

Pressemitteilung

ÖKOFORUM Position Paper on the Fifth Framework Programme of the EU

prepared by the Institute for Social-Ecological Research (ISOE), Frankfurt am Main, Germany and by [Öko-Institut](#), Freiburg/Darmstadt/Berlin, Germany,

ÖKOFORUM is a network of seven leading ecologically oriented research institutes in German-speaking countries whose aim is to develop ecologically acceptable, economically viable and socially attractive concepts for the future to pursue sustainable development pathways.

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1. General assessment

In principle, the ÖKOFORUM research network evaluates positively the proposal for a Fifth Framework Programme of the European Community for Research, Technological Development and Demonstration [1] and the corresponding proposals for specific implementing programmes [2]. Compared to the predecessor programmes, the specific programmes in particular show a concentration upon a smaller number of more integrated and strategically relevant areas. In important parts of the Framework Programme, the previous, highly technology-centred approach has been substantially modified, while socio-economic research has been upgraded. No longer the technological possibilities, but now social demands and needs are to be placed centre-stage.

In large sections, the proposed programme is oriented to the fundamental socio-economic requirements of the EU, to the micro- and macroeconomic demands and to protecting the environment and conserving resources. This is well expressed in the four specific, thematic programmes of the first activity area: "Quality of life and management of living resources"; "User-friendly information society"; "Competitive and sustainable growth"; "Preserving the ecosystem". We welcome it greatly that here the guiding vision

of sustainable development at least implicitly appears to provide an orientation for the programme.

However, it becomes apparent that these objectives and precepts (insofar as at all perceptible at present) have only partially been taken up in the specific programmes. In particular, no cross-cutting, integrated understanding of sustainable development is as yet perceptible. The importance of ecological modernization precisely with regard to economic and social progress is not realized – instead, the ecological dimension of sustainability is regularly treated as subordinate to the economic (competitiveness, growth) and social (employment) dimensions.

Moreover, as before, parts of the specific programmes continue to be dominated by measures aimed at promoting individual technologies tailored to a small number of economic actors above all genetic engineering, air transport and nuclear energy. This corresponds with a highly technology-oriented understanding of innovation, frequently only including social, cultural and institutional research issues as secondary conditions.

The approaches towards promoting and supporting interdisciplinary research and development, and towards improving equal opportunities for female scientists do not appear rigorous enough. Nor is sufficient weight given to the issues surrounding the conception and future orientation of European research and technology policy, nor to the strategic research and development needed over the medium and long term in order to realize the sustainable development of economy and society in Europe.

The present position paper prepared jointly by the Institute for Social-Ecological Research (ISOE) (Frankfurt am Main, Germany) and Öko-Institut e.V. (Institute for Applied Ecology, Freiburg/Darmstadt/Berlin, Germany) for ÖKOFORUM identifies potentials for improvement and optimization for selected examples taken from both the specific and the horizontal programmes. The aim is to support and strengthen the orientation of the 5th Framework Programme to the guiding vision of sustainable development, and to illustrate further perspectives for issue-oriented, multi- and interdisciplinary approaches towards the central concerns of sustainable development.

2. Themes and structure of the 5th Framework Programme

The selection of themes and the determination of research priorities of the 5th Framework Programme is to take place on the basis of a set of criteria divided into three categories which are all to be satisfied simultaneously:

- Criteria related to the Community "value added" and the subsidiarity principle,
- criteria related to social objectives, and
- criteria related to economic development and scientific and technological prospects.

While these three categories of criteria are certainly highly important, it is striking that here the criterion of environmental protection or of the long-term safeguarding and preservation of the natural bases of life is only stated as one criterion beside others in the category of criteria related to social objectives. However, the guiding vision of sustainable development requires that ecological criteria are treated as having equal standing to those of other categories. This is all the more necessary as in individual cases conflicts can well arise between certain social objectives (such as improving the employment situation) and environmental protection objectives.

An assessment of the draft programme against the background of these global objectives pursues the following purposes:

- to review to what extent the stated criteria are taken into consideration with equal standing in the specific programmes and key actions, and
- to consider which other research priorities and approaches would be desirable or necessary in

order to meet the objectives.

