REVISED
WORK PROGRAMME 2008

COOPERATION

THEME 5

ENERGY

(European Commission C(2008)1598 ***of 25 April 2008****)*

Cooperation Work Programme: Energy Theme

The work programme presented here provides for five calls for proposals and other activities. Four calls were included in the version adopted by the European Commission on 29 November 2007 (C(2007) 5765) and have been published on 30 November 2007. This updated version includes a new call for proposals, FP7-ENERGY-2008-TREN-1 and support for a conference on the European Strategic Energy Technology Plan, to be organised under the French Presidency. The work programme will be updated on an annual basis, with the next update for the 2009 calls.

WORK PROGRAMME

2008

COOPERATION THEME 5: ENERGY

5.1. CONTENTS

Note: This work programme describes only part of the topics for which proposals are called for in 2008.

ANNUAL WORK PROGRAMME

2008

COOPERATION THEME 5: ENERGY

Overall objective for FP7:

Adapting the current energy system into a more sustainable one, less dependent on imported fuels and based on a diverse mix of energy sources, in particular renewables, energy carriers and non polluting sources; enhancing energy efficiency, including by rationalising use and storage of energy; addressing the pressing challenges of security of supply and climate change, whilst increasing the competitiveness of Europe's industries.

5.1. CONTEXT

5.1.1. POLICY CONTEXT

Europe's energy economy, and that of the World, is currently on a pathway that is not sustainable. This must change. Set against the backdrop of a growing global demand for energy to power economic development and growth, we are faced with a huge challenge. Sustainable, competitive and secure energy has to become one of the basic pillars of our daily life.

In response to this ever growing challenge the European Council adopted in March 2007 an Action Plan to develop An Energy Policy for Europe. It includes the preparation in 2007 of the first European Strategic Energy Technology Plan (SET-Plan) with the aim of transforming the energy research and innovation system in Europe, including the European Programmes, Member States Programmes as well as the Industry Programmes, to accelerate the development of low carbon technologies. The European Council will examine and eventually endorse the SET-Plan at its spring 2008 Summit. The scope of the SET-plan[1] is much wider than the 7th Framework Programme. In particular, besides technology oriented measures, it includes, between others, policy measures and recommendations. Recommendations encompass also activities foreseen in the Framework Programme. The implementation of this Work Programme will consequently take into account the European Council conclusions.

5.1.2. APPROACH

Europe and the rest of the World share the common objectives of providing abundant, clean, secure and affordable energy, whilst simultaneously achieving substantial reductions in greenhouse gas emissions to mitigate the potentially serious consequences of climate change.

The focus of the research and demonstration actions in this Work Programme will be on accelerating the development of energy technologies towards cost-effectiveness for a more sustainable energy economy for Europe (and world-wide) and ensuring that European industry can compete successfully on the global stage.

Recognising that none of the technologies being developed can make a sufficient difference on their own and that their commercialisation will take place over differing time horizons, a

[1] Communication from the Commission: A European Strategic Energy Technology Plan (SET-Plan) - 'Towards a low carbon future', COM (2007) 723 final of 22.11.2007

broad technology portfolio approach is adopted, thus greatly reducing the risk and potentially the costs, if one or more technologies fail to make the expected progress.

The research, development and demonstration carried out under this Work Programme is expected to:

- Improve energy efficiency throughout the energy system taking into account the global environmental performance;
- Accelerate the penetration of renewable energy sources;
- Decarbonise power generation and, in the longer term, substantially decarbonise transport;
- Reduce greenhouse gas emissions;
- Diversify Europe's energy mix;
- Enhance the competitiveness of European industry, including through a better involvement of SMEs.

References to the contributions towards specific EU policy goals, such as targets for renewables and energy efficiency, are referred to in the relevant Activity areas. The future deployment of the Energy for Europe Action Plan and the associated European Strategic Energy Technology Plan will be reflected in future revisions of this work programme.

