



ENERGIE  
VERWERTUNGSAGENTUR

# Information zum Bereich „nichtnukleare Energie“ im 6. Rahmenprogramm für FTE der EU

Stand: 11. Dezember 2001

Im Rahmen eines Auftrags des Bundesministeriums für  
Verkehr, Innovation und Technologie

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# 1 Das Rahmenprogramm für FTE

## 1.1 Der europäische Forschungsraum

Ein visionäres Konzept für einen europäischen Forschungsraum (EFR, oder ERA für European Research Area) wurde vom für Forschung zuständigen Kommissar Busquin in Jänner 2000 präsentiert<sup>1</sup>. Die Idee dahinter geht weit über die laufenden Rahmenprogramme für FTE der EU hinaus.

In der jetzigen Situation gibt es 15 plus 1 Forschungspolitiken – die der Mitgliedstaaten und die der Europäischen Kommission (EK), die oft parallel und wenig abgestimmt sind. Um aber gegen die anderen großen Wirtschaftsblöcke und Hauptkonkurrenten USA und Japan bestehen zu können ist ein abgestimmtes Vorgehen notwendig. Das Busquin-Papier zeigt aber in den meisten wichtigen Bereichen in diesem Vergleich Rückstände der EU auf. Das eigentliche Problem dabei benennt Mag. Ingolf Schädler (BMVIT) folgendermaßen: „Wir zahlen [für diesen Rückstand] durch Strukturdefizite und ein verlangsamtes Wirtschaftswachstum“.

Das Konzept des Europäischen Forschungsraums weist somit den Weg in Richtung mehr Kohärenz zu einem europäischen „Binnenmarkt“ für die Forschung. Das Konzept als Ganzes kann dabei ohne Übertreibung als „dramatisch neu“ bezeichnet werden und enthält Vorschläge für ein umfassendes Maßnahmenpaket.

Das Konzept des ERA wurde im Europäischen Parlament, im Rat und auch im Europäischen Rat (Staats- und Regierungschefs) eingehend diskutiert und fand durchwegs Zustimmung. Bemerkenswert hierbei ist, dass das Thema Forschung mittlerweile regelmäßig bei den Treffen der Regierungschefs auf der Tagesordnung steht.

## 1.2 Europäische Kommission

Der Vorschlag der EK für das 6. Rahmenprogramm (von 2002 bis 2006)<sup>2</sup> orientiert sich stark am Gedanken des ERA. Dieses 6. Rahmenprogramm wird auch das wichtigste Instrument zur Umsetzung der Idee des ERA sein – da es die wichtigste FTE-relevante Maßnahme darstellt, die im EG-Vertrag vorgesehen ist.

Das neue Rahmenprogramm soll dabei auf folgenden Grundprinzipien beruhen:

- Konzentration auf eine begrenzte Zahl vorrangiger Forschungsbereiche, in denen ein unionsweites Vorgehen den größten europäischen Mehrwert bieten kann
- Konzipierung der verschiedenen Maßnahmen im Hinblick darauf, dass sie eine stärker strukturierende Wirkung auf die Forschungsarbeiten in Europa haben dank einer engeren Verbindung mit den nationalen und regionalen wie auch den sonstigen europäischen Initiativen

<sup>1</sup> KOM (2000) 6; 18.1.2000

<sup>2</sup> KOM (2001) 94 endg., 21.2.2001

- Vereinfachung und Straffung der Durchführungsbestimmungen durch die neu festgelegten Förderformen und die geplanten dezentralisierten Verwaltungsverfahren

Wie es das Beschlussverfahren für das Rahmenprogramm (nach Art. 251<sup>3</sup>) vorsieht, nimmt nach der 1. Lesung des Europäischen Parlaments – diese hat im November 2001 stattgefunden (siehe weiter unten) – die Kommission dazu Stellung (siehe Anhang 2.3). Die EK hat ca. 250 der 334 Abänderungsanträge des Europäischen Parlaments angenommen. Ein daraus abgeleiteter modifizierter Vorschlag für das Rahmenprogramm liegt nun vor (COM (2001) 707 vom 22.11.2001, Auszug siehe Anhang 2.4). Diesem Vorschlag kommt insofern Bedeutung zu, da der Rat diejenigen Änderungen des Parlaments, zu denen die Kommission eine negative Stellungnahme abgegeben hat, nur mehr einstimmig (statt mit qualifizierter Mehrheit) beschließen kann. D.h., wenn die Kommission sich gegen manche Änderungen sträubt, macht sie damit den Mitgliedstaaten eine Umsetzung dieser fast unmöglich.

Der Vorschlag sieht ein Gesamtbudget von 17,5 Milliarden EURO vor. Davon sind 1,23 Milliarden EURO dem EURATOM-Teil zugeordnet, das Budget für nichtnukleare Energie ist im modifizierten Vorschlag erstmals explizit ausgewiesen und beträgt 630 MEuro. Damit verbunden ist auch die Umsetzung der Forderung nach einem eigenständigen Bereich für das Thema „Nichtnukleare Energie“, der im vorliegenden modifizierten Vorschlag „Sustainable Energy Systems“ betitelt wurde. Zu den vorgeschlagenen Technologien siehe Kapitel 1.5.

Von der Kommission wurden bereits zu einem relativ frühen Zeitpunkt Vorschläge für die spezifischen Programmen vorgelegt<sup>4</sup>, diese werden jedoch im Zuge der aktuellen Entwicklungen bei der Struktur und den Inhalten des Rahmenprogramms von der Kommission noch einmal gründlich überarbeitet werden müssen.

In ihrem Vorschlag „...für die Regeln der Beteiligung von Unternehmen, Forschungszentren und Hochschulen sowie die Verbreitung der Forschungsergebnisse“<sup>5</sup> stellte die Kommission erstmals detaillierter die von ihr geplanten Instrumente zur Durchführung des Rahmenprogramms dar. In diesem Bereich wird es deutliche Unterschiede in Art und Umfang im Vergleich zum 5. Rahmenprogramm geben.

#### **Ausblick EK:**

- weitere Standpunkte der Kommission zum Rahmenprogramm nach Art. 251
- modifizierte Version der spezifischen Programme
- Beschluss der Arbeitsprogramme zu den spezifischen Programmen bis Dezember 2002

<sup>3</sup> dieses Verfahren ist im Art. 251 EG-Vertrag festgelegt: Vereinfacht dargestellt ist dabei im Rat (der Forschungsminister) eine „qualifizierter Mehrheit“ erforderlich (Bei der Beschlussfassung des 5.RP galt noch das Prinzip der Einstimmigkeit, d.h. es bestand Vetomöglichkeit). Im Parlament ist die absolute Mehrheit erforderlich. Auch die Rolle der Kommission ist nicht zu vernachlässigen.

<sup>4</sup> KOM (2001) 279 final – 30. Mai 2001

<sup>5</sup> KOM (2001) 500 final – 10. September 2001

### 1.3 Europäisches Parlament

Für die Einhaltung des Zeitplans bis zum Start des 6.RP – eine Vorgabe des Europäischen Rates in Stockholm ist es ja, das 6.RP bis Juni 2002 zu verabschieden – ist das Wechselspiel zwischen Rat und Europäischem Parlament wichtig. Lt. EG-Vertrag wird das Rahmenprogramm gemeinsam von Rat und Europäischem Parlament (EP) beschlossen.