If, following these purposes, we undertake a first, summary examination of the four thematic programmes, the horizontal programme "Improving the human research potential" and the Euratom programme, then the overall picture is ambivalent:

- The first specific programme does albeit attempt to integrate the socially relevant areas of need relating to health and food, but is at the same time focussed strongly on biotechnological production processes (for food and medicines). The third key action, the "cell factory", is clearly oriented to "red", "green" and "grey" genetic engineering. Issue-oriented, socio-economic themes that would be particularly necessary to examine the cultural, economic and social backgrounds and development trends of these areas of need, are only contained to a limited extent (mainly under the 5th key action, "The ageing population").
- The second specific programme is oriented to the new information and communication technologies, and thus pursues a primarily technology-centred approach. It does, however, lay claim to being embedded in the design of a "user-friendly information society". A series of potential fields of application of these technologies are highlighted, and the assertion is made that this does justice to the requirements of citizens and companies. However, the social consequences of the introduction and dissemination of information and communication technologies are not yet adequately addressed in the present programme proposal. [3]
- The third specific programme is mainly concerned with mobility and transport, and thus fails to do justice to the whole bandbreadth of an ecological modernization of production processes, products and services (including the associated social and cultural aspects). While the socio-economic aspects of mobility are to be addressed above all under the second key action, the third and fourth key actions only contain highly technology-centred themes aiming at only certain modes of transportation.
- The fourth specific programme revolves around environmental issues, but is characterized by an extensive omission of the social and cultural dimension and the implementational perspectives of sustainable development. The integrated key action "The city of tomorrow" stands without any links beside rather more sectoral approaches of traditional environmental research in the natural sciences and technology. Energy-related research and development (5th and 6th key actions) is dominated by supply- and technology-oriented approaches. No clear and unequivocal setting of priorities in favour of the promotion and implementation of sustainable, renewable sources of energy is perceptible.
- The horizontal programme "Improving the human research potential and the socio-economic knowledge base" does albeit create important impulses for the formation of a "European science and research area" and for strengthening socio-economic research. On the other hand, however, precisely in the key action "Improving the socio-economic knowledge base" only weak links are created to the social, institutional, participatory, cultural and ecological aspects of sustainable development (e.g. the development of sustainable patterns of consumption and social innovations, the role of civil society and non-governmental organizations e.g. at the local level etc.).
- The specific Euratom programme for research and training euphemistically entitled "Preserving the ecosystem" is based on an over-valuation of the role of nuclear energy: In fact, nuclear energy is only utilized in eight out of 15 EU countries, and only in one of these countries is a future expansion conceivable. As concerns the dominant key action "Controlled thermonuclear fusion", a significant reduction of the allocated funds would be appropriate in view of the lack of medium-term relevance of this type of generation and the rather dubious economic and technological prospects over the long term.

Against this background, one important weakness of the present Programme proposal or of the selection of research priorities and approaches becomes apparent: In many areas, socio-economic, cultural, institutional and implementational approaches and themes are still given too little weight in contrast to technology-centred approaches. It remains unclear in many points how, both within and among the specific programmes, cross-sectional issues can be addressed and synergisms achieved. Integrative research themes and questions remain unasked as e.g. the employment effect and competitive

effectiveness of ecological modernization; the regulation of transboundary risks in a globalized world and an ever more integrated Europe; new concepts to overcome the employment crisis. Instead, the Programme appears to rely exclusively upon the now dubious recipe of creating employment through growth and technological innovation. Possible conflicts in achieving the goals of competitiveness, growth, quality of life and environmental protection are scarcely reflected upon. As noted above, too little consideration is also given to the questions of social, institutional and cultural innovations, new services, other forms of governance and altered patterns of consumption, which are all of great relevance to both the ecological and the social (quality of life and employment) sustainability objectives. Similarly, there is a lack of research themes focusing on the opportunities and instruments for directing the behaviour of economic and social actors towards sustainability.

It would be desirable that, firstly, these questions are included in a cross-cutting manner in all thematic programmes, and that, secondly, they receive a dedicated key action (situated e.g. within the third thematic programme). Research on the regional perspectives and models of sustainable development should also be strengthened, as it is here that integrated concepts for the sustainable utilization of natural resources, the safeguarding and creation of jobs and the improvement of the quality of life can be outlined and tested.

Finally, it is not very clear according to which criteria individual issues and research themes have been assigned to the strategic key actions or to the "research and technological development activities of a generic nature". In many cases, important, forward-looking and integrative research approaches are assigned rather to generic research than to the key actions. Examples of this are the public health research in the first specific programme or the research on "socio-economic aspects of environmental change in the perspective of sustainable development" in the programme "Preserving the ecosystem".