Increasing efficiency throughout the energy system, from source to user, is essential and underpins the whole of the Energy Theme. Recognising their important contribution to future sustainable energy systems, renewables and end-use energy efficiency will be the major part of this Theme (for the overall 7 year period). Particular attention will be paid to stimulating research, development and demonstration and promoting capacity building in this area. Synergies with the Intelligent Energy-Europe Programme component of the Competitiveness and Innovation Programme and with the relevant Structural Fund programmes will be fully exploited in this regard. The potential for future large-scale initiatives integrating funding from various sources (e.g. JTI) will also be used.

- ***Structure and focus of calls in 2008***

Two general calls will be published in the 2008 work programme. One general call (FP7-ENERGY-2008-1) has been published on 30 November 2007. It focuses on research with a longer term perspective, with a view to accelerating technology development. However part of the 2008 budget had been affected to the 2007 call. In addition specific importance will be given in this work programme to cross cutting and cross thematic approaches, Future Emerging Technologies as well as to International actions. Therefore the budget available will leave room for a limited set of topics.

The second general call (FP7-ENERGY-2008-TREN-1) will be published on 29 April 2008 and will address different technologies at research areas and topic level, in most cases asking for a predominant demonstration component. (For more details see Section 5.2.) The main objective is shortening the time to market for promising technologies and systems, and the proposed solutions should go significantly beyond existing state of the art. The call will use the available budget for 2008.

In addition three separate calls respectively targeting cooperation with Russia (FP7-ENERGY-2008-RUSSIA) Future and Emerging Technologies (FP7-ENERGY-FET) and

common research topics with NMP (FP7-ENERGY-NMP-2008-1) were issued on 30 November 2007.

The calls will be implemented using Collaborative Projects and Coordination and Support Actions. The funding scheme applicable to each topic is indicated in this Work Programme, along with guidance as to the expected level of ambition and other relevant information.

Calls for Proposals will be selective. With the exception of a separate budget earmarked for SICAs and for NCP activities in the Energy Call Part 1 (FP7-ENERGY-2008-1) and the Energy Call Part 2 (FP7-ENERGY-2008-TREN-1, as described below) there will be competition, based on quality and excellence, between proposals both across and within research topics and areas in each call, which may result in some topics not being supported in a given call unless otherwise indicated in this Work Programme.

In the call FP7-ENERGY-2008-TREN-1, the proposals for the different topics and areas will compete within the different "activities" which may result in some topics not being supported in this call. Ranked lists of proposals will be established for each activity, and, due to their specific nature, for research area 8.4, related to CONCERTO.

A specific type of reimbursement of costs will be applied to demonstration in topics for CONCERTO projects. In accordance with Annex 3 of the Work Programme, the forms of the grant applied in these areas are the reimbursement of a specified portion of eligible costs and "flat-rate financing" in the form of "scale of unit costs"[2]. The Community financial contribution in the form of "scale of unit costs" will be applicable to the additional energy efficiency measures in buildings and the additional installed capacity of renewable energy sources and/or polygeneration identified as such in the description of work section of the project. It shall be determined on the basis of the amount(s) in EUR per m² built or refurbished and EUR per kW installed that will be established in Annex I of the contract. (For additional details see under Activity 8. below)

- ***Cross-cutting and cross-thematic approaches***

Due attention will be paid to ensuring there is effective coordination between the priority themes and to scientific areas which cut across themes.

In particular progress in material science has the potential to lead to breakthroughs in energy technologies in a wide range of areas (CO2 capture and storage, fuel cells and hydrogen, energy savings, energy storage, etc…). A joint call will be organised with Theme 4 "*Nanosciences, Nanotechnologies, Materials and new Production Technologies* "on the topic of "New materials for energy applications":

- Topic ENERGY.2008.10.1.2: Novel materials for energy applications (Joint Call NMP)

This call will target long term research across a very wide spectrum of novel materials for energy application.

[2] In accordance with Articles 165 and 181 of the Implementing Rules of the Financial Regulations (COMMISSION REGULATION (EC, EURATOM) No 478/2007 of 23 April 2007 amending Regulation (EC, Euratom) No 2342/2002 laying down detailed rules for the implementation of Council Regulation (EC, Euratom) No 1605/2002 on the Financial Regulation applicable to the general budget of the European Communities).