In den Diskussionen mit und im EP – das in diesem Beschlussverfahren eine deutliche Aufwertung erfuhr – ist dabei der zuständige **EP-Ausschuss ITRE** (Industrie, Außenhandel, Forschung, Energie) von besonderer Bedeutung:

- Vorsitzender: Carlos Westendorp (E)
- österreichische Parlamentarier: Daniela Raschhofer, Paul Rübiger,
- österreichische Parlamentarier (Vertreter): Mercedes Echerer, Hans-Peter Martin

Die 1. Lesung wurde am 14. November 2001 abgeschlossen. Die Abänderungsanträge, die ITRE vorbereitet hatte (siehe Anhang 2.2) wurden mehr oder weniger angenommen, nur im Bereich der Ethik gab es einige Diskussionen und Änderungen.

Das Europäische Parlament schlägt für den Bereich Nichtnukleare Energie 700 MEuro vor (für Nuklear/EURATOM wird eine Erhöhung auf 1.330 MEuro gefordert).

#### Ausblick EP:

- 2. Lesung voraussichtlich Februar/März 2002 (nach der „gemeinsamen Position des Rates“ hat das Parlament eine Frist von 3 Monaten für die 2. Lesung, hier wird eine „Abänderung am gemeinsamen Standpunkt“ erwartet)
- Vermittlungsausschuss ?
- Stellungnahme zum Vorschlag der Kommission zu den spezifischen Programmen

### 1.4 Rat/Präsidentschaft

Beim Forschungsministerrat am 10. Dezember 2001 wurde eine Einigung zum Rahmenprogramm über einen „gemeinsamen Standpunkt“ erzielt. Erwartungsgemäß wurden von den Regierungen der Mitgliedstaaten nicht alle Änderungsanträge aus der 1. Lesung des Europäischen Parlaments akzeptiert. Für den Themenbereich „Nichtnukleare Energie“, der in einem eigenen Subprogramm „Sustainable Energy Systems“ zusammengefasst wurde, ist ein Budget von 810 MEuro vorgesehen. Dies stellt einen schönen Verhandlungserfolg (auch Österreichs) dar, den der vorliegende Draft hatte nur 750 MEuro für diesen Bereich vorgesehen.

Bei den Themen im Subprogramm „Sustainable Energy Systems“ zeichnet sich eine breite Aufweitung (deutlich mehr Themen/Technologien) des sehr fokussierten Vorschlags der Kommission ab. Bei den Instrumenten wird zusätzlich zu den beiden großen „neuen“ (Exzellenzzentren und Integrierte Projekte) ein weiteres vorgeschlagen: Specific Targeted Research Projekts (für Forschung und Demonstration). Damit konnte die Forderung der meisten Mitgliedstaaten und des Parlaments nach einem flexibleren Instrument (was das finanzielle Volumen betrifft) untergebracht werden. Dieses neue Instrument soll den

Übergang zu den neuen großen Instrumenten (Exzellenznetze, Integrierte Projekte) sicherstellen.

### **Ausblick Rat:**

- Vermittlungsausschuss ?
- Beschluss des Rahmenprogramms bis Juli 2002
- Beschluss der spezifischen Programme bis Sommer 2002

## **1.5 Die Position Österreichs**

In Österreich wurde am 15. Juni 2001 nach intensiver Diskussion ein Positionspapier im Ministerrat beschlossen. Dieses Papier bildet die Grundlage für den Bereich "nichtnukleare Energie" wird darin u.a. eine aufgabenadäquate finanzielle Ausstattung mit klarem Budget gefordert. Diese Forderung wurde in der „österreichischen Grundsatzposition zu den spezifischen Programmen" vom Oktober 2001 nochmals verstärkt (darin ist auch eine deutliche Mittelerrhöhung für den Bereich „nichtnukleare Energie“ enthalten). Auszug:

### **6. Nachhaltige Entwicklung und globale Veränderungen**

Die finanzielle Ausstattung für die Aktivitäten zur Unterstützung einer nachhaltigen Entwicklung soll gleich wie im 5. Rahmenprogramm sein. Was die Struktur der 6. Priorität betrifft, regt Österreich an, eine mögliche Untergliederung in überschaubare Themenbereiche zu prüfen. Insbesondere sollte der Verkehrsteil von den Energieaspekten und den Aktivitäten bezüglich "global change" getrennt werden, um eine sinnvolle Abwicklung des Programms zu gewährleisten. Die Themen Land- und Forstwirtschaft sowie Fischerei sind in den Bereich "global change" einzubeziehen. Als Modell könnte die Aufteilung zwischen Energie und Umwelt im 5. Rahmenprogramm dienen. Die eigenständigen Bereiche zu den Themenfeldern Verkehr, Energie und globale Veränderungen sollten auf Grund der gestiegenen Bedeutung dieser Themen mit mindestens ebenso hohen Finanzmitteln ausgestattet werden wie im 5. Rahmenprogramm.

Der problemorientierte Ansatz des 5. Rahmenprogramms sollte sich auch in den spezifischen Programmen des 6. Rahmenprogramms wiederfinden; dies deshalb, um zum Beispiel sozio-ökonomische Rahmenbedingungen oder den Bedarf künftiger NutzerInnen der Forschung und Technologieentwicklung in die Aktivitäten einzubeziehen.

Sowohl für die 6. Priorität als auch für die übrigen thematischen Prioritäten gilt die generelle österreichische Haltung, wonach die Projektgrößen flexibel und den Erfordernissen der einzelnen Projekte angemessen sein sollen.

Die vollständigen Positionspapiere finden sich im [Internet auf den Seiten des BMBWK](#). Sie stellen die Grundlage für die weiteren Verhandlungen Österreichs im Rat sowie mit dem Europäischen Parlament dar.

Ein wichtiger Erfolg für den Bereich „nichtnukleare Energie“ konnte mit der Budgeterhöhung von 630 auf 810 Millionen Euro beim letzten Forschungsministerrat am 10.12.2001 erzielt werden.

## 1.6 Vergleich der Inhalte in den Vorschlägen

In untenstehender Tabelle wurden die „gewünschten“ Technologien in den Vorschlägen der Kommission (Modifizierter Vorschlag vom 22.11.2001), des Parlaments (1. Lesung) und aus der gemeinsamen Position des Rates gegenübergestellt.

### **Allgemeine Anmerkungen:**

- Das Parlament wünscht sich eine breite Zahl von explizit erwähnten Technologien (Hintergrund: beim Beschluss der spezifischen Programme ist nur mehr eine Anhörung des Parlaments vorgesehen, aber keine Mitbestimmung wie nach Art. 251)
- Allgemein verlangt das Parlament, die Einschränkung auf „large scale actions“ im Bereich „short term“ zu streichen (Am. 168), der Rat sieht das auch so und die Kommission stimmte dem ebenfalls zu
- Das Thema „fossile Energieträger“ wird vom EP stark forciert, von der EK eher kritisch gesehen (Verweis auf Abschnitt „coordination of policies“ – dort sind aber keine „klassischen“ F&E-Projekte möglich)
- Beim Vergleich des EK-Vorschlags mit der Position des Rates sieht man, dass letztere einerseits die Fokussierung auf erneuerbare Energieträger aufweicht, andererseits den Fokus bei den „langfristigen Erneuerbaren“ von 2 Themen (PV und Biomasse) aufhebt und eine breitere Zahl von erneuerbaren Energieträgern zulässt.
- Das Parlament sieht im Energieteil nur die „stationären Brennstoffzellenanwendungen“ vor, Kommission und Rat behandeln sowohl die stationären als die mobilen Anwendungen in diesem Subprogramm (der Einsatz im mobilen Bereich ist im Transportprogramm vorgesehen).