These summarizing notes and observations, which refer in a general manner to the organization and priorities of the Framework Programme, are detailed in the following on the basis of selected specific programmes and key actions.

3. Comments and proposals concerning the specific programmes

3.1 Specific programme "Quality of life and management of living resources"

In view of the rapid pace of development and change in this area, the focusing of this programme upon the areas of need of food and health is to be welcomed. However, the intended integration of environmental sciences and life sciences has only partly succeeded. An orientation to common objectives and synergisms is scarcely apparent, as the individual key actions are concerned with such disparate themes and approaches as genetic engineering production processes on the one hand and the promotion of sustainable forms of resource use on the other.

The programme further displays a strong leaning towards technological solutions, which also embraces a clear setting of priorities in favour of biotechnology and genetic engineering. Other approaches towards finding solutions, such as social innovations aimed at changing dietary habits, are relegated to second place. Nor are current changes and trends in society in the food and health sectors adequately considered. Not least due to tight public budgets, Europe is facing a redesigning of its food and health systems. This is a process that needs careful scientific analysis and support.

Trends in this process include:

- Food and health; two of the most important areas of human need; are becoming increasingly science- and technology-driven. Science, and with it the political debate on its possibilities, is increasingly penetrating into areas that have previously been reserved to the human private and intimate sphere (dietary behaviour, reproduction and sexuality) or to certain professions (e.g.

- the seed privilege of farmers).
- Increasing commercialization (life sciences corporations). The growing concentration of corporations and the drive towards vertical integration along the value-added chain are increasingly constraining the possibilities for democratic and political decision-making.

In addition to developing not only purely technological but also social alternatives, it is above all necessary that the social, economic, cultural, ethical and ecological consequences of these current trends become subjects of research. As yet, this is scarcely the case with the exception of parts of key action v (The ageing population) and the generic research.

Key action i: Health, food and environmental factors

The connection between food, health and environmental factors is evident and it is positive that the programme aims to address in a multidisciplinary approach the entire process chain of food from primary production through to the final product. However, the question arises whether the right problems are tackled and the right approaches are taken for research and technological development.

For one thing, the socio-economic and cultural conditions (e.g. shifts in dietary habits towards convenience and designer food, excessive consumption of meat and fat) are relegated to second place behind the research themes of the natural sciences and technology (improving manufacturing processes, testing techniques). It makes little sense to aim at technological and medical changes without comprehensively addressing changes in nutritional behaviour.

Moreover, with a view to current developments, above all the following issues would need to be tackled:

- Which risks and opportunities proceed from the increasing globalization and commercialization of nutrition, and how can the EU exert a structuring influence (under simultaneous conditions of trade liberalization)?;
- What are the criteria of sustainable nutrition and which concepts are required on the path towards sustainable nutrition? Which economic actors can play a role here and how can this role be strengthened?

Key action iii: The "cell factory"

This key action centres even more clearly than the first on technological approaches. Above all, a strong tendency towards genetic engineering (in medicine production, waste treatment and food production and processing) is apparent. This focus is particularly hard to understand when viewed in the light of the aim of the specific programme "to meet the requirements of the consumer", as strong reservations against genetically modified products are to be observed among European consumers. A focus on the market opportunities of products would suggest a different orientation of the key action, or at least a restriction to biotechnology.

Moreover, the potentially pending broad introduction of biotechnological and genetic engineering processes creates a massive need for accompanying safety research. This, however, finds no mention in the key action. Such safety research requires trans-sectoral cooperation, examining in joint evaluation projects the ecological and health effects of new technologies not only over the short term, but above all also over the medium to long term after market introduction of new products or production processes.

Key action iv: Sustainable agriculture, fisheries and forestry, including integrated development of rural areas

This key action addresses important questions relating to the sustainable use of the natural basis for human life. This applies particularly to the first priority area "New and/or improved systems of production and exploitation in agriculture, fisheries and aquaculture, including the multi-functional management of forests", and also to the fourth priority area "New tools and models for the integrated and sustainable

development of rural and other relevant areas".

Research on improved systems of production and exploitation of biological resources addresses a highly important issue. However, this priority area fails to make mention of the sustainable use of biodiversity. The conservation of biological diversity is albeit contained as a theme in the 4th thematic programme. It is essential, though, to specifically highlight its utility, particularly for agriculture and ecological innovation [4]. Furthermore, it needs to be made clearer in this priority area that it does not aim at a technologically supported intensification of non-sustainable forms of use (e.g. in aquaculture), such as the "optimization" by genetic engineering techniques of certain species (e.g. in order to gain greater resistance to disease). Instead, a reorientation towards production systems that entail less environmental and health impacts needs to be promoted.

