July 1999 on the European Regional Development Fund, OJ L 213, 13.8.1999, p. 1</i></p> <p><i>Communication from the Commission “The Structural Funds and their Co-ordination with the Cohesion Fund; Guidelines for programmes in the period 2000-06”</i></p>	<p>1783/1999 12/07/99</p> <p>To be adopted</p>
<p><u>Agricultural Policy:</u></p> <p><i>98/235/EC: Commission Decision of 11 March 1998 on the advisory committees dealing with matters covered by the common agricultural policy OJ L 088 , 24/03/1998 p. 0059 – 0071</i></p> <p><i>Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on a forestry strategy for the European Union - COM (1998) 649 of 18 November 1998</i></p> <p><i>Commission in its Communication “Directions towards sustainable agriculture COM (1999) 22 of 27 January 1999</i></p> <p><i>Council Regulation (EC) No 1251/1999 of 17 May 1999 establishing a support system for producers of certain arable crops OJ of 26.6.199, L 160, p.1</i></p> <p><i>Council Regulation (EC) No 1257/1999 of 17 May 1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF) and amending and repealing certain Regulations OJ of 26.6.199, L 160, p.80</i></p> <p><i>Commission Regulation (EC) No 2461/1999 of 19 November 1999 laying down detailed rules for the application of Council Regulation (EC) No 1251/1999 as regards the use of land set aside for the production of raw materials OJ of 20.11.1999, L 299, p.16</i></p>	<p>98/235/EC 11/03/98</p> <p>COM (1998)649 18/11/1998</p> <p>COM (1999) 22 27/01/99</p> <p>1251/1999 17/05/99</p> <p>1257/1999 17/05/99</p> <p>2461/1999 of 19/11/99</p> <p>1251/1999 20/11/99</p>
<p><u>External Relations:</u></p> <p><i>Proposal for a Council Decision concerning the conclusion, on behalf of the European Community, of the Partnership Agreement between the African, Caribbean and Pacific States on the one part, and the European Community and its Member States, on the other part</i></p>	<p>COM(2000)324 23/05/00</p>
<p><u>Enlargement:</u></p> <p>Sufficient funding from TACIS and PHARE for RES in order to implement Protocols opening EU support programmes ALTENER and SYNERGY to associated countries. Appropriate agreements with Mediterranean area countries as well as other areas. Collaboration in the implementation of the World Solar Programme 1996-2005.</p>	<p>Specific Protocols Communication</p>
<p>5. Support measures</p>	
<p><u>The ALTENER programme:</u></p> <p><i>98/352/EC: Council Decision of 18 May 1998 concerning a multiannual programme for the promotion of renewable energy sources in the Community (Altener II) OJ L 159 , 03/06/1998 p. 0053 – 0057</i></p> <p><i>Decision No 646/2000/EC of the European Parliament and of the Council of 28 February 2000 adopting a multiannual programme for the promotion of renewable energy sources in the Community (ALTENER) (1998 to 2002) OJ L 079 , 30/03/2000 p. 0001 – 0005</i></p>	<p>98/352/EC: Council Decision of 18 May 1998</p> <p>Decision No 646/2000/EC of the European Parliament and of the Council of 28 February 2000</p>