**Tabelle 1: Vergleich der Positionen von Kommission, Rat (gem. Standpunkt) und Europ. Parlament (Stand 23. November 2001)**

	<b>EK-modifiziert</b>	<b>Rat</b>	<b>Europäisches Parlament (1. Lesung)</b>
<u>in the short and medium term, especially in the urban environment</u>	<p>the main new and renewable energy sources and their integration</p> <p>alternative motor fuels</p>	<p>Clean energy, in particular renewable energy sources and their integration in the energy system, including storage, distribution and use</p> <p>alternative motor fuels</p>	<ul style="list-style-type: none"> <li>- renewable energy sources, energy savings and energy efficiency, especially in the urban environment and the historical and natural heritage as well as environmentally sound production and processing of renewable raw materials to replace fossil fuels and other raw materials which are in limited supply or damaging to the environment. Also, promotion of research into environmental efficiency in industrial processes to save water and energy and reduce waste;</li> <li>- wind energy, solar energy, solar thermal power plants, innovative photovoltaic technologies, geothermal energy, biomass, stationary fuel cells, energy from the sea, integration of renewable sources in network structures, virtual power stations, combined systems, intelligent load management processes, potential for the increasing use of marketing and securing the position of regeneratively produced energy.</li> <li>- fossil fuels: improvement of performance and cleanliness, transport and distribution of gas and oil, energy storage, more efficient use of fossil fuels, for example, use of combined heat and power and other Distributed Generation applications.</li> <li>- System for greater efficiency in primary energy sources</li> <li>- Extraction and exploitation systems for reducing CO2 and other GHG emissions from coal, oil and gas</li> <li>- technologies for the production, storage and handling of hydrogen</li> <li>- non-obtrusive and more efficient energy transmission systems</li> <li>- new concepts in wind technologies, solar technologies and advanced uses of animal and vegetable biomass of agricultural origin</li> <li>- geothermal energy, sea energy, hydroelectric power</li> <li>- improvement and use of biological resources including biotechnology for sustainable development (knowledge of biological processes that lead to reduced inputs of materials, such as fuel, fertilisers and pesticides, that remedy environmental change and optimise use of limiting resources, such as water and soil);</li> </ul>
<u>for the medium and longer term</u>	<p>energy saving and energy efficiency, in particular in buildings</p> <p>fuel cells including applications for transport and for stationary use,</p> <p>technologies for hydrogen as an energy carrier and storage system</p> <p>new and advanced concepts for photovoltaic energy and advanced uses of biomass (including of agricultural origin),</p> <p>disposal of CO2 associated with cleaner fossil fuel plants</p>	<p>energy savings and energy efficiency, including those to be achieved through the use of renewable raw materials</p> <p>fuel cells including their applications</p> <p>new technologies for energy carriers/transport and storage on a European scale, in particular hydrogen technology</p> <p>new and advanced concepts in renewable energy technologies with a significant future energy potential and requiring long-term research efforts</p> <p>disposal of CO2 associated with cleaner fossil fuel plants</p>	<ul style="list-style-type: none"> <li>- fossil fuels: improvement of performance and cleanliness, transport and distribution of gas and oil, energy storage, more efficient use of fossil fuels, for example, use of combined heat and power and other Distributed Generation applications.</li> <li>- System for greater efficiency in primary energy sources</li> <li>- Extraction and exploitation systems for reducing CO2 and other GHG emissions from coal, oil and gas</li> <li>- technologies for the production, storage and handling of hydrogen</li> <li>- non-obtrusive and more efficient energy transmission systems</li> <li>- new concepts in wind technologies, solar technologies and advanced uses of animal and vegetable biomass of agricultural origin</li> <li>- geothermal energy, sea energy, hydroelectric power</li> <li>- improvement and use of biological resources including biotechnology for sustainable development (knowledge of biological processes that lead to reduced inputs of materials, such as fuel, fertilisers and pesticides, that remedy environmental change and optimise use of limiting resources, such as water and soil);</li> </ul> <p>keine explizit auf "longer term" ausgerichteten Vorschläge des EP</p>

## 1.7 Vergleich der nichtnuklearen und nuklearen Budgetanteile

Der Vergleich der Budgetanteile in Tabelle 2 zeigt zwei Entwicklungen:

Das Thema „Energie-F&E“ verliert an Bedeutung. Im 4. Rahmenprogramm erhielt der Energiebereich noch fast 18 % des Gesamtbudgets, in den aktuellen Vorschlägen zum 6. Rahmenprogramm ist für diesen Bereich nur mehr um die 11 % vorgesehen.

Dabei verliert der Bereich „Nichtnukleare Energie“ deutlich, der EURATOM-Teil (Fusion und Kernspaltung) kann sich recht gut halten. Das führt zum Ende der „relativen Balance“ Nuklear-Nichtnuklear, die in früheren Verhandlungen immer ein wichtiges Argument war. In den letzten Vorschlägen erhält der EURATOM-Teil doppelt so viel wie die nichtnuklearen Energieträger (siehe dazu auch Abbildung 1).

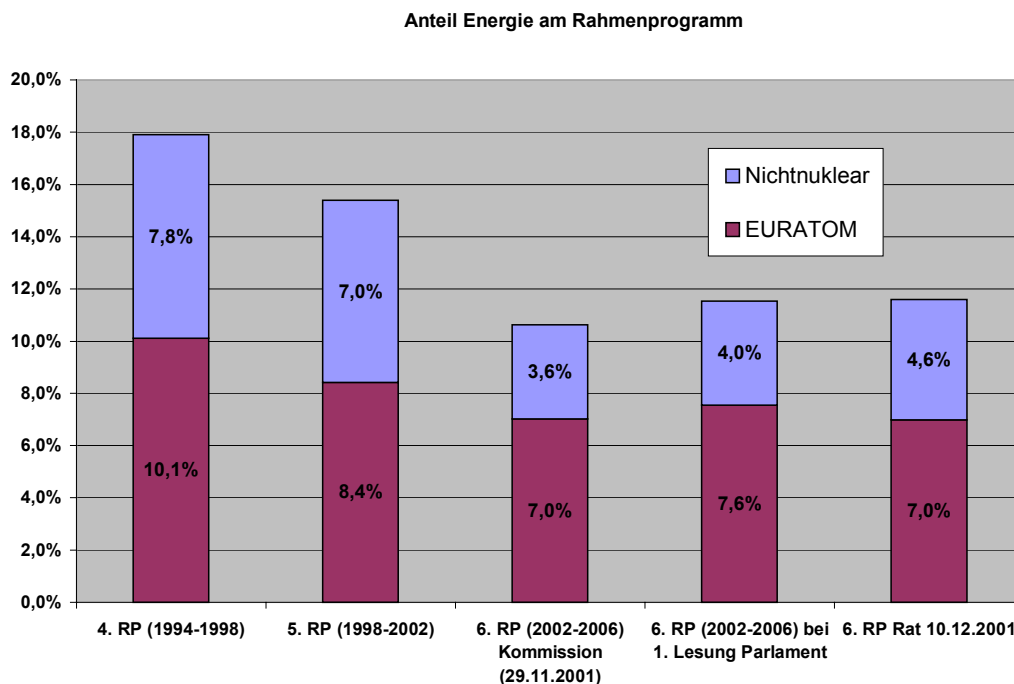
**Tabelle 2: Vergleich der nichtnuklearen und nuklearen Budgetanteile in den Rahmenprogrammen für FTE der EU (in MECU bzw. MEuro)**