Energy efficiency in its wider sense is fundamental to economic stability and development. In the Energy Theme itself, the concept of energy efficiency underpins the whole RTD programme. It is also a prime example of a cross-thematic subject, which will be appropriately coordinated.

In order to reflect the variety of energy technologies and their possible combinations for energy production, the work programme includes "cross-cutting" research areas, open also for combined/hybrid systems. Certain research areas also address the combination of renewable and fossil energy sources for energy production including poly-generation.

The activities "CO2 capture and storage technologies for zero emission power generation" ENERGY.5 and "Clean coal technologies" ENERGY.6 are strongly linked and cross-cutting actions between the two are addressed in a separate section (Activity ENERGY.5&6).Horizontal actions within the Energy Theme (i.e. not linked to specific technologies) are addressed in a separate section (Activity ENERGY.10).

Complementary research activities in the field of ICT for Energy Efficiency are also addressed under Theme 3 *Information and Communication Technologies*.

- ***Consultation***

In the identification of priority topics included in the 2008 Work Programme, the Commission has taken account of energy and research policy priorities and the inputs resulting from a broad consultation process that has included a wide range of stakeholders, including:

- European Technology Platforms (see below)
- Conferences and workshops on specific technologies;
- Requested input from Thematic Networks, Coordination Actions and project clusters;
- Consultations on policy documents, such as Actions Plans and Green Papers, in particular those concerning the European Strategic Energy technology plan;
- Spontaneous inputs received from stakeholder groups or organisations;
- Opinions of the FP6 and FP7 Advisory Groups on Energy;
- Member States (Programme Committee)
- Whenever possible, the outcome of the 2007 calls for proposals

- ***European technology platforms***

The key deliverables of European Technology Platforms, such as vision documents, strategic research agendas, deployment strategies and implementation plans, have been an important input for the research priorities in the Theme, as demonstrated in the relevant sections of this work programme. Such platforms have been established on hydrogen and fuel cells, photovoltaics, biofuels, zero emission fossil fuel power generation, electricity networks of the future, solar thermal energy and wind energy. Other technology platforms covering aspects of interest to energy, such as ERTRAC, sustainable forestry, sustainable chemistry and construction, are also monitored. Some of the most advanced of theses platforms have led to the constitution of a Joint Technology Initiative.

- ***Industrial participation and SME relevant research***

Strengthening the competitiveness of the European energy sector, in the face of severe global competition, is an important objective of this Theme, providing the capability for European industry to attain or maintain world leadership in key energy technologies.

Strong industrial participation in research and demonstration activities has been instrumental in the creation of new industrial sectors, in particular in the area of renewable energy systems, and in placing European industries at the forefront of industrial innovation. Effective industry participation in FP7 will continue to be actively encouraged and promoted in order to make a contribution to achieving the Barcelona objective, i.e. raising research investment to 3% of EU GDP, two thirds of which should come from private investments. In addition to the whole CONCERTO area, where SMEs are specifically invited to participate, a number of other topics of the Work Programme target specifically SMEs, including High Technology ones.

The strategy in the Energy Theme is to particularly encourage further SME participation through the continuation of on-going activities. SMEs, the lifeblood of the EU industry, play a vital role in the energy chain and are crucial to promoting innovation. Dissemination events and the identification of topics particularly suitable for SMEs will continue. Topics open for proposals will indicate whether there is a particular relevance to the participation of SMEs.

- ***International cooperation***

All activities carried out in the Energy Theme are open to researchers and research institutions from third countries and strong efforts will be made to encourage them to seize this opportunity, in particular, countries from the International Cooperation Partner Countries (ICPC, see list of countries in Annex 1) and countries with whom the EU has a Scientific and Technological cooperation agreement.

Except if specified differently, funding will be provided to participants from the ICPC. Funding for organisations from other third countries may be provided on a case-by-case basis if considered necessary for carrying out the project.

More specifically, international cooperation will be implemented via two mechanisms:

(1) Opening of all activities of the Theme to international cooperation. The topics open for proposals will indicate whether there is a particular relevance or encouragement for the participation of third countries, providing guidance as to the targeted countries or regions.