<i>The 5th RTD Framework Programme</i>	<i>Calls for proposals 2001-2002</i>
<i>Accompanying measures</i>	
<i>New targeted actions :</i>	
<i>- Integration of RES in buildings;</i>	
<i>- Decentralised and small scale centralised production of electricity from RES in islands and isolated areas;</i>	
<i>- Bio-energy for the production of electricity and heating/cooling;</i>	
<i>- Integration of RES in communities;</i>	
<i>- Electricity and heating from biomass in rural areas;</i>	
Consumer information campaigns. Targeted information action on the protection of environment with simultaneous energy recovery	<i>Calls for proposals</i>
<i>- Targeted information addressed to main stakeholders</i>	
Development of European standards and certifications	CEN and CENELEC
<i>- Standards on solar thermal equipment</i>	<i>2000</i>
<i>- Standards on solar PV equipment</i>	<i>2001</i>
<i>- Standards on wind turbines</i>	<i>2001</i>
<i>- Standards on biodiesel</i>	<i>2002</i>
<i>- Standards on solid biomass</i>	<i>2002</i>
Better positioning for RES on the institutional banks and commercial finance market by developing schemes facilitating investments in RES projects	Agreements and projects
Creation of a virtual centre "AGORES" for collection and dissemination of information	<i>AGORES launched in April 2000</i>
6. Campaign for take-off - 2000-2003	
<i>Renewable Energy Partnership scheme</i>	<i>Launched in 1999</i>
<i>- national, regional, local authorities, industry, associations, etc.</i>	<i>30 RE Partnership declarations signed by July 2000</i>
<i>- expectations: 50 RE Partnership per year</i>	
<i>Campaign logo</i>	<i>Launched in 1999</i>
<i>Campaign Awards</i>	<i>First: October 2000</i>
<i>Campaign Catalogue</i>	<i>First: October 2000</i>
<i>Promotion:</i>	<i>CTO information Campaign 2000-2003</i>
<i>- Cross-fertilisation of best ongoing policies/programmes in Member States;</i>	
<i>- Integration of RES in cities (sustainable waste/biogas policy and solar energy in buildings);</i>	
<i>- Best practices on primary and secondary biomass specific sectors (liquid biofuels, straw, olive residues, wood residues, etc.)</i>	
<i>- Best practices in public use buildings (schools, hospitals, hotels, offices)</i>	
7. Follow-up	
Scheme to monitor progress	<i>Monitoring scheme under development: September 2000</i>
Improvement of data collection and Statistics	
<i>- Agreement between Community Statistical Office and MS to introduce a new questionnaires on RES for official data collection</i>	<i>Into force for 2001 statistics</i>
Inter-services co-ordination group	<i>Meeting 16/7/98</i> <i>Meeting 28/6/99</i> <i>September 2000</i>
Creation of a Working Group on Renewable Energy Sources, with annual meetings involving the Commission and the Member States	<i>Meeting 19/03/98</i> <i>Meeting 19/05/99</i> <i>October 2000</i>
Regular reporting to the Union's Institutions	<i>September 2000</i>
<i>- Communication to the European Parliament and to the Council</i>	

ANNEX II

Current policies and targets in Member States and Norway

	RES Policy	Targets/Policies
Austria	Elektrizitätswirtschafts und organisationsgesetz – ElWOG (2000)	<p>Obligation on operators of distribution networks to ensure that by 2007 4% of electricity comes from RES-E (excluding all forms of hydro). In addition, end-users or electricity traders located in Austria must ensure that 8% of their supply comes from small-scale hydro installations (up to 10 MW) located in Austria. Fulfilment of the 8% obligation must be documented by means of specific certificates for small-scale hydro.</p> <p>The Austrian cabinet has in September 2000 agreed on the principles for a national climate change strategy that includes enhanced efforts to promote RES.</p>
Belgium	<p>RES Policy Report for Belgium on AGORES website</p> <p>Beleidsnota Energie 2000-2004 (Flanders)</p>	<p><i>Flanders:</i></p> <p>3% RES share of energy production by the end of 2004 and 5% by 2010. RES-E to account for 1% in 2001, 3% in 2004 and 5% in 2010.</p> <p>Decree being passed by Flemish Government to establish a green certificates system with quotas for electricity suppliers (from 2001) together with the establishment of a Renewable Energy Fund.</p> <p><i>Wallonia:</i></p> <p>3% RES share of energy consumption in 2000 and 5% in 2010.</p> <p>Preparations for decree to support RES-E, including implementation of a green certificates system with quotas imposed on electricity suppliers (from 2001).</p>
Denmark	<p>“Energy 21” Action Plan (1996)</p> <p>Electricity Supply Act (1999)</p> <p>Political agreement on reform of electricity sector (1999)</p>	<p>Aim of 12-14% RES contribution to primary energy consumption by 2005 and long-term goal of 35% RES share of total primary energy consumption by 2030.</p> <p>Separate target of 20% RES-E share of electricity consumption by 2003. Introduction of annual RES-E quotas imposed on consumers and preparation of green certificates system to be operational by 2003.</p>
Finland	Action Plan for renewable Energy Sources (1999)	Increase of RES contribution to energy demand with 50% (3Mtoe) by 2010 and a doubling by 2025. Increase of RES-E with 8.35 TWh between 1995-2010 leading to a 31% share of electricity consumption by 2010.
France	<p>Le programme national de lutte contre le changement climatique (2000).</p> <p>Plan bois-énergie et développement local</p>	<p>No overall RES target, but various sectoral strategies and targets:</p> <p>EOLE 2005 programme: 250-500 MW wind capacity by 2005. Proposal for 3000 MW wind capacity by 2010 as part of climate change strategy. In addition, development of wood energy, solar, geothermal and a special programme for the DOM/TOM and Corsica.</p>