	Nicht-nuklear <sup>6</sup>	nuklear (EURATOM)	Summe Energie	Verhältnis Nichtnuklear-Nuklear	Summe Gesamtprogramm <sup>7</sup>	Anteil Energie (Nichtnukleare Energie) am Gesamtprogramm in %
4. RP (1994-1998) <sup>8</sup>	1.030	1.336	2.366	44:56	13.215	17,9 (7,8)
5. RP (1998-2002)	1.042	1.260	2.302	45:55	14.960	15,4 (7,0)
6. RP (2002-2006) EK 29.11.2001	630	1.230	1.860	34:66 (ca. 1:2)	17.500	10,6 (3,6)
6. RP (2002-2006) bei 1. Lesung EP	700	1.330	2.030	34:66 (ca. 1:2)	17.600	11,5 (4)
6. RP Rat 10.12.2001	810	1.230	2.040	40:60	17.500	11,7 (4,6)

<sup>6</sup> Beim nichtnuklearen Anteil ist der energierelevante Beitrag für die Gemeinsame Forschungsstelle nicht enthalten.

<sup>7</sup> inkl. EURATOM

<sup>8</sup> Angaben zum 4. RP in ECU. Zum Zeitpunkt der Fixierung des Euro-Kurses betrug die Umrechnung 1:1, davor hat der Kurs des ATS zum ECU natürlich geschwankt)



**Abbildung 1: Budgetanteil des Bereiches Energie am gesamten Rahmenprogramm**

## 1.8 Der Bereich „Kohle und Stahl“

Mitte nächsten Jahres läuft einer der 3 Gründungsverträge der Europäischen Gemeinschaft, der sog. EGKS-Vertrag (Europäische Gemeinschaft für Kohle und Stahl) nach 50-jähriger Laufzeit aus. Die Zinsen aus den Finanzmitteln (ca. 1,6 Milliarden Euro), die im Rahmen dieses Vertrages für die Forschung und Entwicklung in den Bereichen Kohle und Stahl parallel und unabhängig zu den Aktivitäten in den Forschungsrahmenprogrammen eingesetzt wurden, sollen auch weiterhin für F&E in diesen Bereichen zur Verfügung stehen. Besonders der Bereich Kohle ist dabei energierelevant (conversion and combustion of coal). Dieser Bereich soll 27,2% (72,8% für Stahl-F&E) enthalten, das sind für 2002 10 MEuro. Die Finanzmittel werden am 24. Juli 2002 der Europäischen Gemeinschaft übertragen, die DG TREN, die bisher die Koordination innehatte, soll auch weiterhin in der Kommission für „Kohle und Stahl – F&E“ verantwortlich bleiben. Der Übergang wurde in einem Protokoll im Anhang zum Vertrag von Nizza festgelegt<sup>9</sup>.

<sup>9</sup> siehe dazu auch COM (2001) 121 vom 7.3.2001

## 2 Anhang



## 2.1 (Ursprünglicher) Vorschlag EK

### Auszug aus COM (2001) 94 vom 21.2.2001

#### 1.1.6. *Sustainable development and global change*<sup>10</sup>

##### Objective

The activities carried out in this area are intended to strengthen the scientific and technological capacities needed for Europe to be able to implement sustainable development and make a significant contribution to the international efforts to understand and control global change and preserve the equilibrium of ecosystems.

##### Justification of the effort and European added value

The global implementation of sustainable development requires more particularly:

- the design, development and dissemination of technologies making it possible to ensure more rational use of natural resources, less waste production and a reduction in the impact of economic activity on the environment;
- a better understanding of the mechanisms of global change, and in particular climate change and our related forecasting capacities.

Where technology is concerned, as highlighted in the Commission Green Paper "Towards a European strategy for the security of energy supply"<sup>11</sup>, two areas concerned as a matter of priority are energy and transport, which are responsible for over 80% of total emissions of greenhouse gases and more than 90% of CO<sub>2</sub> emissions.

Under the Kyoto Protocol, the EU is required to reduce its greenhouse gas emissions by 8% compared with the 1990 levels in the period 2008-2012.

Achieving this objective in the **short term** requires a major large-scale effort to deploy technologies currently under development.

Above and beyond this objective, the **long term** implementation of sustainable development in the coming decades makes it necessary to ensure the availability, under economic conditions, of the most appropriate energy sources and vectors in this respect. This will require a sustained longer-term research effort.

Medium and long-term research efforts will also be necessary to develop the sustainable European transport system that is likely to be mentioned as a priority objective for the EU in the White Paper on the Common Transport Policy currently being prepared by the Commission.

Turning to the study of climate change, the efforts made today at world level represent some EUR 2 billion per annum. Europe spends EUR 500 million compared with EUR 900 million in the case of the United States.

<sup>10</sup> The priority objectives for nuclear research are set out in the Annex "Scientific and technological objectives" of the proposal for the Euratom Framework Programme.

<sup>11</sup> COM(2000) 769.

The European Union is a party to the international agreements in the various areas associated with global change such as the Kyoto Protocol on Climate change and the UN Conventions on Biodiversity and Desertification. It has a duty to make a substantial and coherent contribution to the efforts made through the major international research programmes on these themes.

Action by the Community can help to ensure this vital coordination of Europe's contribution to the world effort.

### **Actions envisaged**

#### *Technologies for sustainable development*

The Community's effort in the short term will concentrate on a limited number of large-scale actions in the following areas:

- renewable energy sources, energy economies and energy efficiency, especially in the urban environment, as well as clean transport, with the development of new vehicle concepts in particular for road transport, as well as the development of alternative motor fuels;
- intelligent transport, especially in the form of technologies making possible a rebalancing as well as the integration of different modes of transport, for example by means of innovations in the management of the logistic chain (in particular containers).

Turning to the longer term, activities will concentrate as a matter of priority on:

- fuel cells for stationary applications and in transport;
- hydrogen technology;
- new concepts in solar photovoltaic technologies and advanced uses of biomass.

#### *Global change*

Community activities will address the following aspects as a matter of priority:

- impact and mechanisms of greenhouse gas emissions on climate and carbon sinks (oceans, forests and soil);
- water cycle;
- biodiversity, protection of genetic resources, operation of terrestrial and marine ecosystems and interactions between human activities and the latter;
- mechanisms of desertification and natural disasters connected with climate change;
- global climate change observation systems.