(2) A series of "Specific International Cooperation Actions" (SICA) will be dedicated to international co-operation with partners from International Cooperation Partner Countries (ICPC). They will address, on the basis of mutual benefit, problems of shared interest and importance such as the environmental consequences of energy policies, energy supply inter-dependency, technology transfer and capacity building and will engage emerging economies with significant energy needs. See below.

Where relevant, a particular attention will be paid to support important strategic bilateral agreements and dialogues, as well as multi-lateral co-operation initiatives, such as the International Partnership for the Hydrogen Economy (IPHE), the Carbon Sequestration Leadership Forum (CSLF) and others.

- ***Specific International Cooperation Actions (SICA)***

Topics for proposals for Specific International Cooperation Actions (SICA) are incorporated into the activities and areas described in Chapter 5.2. Such opportunities, described in detail in the relevant sections, include:

- Topic ENERGY.2008.2.1.1: Enhancing strategic international cooperation initiatives in the field of concentration photovoltaics *(Mediterranean Partner Countries)*

- Topic ENERGY.2008.2.5.1: Improve the environmental profile of the Concentrated Solar Power (CSP) installations *(Mediterranean Partner Countries)*

- Topic ENERGY.2008.3.2.1: Enhancing international cooperation between the EU and Latin America in the field of biofuels *(Latin America)*

- Topic ENERGY.2008.5.2.1: CO2 Capture and Storage – Capacity building with the large emerging economies *(large emerging economies members of CSLF)*

In call FP7-ENERGY-2008-1 a specific budget will be dedicated to SICAs, avoiding direct competition with the other proposals submitted in the same call.

Special participation rules apply to Specific International Cooperation Actions – these are explained in the topic description only when they are different from the normal participation rules.

- ***Energy EU Russia Call***

The European Commission and the Federal Agency for Science and Innovation of the Russian Federation jointly agreed to co-fund two projects (one per topic) on the topics below:

- Topic ENERGY.2008.2.2.1: Enhancing strategic international cooperation with Russia in the field of power generation from biomass

- Topic ENERGY.2008.7.2.1: Innovative operational and monitoring tools for large power systems

In order to ensure a balance between EU and Russian participants a minimum number of two participants established in Russia is requested. This is an eligibility criterion. The proposals will be evaluated by a panel of EU and Russian experts, within the peer-review evaluation system of the European Commission and on the basis of the evaluation criteria set out in Annex 2 of this work programme. In addition, a separate evaluation of the Russian part of the project will be carried out by the Federal Agency for Science and Innovation

The European Commission and the Federal Agency for Science and Innovation will each reserve a dedicated budget of up to EUR 4 million to fund these two EU-Russia projects. The European partners will be funded by the European Community. The Russian partners will be funded by the Federal Agency for Science and Innovation. In addition, the European Community may contribute to the Russian participants up to 5% of their total eligible costs. This contribution will only cover costs which are not funded by the Federal Agency for Science and Innovation.

- ***Future and Emerging Technologies (FET)***

The objective is to support research aiming at identifying or further exploring new scientific and technological opportunities in a given field and/or in combination with other relevant areas and disciplines, as well as to nurture novel ideas and radically new uses and to explore new options in research roadmaps, in particular those with a potential for significant breakthroughs. A specific call will take place in 2008 for the following topic:

- Topic ENERGY.2008.10.1.1: Future Emerging Technologies

This topic aims at ensuring a genuine chance for "emerging ideas" to be funded based on the strategic need to utilise the creative spirit in European research. It covers all the areas of the Theme and is to provide rewards for "high risk / high impact" science and to vigorously promote multi-disciplinarity on a European collaborative basis.

- ***Coordination of Non-Community Research Programmes***

The objective of the ERA-NET scheme is to step up the cooperation and coordination of research programmes carried out at national or regional level in the Member or Associated States through the networking of research programmes, towards their mutual opening and the development and implementation of joint activities.

There were specific Energy ERA-NET topics in the 2007 call. However there are no ERA-NET Topics in the Work Programme 2008.

However, there will be a general bottom up call in 2008 from which might emerge ERA-NET projects with relevance to ENERGY Research. Coordination will be established with these projects whenever relevant (see Annex IV for further information on this call).