The development of new tools and models for the sustainable development of rural areas (fourth priority area) is crucially important. However, here, too, the direction promoted is not yet clear enough. This area should focus on issues such as linking food production with landscape management, or expanding organic agriculture, particularly in view of the still not fully deployed market potential of the latter.

Key action v: The ageing population

This key action within the thematic programme is a positive element, as it gives stronger consideration to socio-economic requirements instead of one-sided technology orientation. In particular, it introduces issues relating to new services (e.g. specific health services and social care services) and offers adapted to needs (e.g. assessment and quantification of needs and design/development of competitive and adapted products and services).

3.2. Specific programme "Competitive and sustainable growth"

The perspective of sustainable growth embodies, if not an outright contradiction, then at least competing objectives that call for clarification. How to overcome this competition and to transform it into perspectives for action that are both economically and ecologically beneficial should be the central strategic objective of this specific programme. Themes of crucial importance therein would be: "ecological modernization and structural change in European industry", "developing sustainable core competences for European industry" [5], "sustainable employment perspectives", "clean technology and ecodesign as strategic approaches", and "changing consumption structures and use patterns".

However, the strategic objective of the programme to contribute to competitiveness and sustainability "particularly where these two objectives interact" and "to generate a strategic vision of research in all industrial sectors throughout Europe" is overall only partially implemented. Instead, two thirds of the funds assigned to the key actions are earmarked for the theme of mobility and transport. In view of the considerable environmental impacts resulting from this sector, a restructuring of transport systems towards sustainability is doubtlessly an important task; but neither do transport and mobility have such a high employment relevance in Europe, nor does the transfer of knowledge from science to industry appear particularly problematic in this sector. Moreover, from the sustainability perspective it appears questionable whether it is justified that more than 30 percent of the funds intended for the entire specific programme are appropriated for supporting air transport. By contrast, the only trans-sectoral key action ("innovative products ...") does not suffice to extensively address the strategic issues of an ecological modernization of European industry and of a transition to sustainability.

A further point of criticism is that the goal of improving the employment situation is scarcely integrated into this programme and remains subordinated to the goal of improving competitiveness. It is assumed in the programme that technological innovation and increased competitiveness will contribute to solving the employment problem. Neither is the circumstance addressed that, under conditions of globalization, improved competitiveness is often aimed at by reducing jobs or transferring them abroad, nor are

alternative strategies addressed for improving the employment situation (e.g. creating new fields of employment in the service sector, developing new forms of distributing work).

Key action i: Innovative products, processes and organization

In principle, the overall goals of the key action (e.g. "to reduce overall life-cycle impacts") are to be welcomed. However, it is striking that the focus is placed almost exclusively upon production, production techniques and processes, while innovative products and services receive little consideration. A reduction of the environmental impacts associated with production processes is clearly important, but care must be taken not to underestimate the importance to a structural transition towards sustainability of innovative e.g. durable or modular products and also of new services and new patterns of use. Giving greater attention to these themes would also mean intensifying and integrating social science research on patterns of consumption and use, on the expectations and needs of consumers, and on the acceptance in society for new products and services. Another issue that is given too little consideration is that of the opportunities and impediments to cooperation spanning companies, sectors and countries of companies along the value chain (including the disposal and recycling companies). For it is only this type of cooperation that permits full exploitation of the potentials of eco-efficient technologies and production processes.

Key action ii: Sustainable mobility and intermodality

The overall aim of this key action, "to achieve a better long-term reconciliation of the growing demand for mobility with the need to respect environmental, social, economic and safety constraints", points in the right direction. Modal and intermodal transport management systems and the improvement of infrastructures and their interfaces with transport means and systems, around which the key action revolves, are undoubtedly correct approaches towards this. However, these need to be supplemented by approaches and instruments of Transport Demand Management, such as has been developed in recent years above all in the USA. It is oriented towards ensuring the mobility of people by means of providing new services and supporting new behavioural patterns. Such issues are indeed mentioned in the second key action as opposed to the third key action, which is strongly technology centred but need to be given greater weight. In the intended socio-economic scenarios for the mobility of people and goods, it is essential to also research the causes of the growing mobility demand, and to produce strategies to uncouple economic growth, quality of life and traffic growth.