## 2.2 1. Lesung Europäisches Parlament

Auszug aus: Report Caudron, 26.10.2001 (Final A5-0376/2001)

### LEGISLATIVE PROPOSAL

**Proposal for a decision of the European Parliament and of the Council concerning the multiannual framework programme 2002-2006 of the European Community for research, technological development and demonstration activities aimed at contributing towards the creation of the European Research Area (COM(2001) 94 – C5-0087/2001 – 2001/0053(COD))**

The proposal is amended as follows:

Text proposed by the Commission <sup>12</sup>

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Amendments by Parliament

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Amendment 160  
ANNEX 1, Chapter 1.1.6, Title

Sustainable development and global change

**Energy**, sustainable development, **biodiversity** and global change

Justification

Self justifying

Amendment 161  
ANNEX 1, Chapter 1.1.6a, sub Title (new)

**1.1.6a. Energy**

Justification

Partie Energie

<sup>12</sup> OJ C 180, 26.6.2001, p. 156

Amendment 162

Annex 1, chapter 1.1.6a), objective, paragraph 1 (new)

**The activities carried out in this area are intended to ensure and maximize the availability, sustainability and conservation of the indigenous resources as well as the security of supply of cheap, clean energy in forms required by both the citizens of Europe and industry.**

Justification

The inclusion of this thematic area would facilitate systematic development of all our energy resources provided a sustainable development approach is followed. The objective would be to maximize indigenous resources and security of supply of cheap, clean energy in forms required by both the citizens of Europe and industry. Such an approach would not only facilitate an accelerated development of renewables and sustainable development of conventional energies, but would also act as a bridge to longer term solutions like hydrogen and ensure an integrated and targeted approach.

Amendment 163

Annex 1, Chapter 1.1.6a), Objective, paragraph 2 (new)

**The activities carried out in this area are intended to strengthen the scientific and technological capacities needed for Europe to be able to implement sustainable development and make a significant contribution to the international efforts to understand and control global change and preserve the equilibrium of ecosystems. It recognises, however, the growing dependence on imported fossil fuels and the associated near to mid-term (2010-2020) requirement to support technological developments essential to address the reduction of greenhouse gases and pollutant emissions and the security of energy supply by safeguarding the existing infrastructure, until Renewables technologies gain more widespread acceptance, especially in the liberalised energy market, an approach which would have positive implications for cost, safety and security of energy supplies.**

Justification

Natural gas is an obvious stepping stone to a hydrogen based system, in terms of infrastructure provision and

development. The EU is dependent on finding, extracting and transporting gas and oil from remote areas, including the North Sea. These technologically demanding feats were only made possible as a result of a tremendous R&D effort and, if we want to ensure security of supply, this effort must continue in future, to make more finds feasible and to improve recovery from existing finds. Similarly, storage of energy becomes more and more important as the energy system becomes more complex with many decentralized generating units. This requires improved and new concepts for gas storage.

Amendment 164

Annex 1, chapter 1.1.6a) Justification of the effort and European added value, paragraph 1 and indent 1 (new)

**The global implementation of sustainable development requires:**

**- the design, development and dissemination of technologies making it possible to ensure more rational and sustainable use of natural resources to produce energy and raw materials for industrial processes. This should include finding and developing the resources, clean and energy efficient production and minimising waste, emissions and the impact of such economic activity on the environment. Particular attention should be given to the development of an Energy Intelligent Europe.**

Justification

Europe should become the most energy intelligent economy in the world. Linking Energy Intelligence to the knowledge-based economy will help Europe to become the most competitive economy worldwide while achieving its ultimate goal – sustainable development. Energy Intelligence should therefore receive the fullest attention of the EU and of Member States. The requirement for the development and production of clean, energy efficient technologies which ensure sustainability, minimum waste and emissions needs to be included in the quest for the rational use of all our natural resources, including hydrocarbons, whilst ensuring both environmental and economic activity is assured within the European Community. The accelerated development of renewables is fully supported yet will provide insufficient energy alone to meet the demand growth in the next few decades. A secure European supply is important for continued wealth creation and jobs in Europe.

Amendment 165

Annex 1, chapter 1.1.6a), Justification of the effort and European added value, paragraph 2-4 (new)

**The requirement to provide security and diversity of supply whilst meeting ever more stringent environmental obligations within a European Community promoting its indigenous industry with the ability to provide for internal economic growth against a worldwide threat to competitiveness is well documented.**

**Such a goal requires a continuous and evolving RD&D programme to facilitate an accelerated development of renewables and sustainable development of conventional energies but also act as a bridge to longer term solutions like hydrogen.**

**The growth in energy demand and the Kyoto targets require the development of safe, clean, cheap and sustainable innovative conventional energy technical solutions. This in turn will accelerate the development of a replacement programme of renewables to meet the demand.**

#### Justification

The inclusion of this thematic area would facilitate systematic development of all our energy resources provided that a sustainable development approach. The objective would be to maximize indigenous resources and security of supply of cheap, clean energy in forms required by both the citizens of Europe and industry. Such an approach would not only facilitate an accelerated development of renewables and sustainable development of conventional energies, but would also act as a bridge to longer term solutions like hydrogen and ensure an integrated and targeted approach.

#### Amendment 166

Annex 1, Chapter 1.1.6a), Justification of the effort and European added value, paragraph 5(new)

**In order to achieve sustainable development the production and management of natural resources over the whole life cycle, as in the case of energy, is a core issue. Following the EU's policy on sustainable development, the Commission's 'Communication on the non-energy extractive industry and sustainable development' and the Council's Resolution with respect to this Communication, in which the need for intensified research is identified, and in view of Enlargement and the associated environmental and social issues related to the extractive industry in these countries; intensified research in this area is required;**

Justification

The accelerated development of renewables is fully supported yet will provide insufficient energy alone to meet the demand growth in the next few decades. A secure European supply is important for continued wealth creation and jobs in Europe.

Amendment 167

Annex I, chapter 1.1.6a), Actions envisaged, paragraph 1(new)

**Clean energy of the future**

Justification

Energy and transport are two separate important thematic areas and will therefore be dealt with in individual chapters and completed as appropriate.

Amendment 168

Annex I, chapter 1.1.6a), Actions envisaged, paragraph 2(new)

**The Community's effort in the short and medium-term will concentrate on a limited number of actions in the following areas:**

Justification

Energy and transport are two separate important thematic areas and will therefore be dealt with in individual chapters and completed as appropriate.

Amendment 169

ANNEX 1, Chapter 1.1.6a), Actions envisaged, paragraph 2, indent 1(new)

**– renewable energy sources, energy savings and energy efficiency, especially in the urban environment and the historical and natural heritage as well as environmentally sound production and processing of renewable raw**

**materials to replace fossil fuels and other raw materials which are in limited supply or damaging to the environment. Also, promotion of research into environmental efficiency in industrial processes to save water and energy and reduce waste;**

#### Justification

All transport-related actions are grouped together under the new section 1.1.8 on 'Surface transport'.

In conjunction with Amendment 28. Energy and transport are two thematic areas that are important in their own right and are therefore dealt with in separate points, and in correspondingly greater detail.

Energy saving and energy efficiency are important in rural areas too. There is no justification for confining this topic to the urban environment.

Experts consider that the Commission proposal took too little account of this field. With the right technological development, renewable raw materials could do much to alleviate environmental problems and at the same time broaden the sources of income of European agriculture.

The latest knowledge of wind energy and wind turbine technology as sustainable energy sources should be specifically mentioned in the proposal. The development of such energy sources may in the longer term help mitigate the increasing changes in the global climate.