Germany	Erneuerbare Energien Gesetz (2000)	<p>At least a doubling of the RES share of total energy consumption by 2010. A substantial increase in contribution of RES-E in order to achieve the doubling of all RES.</p> <p>A sectoral target for photovoltaic of 300 MW additional installed capacity under the “100.000 solar roofs programme” (1999-2004).</p>
Greece	<p>Action Plan “Energy 2001”</p> <p>RES Policy Report for Greece on AGORES website</p>	<p>Increase of RES share in national energy balance from 5.4% in 1996 to 8.2 – 8.5% in 2010, mainly via wind and biomass.</p> <p>Electricity utilities 10-year Development Plan (1994-2003): 306 MW installed capacity of large hydro, 17 MW small hydro and 37 MW wind parks in operation by 2003.</p>
Ireland	Green Paper on sustainable energy (1999).	<p>500 MWe target for installed electricity capacity for the period 2000-2005 (increase in RES-E production from 6% in 1998 to 12.4% in 2005 – a 3,75% RES share in total primary energy requirement).</p> <p>The Alternative Energy Requirement (AER), a competitive central bidding system, is the principal support mechanism for RES-E.</p>
Italy	<p>Italian White Paper for the valorisation of Renewable Energy Sources (1999).</p> <p>Law Decree of 11 November 1999 concerning RES-E</p>	<p>RES production forecast suggesting an increase from 11,7 Mtoe in 1997 to 20,3 Mtoe by 2008 – 2012. Installed capacity for RES-E forecasted to increase from 17104 MWe (1997) to 24700 (2008-2012).</p> <p>From 2002 an obligation on large producers or importers of electricity generated by fossil fuels to generate or purchase a quota of 2% RES-E (by new RES-E plants). A system of green certificates is planned in conjunction with the obligation.</p>
Luxembourg	Stratégie nationale de réduction des émissions de gaz à effet de serre (2000)	10% of total electricity consumption should be covered by RES-E in 2010.
Netherlands	<p>Renewable Energy – Advancing Power”: Action Programme for 1997 – 2000 (1997)</p> <p>1999 Energy Report</p>	<p>5% RES share of total energy demand in 2010 and 10% by 2020.</p> <p>1000 MW wind capacity on onshore locations by 2000, but no separate policy target for RES-E.</p> <p>The government has made an agreement with utilities stipulating that energy distributors must sell 1700 GWh RES-E by end of 2000. A green label system in operation since 1998 as a forerunner to green certificates. A voluntary system of tradable green certificates for renewable electricity, gas and heat is in preparation and scheduled to become operational in 2001.</p>
Portugal	<p>“Programa Energia”</p> <p>RES Policy Report for Portugal on AGORES website</p>	<p>No overall RES targets, but some specific technology targets established under financial support schemes (e.g. 180 MW RES-E by the end of 1999 within the ENERGIA Programme).</p> <p>Some elements of ENERGIA will continue in new support programme.</p>
Spain	Plan de Fomento de las Energías Renovables/Programa de Energías Renovables (1999)	<p>Comprehensive plan for development of RES setting as overall target that 12% of energy demand should be covered by RES in 2010.</p> <p>Specific RES-E target aiming at 29,4% RES-E share of total electricity generation by 2010.</p>

Sweden	<p>Bill on a Sustainable Energy Supply (1997)</p> <p>Regeringens proposition 1999/2000: 134 “Ekonomiske förutsättningar för elproduktion från förnybara energikällor” (2000).</p>	<p>Additional 1.5 TWh electricity from RES by end of 2002 from 3 sources:</p> <ul style="list-style-type: none"> - CHP based on bio-fuels: 0.75 TWh - Wind power: 0.5 TWh - Small scale hydropower: 0.25 TWh <p>Government proposal for a green certificates trading system combined with quotas for RES-E to come into force 1 January 2003.</p>
UK	<p>New and Renewable Energy – Prospects for the 21st Century – Conclusions in Response to the Public Consultation, DTI.</p>	<p>Government proposal for 5% RES-E by 2003 and 10% by 2010 to be achieved by means of a Renewables Obligation imposed upon licensed electricity suppliers.</p> <p>Development of a green certificates trading system as a means to fulfil the Renewable Obligation.</p>
Norway	<p>Stortingsmelding nr. 29 1998-99 (1999)</p>	<p>4 TWh additional waterborne heat per year based on RES, heat pumps and surplus heat by 2010. 3 TWh wind power production per year by 2010.</p>

ANNEX III

List of abbreviations

RES : Renewable Energy Sources

GHG : Green House Gases

ETBE : Ethyl Tertio Buthyl Ether

CAP : Common Agricultural Policy

PV : Photo Voltaic

ACP : African Caribbean Pacific

EE : Energy Efficiency

FP : Framework Programme

COP : Conference of the Parties

RTD & D : Research Technology and Development and Demonstration

ERDF : European Regional Development Fund

EDF : European Development Fund

OPET : Organisation Promotion of Energy and Technology

CTO : Campaign for Take Off

MSW : Municipal Solid Waste

CHP : Combined Heat and Power