3.3. Specific programme "Preserving the ecosystem"

It is of course to be welcomed that one of the specific programmes is predominantly devoted to the research on and the preservation of the environment. However, it remains to be noted that sustainable development (which is stated as a strategic objective of the programme) is thereby once again in danger of being restricted to sectoral issues of environmental policy and protection. Such a tendency is definitely perceptible in the proposal for the specific programme with the exception of the key action "The city of tomorrow and cultural heritage" and the socio-economic research activities of a generic nature. Sustainable development, however, addresses the links between nature and society. Thus the social causes and consequences of environmental changes (e.g. of global change and loss of biodiversity) are of pivotal interest. The thrust must above all be to develop strategies for structural change in the societal areas of need and demands, from the perspective of long-term preservation of the natural bases of human life. Some of these areas are albeit noted in the first and third thematic programmes (food, health and mobility). Other important areas, however, such as construction/housing, leisure/tourism, clothing and hygiene, are missing.

Instead of an approach that is strategic and integrates socio-economic issues, the specific programme is predominantly characterized by a sectoral approach. It addresses concerns of water management, global change, the oceans, the development of cities and energy supply and consumption. Studies on the

causes and consequences of the intensifying land use are, however, absent, although this is of major importance for the loss of biodiversity. Such studies should therefore be included in the second key action.

Furthermore, after more than twenty years of intensive, mainly natural science and technological environmental research, it is now time to broaden the perspective. In many fields the direction that needs to be taken is known (renewable sources of energy, energy- and water efficient use etc.), but implementation is lacking. Here research is called upon to identify the implementational barriers and to formulate approaches towards removing these. These barriers include not only patterns of individual behaviour, but also institutional blockages as well as outdated structures and economic framework conditions. Nor does it appear expedient in terms of European competitiveness to continue to invest a large part of funding in natural science and technological basic research. Without a widespread implementation of environmentally sound technologies, they will not be able to tap any market potential both within and beyond Europe.

Key action i: Sustainable management and quality of water

Here it merits approval that above all in the first focus "Development of integrated approaches for the management of water resources ..." important suggestions and findings of the interdepartmental Task Force Water initiated by the European Commission have been taken up. Through this, the conventional supply and technology centred approach, though not abandoned, has at least been substantially broadened through the inclusion of use-related issues. These are concerned above all with a greater consideration and regulation of water demand (demand side management), and with innovative technologies for efficient water usage (e.g. rational re-use of water, closed loop technologies).

In this context, innovative steering techniques should be given greater attention in the future. These include (possibly also transboundary) agreements, e.g. between water suppliers and users, or between waterworks and farmers. A remaining point of criticism is that, due to the concentration of the key action upon water resource management, river ecosystems are not adequately addressed. This also applies to the problems resulting from the growing degree of regulation of river systems and the sealment of their catchment areas, in particular the ever more frequent and increasingly also transboundary flood events.

Key action ii: Global change, climate and biodiversity

This key action illustrates in an exemplary manner the discrepancy between the aspirations and the reality of the programme. The goal of developing and implementing political strategies is formulated ("to develop the scientific, technological and socio-economic basis necessary to underpin implementation of Community policies relating to changes in the environment"). But a look at the priorities of the key actions shows a clear imbalance in favour of natural science and technical research on the analysis and diagnosis of changes in natural systems ("to understand, detect, assess and predict global change, to foster better understanding of ecosystems, to support ... global observation systems"). Only one of the four priorities ("scenarios and strategies for the prevention and mitigation of and adaptation to global change, climate change and conservation of biodiversity in the context of sustainable development") points in the programmatically formulated direction.

It would be conceivable to take the latter priority as the heading for key action ii and to address under this e.g. the following research themes:

- the development of instruments by which to halt the growing loss of fertile land and habitats (due to erosion, salination, pollution, paving-over, resource extraction and so forth) and the diversity of species;
- the impacts and suitable design of a European energy tax;
- the potentials of emission trading and joint implementation both among states and for multinational corporations.

In addition, research on the socio-economic aspects of environmental change and on the employment effects of sustainable energy systems could be taken from the generic research activities and integrated into this key action.^[6]

Key action iv. The city of tomorrow and cultural heritage

The key action offers above all in its first and fourth priority areas a good example of an issue-oriented, integrated approach towards the future issues of sustainable development. Both socio-economic and cultural as well as ecological issues are addressed, and viable solutions pathways and development scenarios are sought. However, in the fourth priority (comparative assessment and cost-effective implementation of strategies for sustainable transport systems in an urban environment) a too one-sided concentration on technological concepts is apparent. This relegates to a secondary role both the issues of social acceptance, e.g. of new vehicle types, and the non-technological approaches through user-oriented mobility management or through social innovations (car-pooling, car-sharing etc.).