#### Amendment 170

Annex I, chapter 1.1.6a), Actions envisaged, paragraph 2, indents 2 to 14 (new)

- **wind energy,**
- **solar energy,**
- **solar thermal power plants,**
- **innovative photovoltaic technologies,**
- **geothermal energy,**
- **biomass,**
- **stationery fuel cells,**
- **energy from the sea,**
- **integration of renewable sources in network structures,**
- **virtual power stations,**
- **combined systems,**
- **intelligent load management processes,**
- **potential for the increasing use of marketing and**

**securing the position of regeneratively produced energy.**

Justification

Energy and transport are two separate important thematic areas and will therefore be dealt with in individual chapters and completed as appropriate.

Amendment 171

Annex 1, chapter 1.1.6a), Actions envisaged, paragraph 2, indent 15 (new)

**- fossil fuels: improvement of performance and cleanliness, transport and distribution of gas and oil, energy storage, more efficient use of fossil fuels, for example, use of combined heat and power and other Distributed Generation applications.**

Justification

Combined heat and power and other Distributed Generation applications have great potential to be a very efficient and environmentally sustainable power source with the ability to operate on many different fuels including renewable fuels such as biogas. Fossil fuels will continue to play an important role in European energy production. Research should continue to make heat and power production as clean as possible. Technologies for transport, distribution and storage should also be improved, as they are responsible for large-scale environmental damage.

Amendment 172

Annexe 1, chapter 1.1.6a), paragraph 2, indent 16 (new)

**- System for greater efficiency in primary energy sources**

Justification

Efficiency has always been a priority in the European energy sector and specific focus must be applied to enhance such efficiency.

Amendment 173

Annex 1, chapter 1.1.6a), Actions envisaged, paragraph 2, indent 17(new)

**- Extraction and exploitation systems for reducing CO<sub>2</sub> and other GHG emissions from coal, oil and gas**

Justification

Extended efforts in this area are necessary for European research in order to reduce global emissions and achieve Kyoto targets.

Amendment 174

Annex 1, chapter 1.1.6a), "Actions envisaged", Paragraph 2, indent 18(new)

**- technologies for the production, storage and handling of hydrogen**

Justification

In conjunction with Amendment 27. Energy and transport are two thematic areas that are important in their own right and are therefore to be dealt with in separate points, and in correspondingly greater detail.

In order for the use of hydrogen, an environmentally sound source of energy, to become widespread, a smooth functioning infrastructure must be developed to supply users with hydrogen. This necessitates support for the production, storage and handling of hydroge

Amendment 175

Annex 1, chapter 1.1.6a), actions envisaged, paragraph 2, indent 19 (new)

**- non-obtrusive and more efficient energy transmission systems.**

Justification

Power lines and pipelines disfigure the landscape, underground systems are very expensive, there can be significant losses in the transmission of most types of energy. This area could benefit from developments in environmental, energy saving and cost terms.

Amendment 176

Annex 1, chapter 1.1.6a), Actions envisaged, Paragraph 2, Indent 20 (new)

- **new concepts in wind technologies, solar technologies and advanced uses of animal and vegetable biomass of agricultural origin;**

Justification

Clarifies the concept of biomass and improves the wording in general by including agricultural aspects.

Amendment 177

Annex 1, chapter 1.1.6a), Actions envisaged, paragraph 2, indent 21 (new)

- **geothermal energy, sea energy, hydroelectric power;.**

Justification

Renewable energies will help to combat greenhouse gas emissions. Research is needed to make them more competitive. Biomass is another alternative energy with great promise for rural areas where there is intensive farming and stock-breeding. Hydro-electric power should not be omitted from the list, in view of its importance.

Amendment 178

Annex 1, chapter 1.1.6a), Actions envisaged, paragraph 2, indent 22(new)

- **improvement and use of biological resources including biotechnology for sustainable development (knowledge of biological processes that lead to reduced inputs of materials, such as fuel, fertilisers and pesticides, that remedy environmental change and optimise use of limiting resources, such as water and soil);**

Justification

To promote biotechnological developments which will benefit the environment and save on scarce resources.



## 2.3 Stellungnahme der EK zur 1. Lesung EP (20.11.2001)

1.1.6 Développement durable et Changement planétaire				
160	Annex 1, Chapter 1.1.6, Title	Write title as : "1.1.6 <u>Energy</u> , sustainable development, <u>biodiversity</u> and global change"	Oui* en partie	It is enough to have the title as " <b>Sustainable development</b> ", as all parts under this title relate to the goal of sustainability.
1.1.6. A) Energy				
161	Annex 1, Chapter 1.1.6a, sub Title (new)	Write title as : "1.1.6a Energy"	Oui* en principe	It is appropriate that the title reads " <b>Sustainable energy systems</b> " to cover the aspect of the use of energy in the context of sustainable development.
162	Annex 1, chapter 1.1.6 a), objective, paragraph 1 (new)	Clarify the objectives of the activities carried out in this area to ensure and maximize the availability, sustainability and conservation of the indigenous resources as well as the security of supply of cheap, clean energy in forms required by both the citizens of Europe and industry.	Oui* en partie	Acceptable with reformulation (see attached text).
163	Annex 1, chapter 1.1.6 a), objective, paragraph 2 (new)	Expand the objective to the energy supply needs (natural gas).	Non	This modification would lead to a shift of focus of the proposed programme towards areas where market forces are much more important than any possible EU contribution. Research on fuel cells will help to contribute to bridge the gap between fossil fuels and a possible future hydrogen economy.
164	Annex 1, chapter 1.1.6 a), Justification of the effort and European added value, paragraph 1 and indent 1 (new)	Add a paragraph on the sustainable use of natural resources to produce energy and raw materials for industrial processes. Add further that this should include finding and developing the resources, clean and energy efficient production and minimising waste, emissions and the impact of such economic activity on the environment. Finally, add that particular attention should be given to the development of an Energy Intelligent Europe.	Oui* en principe	Acceptable with reformulation (see attached text)

165	Annex 1, chapter 1.1.6 a), Justification of the effort and European added value, paragraph 2-4 (new)	Add a whole paragraph on the requirement to provide security and diversity of supply whilst meeting ever more stringent environmental obligations within a European Community promoting its indigenous industry with the ability to provide for internal economic growth against a worldwide threat to competitiveness. For this goal, an R&D programme would be needed to facilitate an accelerated development of renewables.	Oui* en partie	Acceptable with reformulation (see attached text)
166	Annex 1, chapter 1.1.6 a), Justification of the effort and European added value, paragraph 5 (new)	Add that, in order to achieve sustainable development, the production and management of natural resources over the whole life cycle, like in the case of energy, is a core issue.	Oui* en partie	Acceptable with reformulation (see attached text).
167	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 1 (new)	Write "Clean energy of the future" instead of "Technologies for sustainable development"	Non	This is not appropriate as it has the clear consequence of opening up this part too broadly to cover all relevant topics, thus not permitting the attainment of critical mass in areas of major importance with European added value.
168	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2 (new)	Delete the reference " <u>large scale</u> ".	Oui	
169	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 1 (new)	Modify this indent by - Mentioning renewable energy sources and energy efficiency, especially in the urban environment and the historical and natural heritage; - Mentioning indicatively environmentally sound production and processing of renewable raw materials to replace fossil fuels and other raw materials which are in limited supply or damaging to the environment; - Adding reference to promotion of research into environmental efficiency in industrial processes to save water and energy and reduce waste.	Oui* en principe	Aspects of renewable raw materials will be dealt with under part 1.1.3.  Fossil fuels is proposed as a topic under block 3 "co-ordination of national policies"  Energy efficiency will be dealt with under this part (see attached text).

170	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indents 2 to 14 (new)	Mention a range of possible energy sources: wind energy, solar energy, solar thermal power plants, innovative photovoltaic technologies, geothermal energy, biomass, stationary fuel cells, energy from the sea, integration of renewable sources in network structures, virtual power stations, combined systems, intelligent load management processes, potential for the increasing use of marketing and securing the position of regeneratively produced energy.	Oui* en principe	It is noted that certain parts are covered already under this priority. Fossil fuels are addressed under block 3 on coordination of policies (see attached text).
171	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 15 (new)	Add an indent on fossil fuels: improvement of performance and cleanliness, transport and distribution of gas and oil, energy storage, more efficient use of fossil fuels, for example, use of combined heat and power and other Distributed Generation applications.	Oui* en principe	Improvements needed for the technologies related to the use of fossil fuels have been excluded from the FP proposal, in view of focusing on promising new and renewable energy technologies. These technologies will certainly be addressed by industry and national programmes, therefore research on fossil fuels is taken up as one of the items of block 3 on coordination of policies (see attached text).
172	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 16 (new)	Add an action on a system for greater efficiency in primary energy sources.	Oui* en principe	This is done under block 3 on the coordination of national policies (see attached text).
173	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 17 (new)	Add the extraction and exploitation systems for reducing CO <sub>2</sub> and other GHG emissions from coal, oil and gas	Oui* en principe	This is covered under the sub-priority on energy (see attached text).
174	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 18 (new)	Add technologies for the production, storage and handling of hydrogen.	Oui* en principe	This is covered under the sub-priority on energy (see attached text).
175	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 19 (new)	Add non-obtrusive and more efficient energy transmission systems.	Non	This is against retaining the focus of efforts. Further, this is already addressed in a satisfactory manner by industry and utility companies.
176	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 20 (new)	Add "wind technologies" to the new concepts, delete "photovoltaic" and specify the concept of biomass to include biomass of agricultural origin.	Oui* en principe	Acceptable with reformulation (see attached text).

177	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 21 (new)	Add a new indent on geothermal energy, sea energy, hydroelectric power.	Oui* en principe	Acceptable with reformulation (see attached text).
178	Annex 1, chapter 1.1.6 a), Actions envisaged, paragraph 2, indent 22 (new)	Add improvement and use of biological resources including biotechnology for sustainable development (knowledge of biological processes that lead to reduced inputs of materials, such as fuel, fertilisers and pesticides, that remedy environmental change and optimise use of limiting resources, such as water and soil);	Oui* en principe	This is acceptable and is accommodated under priority 1.1.3, New production processes, with the formulation "Systems research needed for waste management and hazard control <b><u>in production and manufacturing, including bio-processes and reduction of consumption of primary resources;</u></b> "

## 2.4 Modifizierter Vorschlag der EK zum Rahmenprogramm

### Auszug aus KOM (2001) 709 vom 22.11.2001

#### 1.1.6. *Sustainable development and global change*<sup>13</sup>

##### Objective

The activities carried out in this area are intended to strengthen the scientific and technological capacities needed for Europe to be able to implement sustainable development, **recognised as a Community objective by the Gothenburg European Council, integrating its environmental, economic and social dimensions, with particular regard to secure sustainable energy and transport. They should enable Member States, the candidate and other associated countries to** and make a significant contribution to the international efforts to understand and control global change and preserve the equilibrium of ecosystems.

##### Justification of the effort and European added value

The global implementation of sustainable development requires more particularly:

- the design, development and dissemination of technologies making it possible to ensure **the conservation and** more rational **and sustainable** use of natural resources, **with** less waste production and a reduction in the impact of economic activity on the environment, **in favour of an “energy intelligent” and “transport intelligent” Europe;**
- a better understanding of the mechanisms **and impacts** of global change, and in particular climate change and our related forecasting capacities, **and of ecosystems.**

Where technology is concerned, as highlighted in the Commission Green Paper "Towards a European strategy for the security of energy supply"<sup>14</sup>, two areas concerned as a matter of priority are energy and transport, which are responsible for over 80% of total emissions of greenhouse gases and more than 90% of CO<sub>2</sub> emissions.

Under the Kyoto Protocol, the EU is required to reduce its greenhouse gas emissions by 8% compared with the 1990 levels in the period 2008-2012. **This will require the development of innovative sustainable energy and transport solutions.**

Achieving this objective in the **short term** requires a major large-scale effort to deploy technologies currently under development.

Above and beyond this objective, the **long-term** implementation of sustainable development in the coming decades makes it necessary to ensure the availability, under economic conditions, of the most appropriate energy sources and carriers in this respect. This will require a sustained longer-term research effort.

Medium and long-term research efforts will also be necessary to develop the sustainable European transport system, ~~that is likely to be mentioned~~ **which has been established** as a priority objective for the EU in the White Paper on the ~~Common~~ **European** Transport Policy ~~currently being prepared by the Commission.~~

On the study of climate change, the efforts made today at world level represent some EUR 2 billion per annum. Europe spends EUR 500 million compared with EUR 900 million in the case of the United States.

The European Union is a party to the international agreements in the various areas associated with global change such as the Kyoto Protocol on Climate change, **the Montreal Protocol**, and the UN Conventions on Biodiversity and Desertification. It has a duty to make a substantial and coherent contribution to the efforts made through the major international research programmes on these themes.

<sup>13</sup> The priority objectives for nuclear research are set out in the Annex "Scientific and technological objectives" of the proposal for the Euratom framework programme.

<sup>14</sup> COM(2000) 769.

Action by the Community can help to ensure this vital coordination of Europe's contribution to the world effort.

### **Actions envisaged**

**Technologies for sustainable development**

The Community's **RTD** efforts ~~in the short and medium term~~ will concentrate on ~~a limited number of large scale actions~~ **activities** in the following areas:

- ~~renewable energy sources, energy savings and energy efficiency, especially in the urban environment, as well as clean transport, with the development of new vehicle concepts in particular for road transport, as well as the development of alternative motor fuels;~~
- ~~intelligent transport, especially in the form of technologies making possible a rebalancing as well as the integration and increasing intermodality of different modes of transport, for example by means of innovations in the management of the logistic chain (in particular containers).~~

Turning to the longer term, activities will concentrate as a matter of priority on:

- fuel cells for stationary applications and in transport;
- hydrogen technology;
- new concepts in solar photovoltaic technologies and advanced uses of biomass.