Key actions v "Cleaner energy systems, including renewables" and vi "Economic and efficient energy for a competitive Europe"

Here the misunderstanding from which the proposed specific programme proceeds is particularly apparent: The circumstance that renewable energy sources are not yet developed far enough is not a primarily technological problem. For most renewable technologies, technical development, and, linked to this, the price degeneration of new systems, can be above all optimized by means of vigorous market introduction. A main focus of research should therefore be placed on examining how the framework conditions for this market introduction could be improved. One of the most important issues in this context is how renewable technologies could be promoted under the conditions of the EU internal energy market.

Much the same can be said of the development of central and decentral combined heat and power generation (CHP): Funding for technological RTD is only required here to a limited extent. What is more important is the formation of an appropriate energy policy environment for the operators and investors of CHP systems. Finally, the possibilities of improving energy efficiency, in particular on the end-use side, should not only be examined from the technological perspective, but also by developing appropriate implementational concepts and strategies and the political instruments required for this.

Key action vi only contains such approaches to a limited extent, and narrows down energy policy issues excessively to the development of scenarios. The RTD theme "modelling and policy impact analysis" should therefore be given greater priority with respect to the conception of energy and environmental policy strategies.

Here possible focuses are:

- Liberalization in the energy market: Impacts upon renewables, CHP and energy efficiency in the Community; development of a Community strategy for the promotion of these technologies
- Reduction of energy consumption in the existing building stock: National and European requirements and economic interactions
- Implementation of the IRP Directive: Restructuring of energy supply companies to energy service companies; development of fields of operation for new actors in energy efficiency (e.g. independent energy service providers, energy management service companies)

3.4. Horizontal programme "Improving the human research potential and the socio-economic knowledge base"

We consider the overall objectives of this programme to be most important, such as to promote a European scientific and technological culture, to promote the mobility of researchers, to support young researchers, to promote equal opportunities for women and men in science and technology and a greater, issue-oriented inclusion of social and economic science and the humanities. A point of criticism is that the promotion of interdisciplinary research and development is not given the consideration that it deserves in the programme, although the activities relating to supporting training and mobility of researchers would offer a good framework for this. Interdisciplinarity is not stated as an objective in its own right and a prime criterion, but is only mentioned in passing in the action line "Research training networks". Considering that research on social, technological and ecological concerns within the confines of individual disciplines is increasingly meeting its limits, the promotion of interdisciplinary cooperation and in particular of the ability to enter into such cooperation should be given a central priority in this programme.

The objective of providing equal opportunities for male and female scientists deserves full support. However, no specific programmes, verifiable sub-goals or institutionalized promotion measures are perceptible in this area. There is thus a danger that the implementation of this objective is subordinated to other interests, and the promotion of the potential of female scientists is watered down to a more or less rhetoric commitment. Moreover, the entire horizontal programme, and particularly its key action "Improving the socio-economic knowledge base", is characterized by a failure to address the gender category as an important dimension of problem analysis and solution. The structural change noted in the key action, for instance, often has very different dimensions from the male and female perspectives, and impacts differently upon the two sexes. This needs to be taken into consideration if more than lip service is to be paid to the goal of an improvement of the quality of life for all citizens.

Key action: Improving the socio-economic knowledge base

This key action aims at putting the social sciences in a position to better understand the key problems facing European society. This quite correctly places the focus of attention upon social problems such as employment, racism and migration or governance. A further aim of the key action is to examine the concerns of other specific programmes and key actions from a social science perspective, and to address links and interactions between natural, technical, social and cultural science issues. If this aim is taken seriously, this key action needs a close thematic and conceptual connection to the other thematic programmes, in order to strengthen the role of socio-economic research in these. However, this close link is only rarely established, and least of all in the themes of sustainability and ecology.