#### **i) Sustainable Energy Systems**

- **in the short and medium term, especially in the urban environment:**
  - **the main new and renewable energy sources and their integration,**
  - **alternative motor fuels,**
  - **energy saving and energy efficiency, in particular in buildings;**
- **for the medium and longer term:**
  - **fuel cells including applications for transport and for stationary use,**
  - **technologies for hydrogen as an energy carrier and storage system,**
  - **new and advanced concepts for photovoltaic energy and advanced uses of biomass (including of agricultural origin),**
  - **disposal of CO<sub>2</sub> associated with cleaner fossil fuel plants;**

#### **ii) Sustainable surface transport**

- **with a view to developing environmentally friendly transport systems and vehicles and clean urban transport, with rational use of the car in the city:**
  - **new vehicle concepts in particular for road and urban transport, including novel propulsion systems and integration of fuel cells for transport purposes,**
  - **advanced design and production techniques leading to improved quality, safety, recyclability, comfort and cost-effectiveness ;**
- **with a view to making rail and maritime transport more effective, and addressing the interoperability needs of a single European Railway System and assuring intelligent and safe transport of passengers and freight in particular for road and maritime transport:**
  - **rebalancing and integrating different modes, in favour of those that are more sustainable and safer (for example by means of developing intermodality for freight and passengers, and innovations in the management of the logistic chain),**
  - **optimising infrastructure use and increasing safety, through interoperable intelligent transport systems and vehicles, and avoiding traffic congestion, in particular in urban areas.**

#### **iii) Global change and ecosystems**

Community activities will address the following aspects as a matter of priority:

- impact and mechanisms of greenhouse gas emissions **and other atmospheric constituents** on climate and carbon sinks (oceans, forests and soil) **in particular to improve prediction and to evaluate mitigation options;**
- water cycle, **including soil – related aspects;**

- **understanding marine and terrestrial** biodiversity, **marine ecosystem functions,** protection of genetic resources, **sustainable management** ~~operation~~ of terrestrial and marine ecosystems and interactions between human activities and the latter;
- mechanisms of desertification and natural disasters connected with climate change;
- global climate change observation systems.

## 2.5 Gemeinsamer Standpunkt des Rates vom 10. Dezember 2001

(Quelle: BMBWK)

### 1.1.6 Sustainable development, global change and ecosystems

#### Objective

The activities carried out in this area are intended to strengthen the scientific and technological capacities needed for Europe to be able to implement sustainable development, emphasised by the Göteborg European Council, and integrating its environmental, economic and social objectives with particular regard to renewable energy, transport, and sustainable management of Europe's land and marine resources. They should enable Member States, the candidate and other associated countries to make a significant contribution to the international efforts to understand and control global change and preserve the equilibrium of ecosystems.

#### Justification of the effort and European added value

The implementation on a global scale of sustainable development requires more particularly:

- the design, development and dissemination of technologies and solutions, such as promotion of changes in energy consumption behaviour, making it possible to ensure the conservation and more rational and sustainable use of natural resources, with less waste and a reduction in the impact of economic activity on the environment. Sectors of strategic importance in this context include energy and transport, especially the urban and regional development aspects of these sectors;
- a better understanding of ecosystems and of the mechanisms and impacts of global change (for instance climate change), including the effect of these mechanisms on land and marine resources; as well as the development of related forecasting capacities.

Where technology is concerned, as highlighted in the Commission Green Paper "Towards a European strategy for the security of energy supply"<sup>15</sup> and in the Commission's White Paper "European transport policy for 2010: time to decide"<sup>16</sup>, two areas concerned as a matter of priority are energy and transport, which are responsible for over 80% of total emissions of greenhouse gases and more than 90% of CO<sub>2</sub> emissions.

Under the 1997 Kyoto Protocol to the 1992 United Nations Framework Convention on climate change, the EU is required to reduce its greenhouse gas emissions by 8% compared with the 1990 levels in the period 2008-2012. This will require the development of innovative sustainable energy and transport solutions. Other important commitments are contained in international instruments such as the 1992 UN Convention on biological diversity, the 1994 UN Convention to combat desertification in countries seriously affected by drought and/or desertification, particularly in Africa, and the 1987 Montreal Protocol on substances that deplete the ozone layer as well as in the EU strategy for sustainable development, including the Sixth Action Programme on the Environment.

<sup>15</sup> COM (2000) 769.

<sup>16</sup> COM (2001) 370.

Achieving the above objective in the short term requires a major effort to deploy technologies currently under development. Community action is important to ensure coordination of Europe's contribution to world efforts.

Above and beyond this objective, the long-term implementation of sustainable development in the coming decades makes it necessary to ensure the availability, under economic conditions, of the most appropriate energy sources and carriers in this respect. This will require a sustained longer-term research effort.

Medium and long-term research efforts will also be necessary to develop sustainable European transport systems, and to make progress in the context of global change and protection of biodiversity and preserving ecosystems which would also contribute to the sustainable use of land and marine resources. In the context of global change, strategies for an integrated, sustainable use of agricultural and forest ecosystems are of particular importance for the preservation of these ecosystems and will contribute substantially to the sustainable development of Europe.

### Actions envisaged

The Community's RTD efforts will concentrate on activities in the following areas:

#### I. Sustainable energy systems<sup>17</sup>

- in the short and medium term, especially in the urban environment:
  - = Clean energy, in particular renewable energy sources and their integration in the energy system, including storage, distribution and use;
  - = energy savings and energy efficiency, including those to be achieved through the use of renewable raw materials
  - = alternative motor fuels;
  
- in the medium and longer term:
  - = fuel cells including their applications;
  - = new technologies for energy carriers/transport and storage on a European scale, in particular hydrogen technology;
  - = new and advanced concepts in renewable energy technologies with a significant future energy potential and requiring long-term research efforts;
  - = disposal of CO<sub>2</sub> associated with cleaner fossil fuel plants;

#### II. Sustainable surface transport<sup>18</sup>

- Developing environmentally friendly transport systems and means of transport of passengers and freight, and clean urban transport with rational use of the car in the city:
  - = new technologies and concepts for surface transport, including novel propulsion systems and integration of fuel cells for transport purposes;

<sup>17</sup> Other energy related topics are included under section 1.2.1 ("Supporting policies and anticipating scientific and technological needs") and in Heading III.

- = advanced design and productions techniques leading to improved quality, safety, recyclability, comfort and cost-effectiveness;
- Making rail and maritime transport more effective and more competitive, addressing the interoperability of transport modes, and assuring intelligent and safe transport of passengers and freight:
  - = rebalancing and integrating different modes, in particular in the urban and regional context, making rail and maritime transport more effective (for example, by means of promoting intermodality);
  - = increasing safety, and avoiding traffic congestion (in particular in urban areas), through the integration of innovative electronics and software solutions and by means of the use of advanced satellite navigation systems and telematics solutions.

### III. Global change and ecosystems

Community activities will address the following aspects as a matter of priority:

- impact and mechanisms of greenhouse gas emissions and atmospheric pollutants from all sources, including those resulting from energy supplies, transport and agriculture on climate, ozone depletion and carbon sinks (oceans, forests and soil) in particular to improve prediction and to evaluate mitigation options;
- water cycle, including soil-related aspects;
- understanding marine and terrestrial biodiversity, marine ecosystem functions, protection of genetic resources, sustainable management of terrestrial and marine ecosystems and interactions between human activities and the latter;
- mechanisms of desertification and natural disasters;
- strategies for sustainable land management, including integrated coastal zone management (ICZM), and including integrated concepts for the multipurpose utilisation of agricultural and forest resources, and the integrated forestry/wood chain;
- operational forecasting and modelling, including global climate change observation systems.

Research undertaken under this priority will be complemented by the development of advanced methods for risk assessment and methods of appraising environmental quality, including relevant prenormative research on measurements and testing for these purposes.

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<sup>18</sup> Other transport policy-related topics (such as transport security, tools and indicators for transport system performance and forecasting) are dealt with under section 1.2.1 ("Supporting policies and anticipating scientific and technological needs").