If the aim of undergoing changes towards achieving sustainable socio-economic development as formulated in the key action is to be taken seriously, the logical consequence of this would be to integrate sustainability in the key action and not just as a partial aspect, but as a fundamental orientation on the basis of which the individual priority areas are to be addressed. Sustainability can not be understood as is evidently the case in the key action merely as sustainable development of the economy (sustainable growth), but must include social and ecological perspectives with equal standing. Ecological aspects in particular are severely neglected in the individual priority areas of the key action. A systematic consideration of the ecological dimension of sustainability in the priority areas would for instance mean: analysing societal trends and structural change with respect to ecological changes, placing dependencies between technology, society and employment in relation to the natural environment, and creating and studying sustainable development models in which care for the environment has equal standing beside growth and employment.

Moreover, the priority areas of the key action omit or inadequately consider important societal concerns. Thus, for instance, the priority "Technology, Society and Employment" makes no reference to researching the risks of technologies, nor to researching their (socially and culturally disparate) perceptions in society. That the users of technologies are mentioned is a positive point, but it needs to be made clearer that their active involvement in technology development is necessary. Here again, the gender perspective would be an important analysis category.

The priority area "Governance and Citizenship" needs to give greater consideration to the newly emerging civil society actors and groups (NGOs, Local Agenda 21 initiatives and various forms of self-organization etc.), in addition to the state and the individual citizen. Such groups and action structures are gaining growing importance in society, particularly in times of increasing social uncertainty and diminishing governmental capacity for action. Their public role should therefore be considered and promoted just as should the direct participation of individual citizens in the political process.

Support for the development of scientific and technology policies in Europe

The importance of the goal pursued by this activity the stronger networking and Europeanization of research and technology policies can scarcely be overstated. However, here, too, the guiding vision of sustainability should be taken as orientation throughout. Strategic political analysis must therefore focus above all on examinations of the specific consequences that follow from the guiding vision of sustainability as a concept for research and technology policy, and examinations of the RTD requirements that result from this vision over the short, medium and above all long term. This could draw on the experience and results of national research programmes such as the Dutch STD Programme ("Sustainable Technological Development"). A strategically oriented European STD programme would be both conceivable and desirable.^[7]

3.5. Specific programme (Euratom) for research and training on "Preserving the ecosystem"

The strategic objective of this programme is "to help exploit the full potential of nuclear energy". It must however be noted that this programme is based on a fundamental over-valuation of the present and future utilization of nuclear energy, both as concerns thermonuclear fusion and nuclear fission. The general outlines of the programme are conventionally oriented and fail to reflect the current realities in Europe:

- Nuclear energy is presently only utilized for power generation in eight Member States of the European Union, in seven states it is not used. Among the non-users, no trend towards embracing this form of energy is in view.
- The aim of exploring new promising concepts is not appropriate to the actual development, even in the user countries, as, with the exception of one single country, no new nuclear installations have been built for many years, in some countries even for decades. For economic reasons alone, no reversal of this trend is to be expected. Insofar, a stronger programmatic orientation to the real needs in these countries would be desirable (research on phase-out and conversion, handling the restructuring process, handling the burdens of the nuclear legacy).
- While nuclear energy may in the past have had a stronger industry policy role, it long ago irrevocably lost this role. Only two European manufacturers are still on the global market at all as suppliers, and the turnovers of these in the nuclear branch are negligible. In this situation, further promotion can be dispensed with.

Furthermore, the general outlines give the wrong signals for the further development in Eastern Europe. Instead of propping up the existing inappropriate energy supply and consumption structures, these countries should rather be supported in finding ways to phase out nuclear energy. The programme only considers protection interests where the nuclear promotion interests appear to be endangered by all too severe infringements.

Key action i: Controlled thermonuclear fusion

In view of the lack of medium-term importance of this type of generation, and considering the dubious economic and technical prospects, even over the long term, the financial appropriations for this key action are far too high. By the measure of the international programmes, an appreciable reduction would

certainly be justifiable. In this key action, too, questions of protection interests play too small a role.

Key action ii: Nuclear fission

Even though the safety of existing facilities, of the fuel cycle and of future systems are stated here as priority areas, this key action is not really primarily oriented to protection and safety interests. Thus research on the ageing of materials and equipment is aimed mainly at increasing the residual life-spans of reactors and reducing the economic costs of the periodically required maintenance of older facilities. Safety-related criteria only play a subordinate role here. Research on serious accidents, too, aims merely at an improved appraisal of the consequences of such events, and is not oriented to their complete prevention.

The rising EU research expenditures for the development of waste disposal technologies have in the meantime led to a situation in which the funds formerly appropriated for this in the respective national budgets of the Member States have partially experienced drastic cuts. This effectively means a reversal of the subsidiarity principle. In view of the imbalance set out at the beginning of this section, the responsibilities, above all of the larger user countries, to carry out their own research and development in this field should be reactivated and strengthened. This also applies to the problems associated with "direct final disposal": The research envisaged here is not safety-oriented and merely replaces the research that is under way or has been carried out in individual countries. The intended expenditures for radiation protection, by contrast, are largely safety-oriented and should be retained. A stronger focus needs to be placed here on the field of radiologically contaminated environments, as almost all Member States have not yet developed an appropriate regulation of these.

4. Outlook: Implementation and further development of the 5th Framework Programme and its specific programmes

Drafting a programme that is appropriate to the present and future socio-economic, ecological and technological challenges and opportunities is a demanding task. The purpose of the present position paper is to make a contribution, from the perspective of independent research, to the debate on the further development and optimization of European research policy. Despite all criticism of specific points, it must be noted that the 5th Framework Programme is, in many points, an important step in the right direction.

Finally, with regard to the further development of the programme, two important aspects need to be stressed:

Firstly, particular attention needs to be given in the further process to ensuring that the positive and fertile approaches contained in the Framework Programme are adequately considered and reinforced in its implementation. This includes a series of institutional innovations within EU research promotion and policy, which have partly already been initiated, such as:

- creating greater transparency in the implementation of programmes,
- stronger participation of the European Parliament and of the scientific and general public in the evaluation and further development of the programmes,
- involvement of the External Advisory Groups with the goal of being able to make use in a targetted manner of "independent advice concerning the content and direction of research work carried out under the key actions", and transparent procedures for appointment of the members of the Advisory Groups,
- comprehensive information of users (for instance through the Internet), and acceleration of award procedures,
- embracing the European research landscape in its whole breadth. This means the inclusion not only of SMEs, but also of independent, non-profit research institutions. It must be noted in this

connection that the financing of 50% of the eligible costs of research projects effectively means the exclusion of scientific non-profit institutions (such as the research institutes in the ÖKOFORUM network) from EU research assistance. For, in contrast to e.g. universities, such institutions do not command over complementary state financing.^[8]

Secondly, in the further detailing of the specific programmes and in the future updating of the Framework Programme, above all the following points discussed above need to be given greater consideration:

- The embedding of sustainability as an integrative, guiding orientation, that takes social, ecological and economic aspects into consideration with equal standing,
- a further enhancement of the priority given to socio-economic research, greater attention being given to the importance of social innovations, too,
- more impulses for interdisciplinary research and development,
- stronger promotion of female scientists,
- involvement of civil society actors, and
- a stronger implementation orientation of programmes and key actions.

[1] C4-0182/98 Common Position (EC) Adopted by the Council on 12 February 1998 with a View to Adopting the Decision of the European Parliament and of the Council Concerning the Fifth Framework Programme of the European Community for Research, Technological Development and Demonstration Activities (1998 to 2002)

[2] COM (98) 305 Commission Proposals for the Council Decisions Concerning the Specific Programmes Implementing the Fifth Framework Programme of the European Community for Research, Technological Development and Demonstration Activities (1998 to 2002)

and COM (98) 306 Commission Proposal for a Council Decision Adopting a Specific Programme (Euratom) for Research and Training on "Preserving the Ecosystem" (1998 to 2002)

[3] For this reason, the Committee on Research, Technological Development and Energy of the European Parliament adopted at its session of 03.06.1998 a recommendation to the Parliament that provides for the creation of a further key action ("Social changes through the introduction of new information and communication technologies") in this specific programme.

[4] Cf. President's Committee of Advisors on Science and Technology (PCAST) in its March 1998 report: "Teaming with Life: Investing in science to understand and use America's living capital"

[5] Cf. Institute for Prospective Technological Studies, Seville: Advanced technology and the competitiveness of European industry: The case of textiles, steel, motor vehicles and aerospace, EUR 17732 EN, September 1998_7

[6] On the other hand, the further development of analysis and diagnosis techniques could be assigned to generic research, as a large number of national and international research projects are already under way here that need to be continued and intensified.

[7] Cf. L. Soete, STD should receive European follow-up. In: STD Vision: Technology, key to sustainable prosperity. The Hague, 1997

[8] We therefore suggest including the following sentence in the 5th Framework Programme proposal (Annex IV): "In the case of legal entities without intent to realize a profit, the additional costs of research can be financed at the rate of 100%."