- ***Dissemination actions***

In order to strengthen the diffusion and use of the output of research, the dissemination of knowledge and transfer of results, including to policy makers, will be supported. Cities and communities in urban areas are main producers of CO2. Dissemination and pooling of knowledge on energy-saving measures is therefore essential, as cities and communities in urban areas are key engines for implementing climate change strategies. This will complement actions in the Intelligent Energy-Europe (IEE) Programme component of the Competitiveness and Innovation Programme (CIP) to support innovation and remove non-technological barriers to the widespread market deployment of demonstrated energy technologies.

- ***Integration of the socio-economic dimension and societal concerns***

To become the most advanced knowledge-based society in the world, Europe must create a social and cultural environment conducive to successful and exploitable research. Therefore, legitimate societal concerns and needs have to be taken on board, entailing an enhanced democratic debate with a more engaged and informed public and better conditions for collective choices on scientific issues. This is particularly the case in the energy field which has an impact on the everyday life of all citizens.

Wherever possible, actors in the energy field will be encouraged to develop science in society perspectives from the very beginning of the conception of their activities. Where

appropriate, cross-thematic partnerships, particularly with the "*Science in Society*" activity in the Capacities Programme, will be established which will focus on actions and measures of mutual benefit, highlight synergies, and help bridge the gap between topical areas in science and technology and society's interests.

Many of the activities to be funded under this programme will also make positive contributions to education and training and to raising general levels of awareness of the nature of the research undertaken and the benefits likely to accrue. They will also contribute to upgrade the ability of cities and communities in urban areas to cope with the issues at stake; including through collaboration with stakeholders.

Opportunities for the integration of the socio-economic dimension and societal concerns occur throughout this work programme. They are incorporated into the activities and areas described in Chapter 5.2.

- ***Gender and ethical issues***

Activities in the work programme will be carried out according to fundamental ethical principles.

The pursuit of scientific knowledge and its technical application towards society requires the talent, perspectives and insight that an increasing diversity in the research workforce will ensure. Therefore, a balanced representation of women and men at all levels in research projects is encouraged. When human beings are involved as users, gender differences may exist. These will be addressed as an integral part of the research to ensure the highest level of scientific quality.

5.1.3. OTHER ACTIVITIES

The activities described in this section fall outside of the mainstream "calls for proposals" means of implementation of the Work Programme. Funds will be made available to support the following activities:

- a specific initiative on the basis of Art 171 or 169 of the Treaty is foreseen;
- several calls for tender ;
- Contributions paid by the Communities as subscriptions to the International Energy agency[3]a grant to a direct beneficiary is identified to receive financial support without a call for proposals[4].

a) Joint Technology Initiative on fuel cells and hydrogen

The Commission will make a specific proposal for a Joint Technology Initiative (JTI) on hydrogen and fuel cells, on the basis of Article 171 of the Treaty (proposal for a Council Regulation setting up the European Partnership for Hydrogen and Fuel Cell Technology Development).

[3] In accordance with Article 108 (2) (d) of the Financial regulations applicable to the General Budget of the European Communities).

[4] In accordance with Article 14(a) of the FP7 Rules for Participation.

b) Calls for Tender

The Commission will issue Calls for Tender for public procurements, such as specific studies or services required to achieve the programme objectives, particularly with regard to the monitoring and assessment of the programme and to the promotion and dissemination of results. A list of Calls for Tender planned for 2008 is shown in the table below:

Subject (Indicative title)	Indicative Budget in Euros	Expected duration	Indicative timetable
Establish an umbrella structure in order to finalise and ensure further coordination of the EU Flagship Programme in the area of sustainable power generation from fossil fuels with CO2 Capture and Storage.	One contract EUR 3 million	3 years	First Quarter 2008
Development of a set of energy research indicators in order to create a common understanding of the state of the art and updated research objectives at European level for the whole portfolio of European research.	One Contract EUR 800 000	3 years	Second quarter 2008
Monitoring and mapping energy research activities at the EC, EU and global level.	One contract EUR 700 000	3 years	Second quarter 2008
Support to the coordination of the European Strategic Energy Technology (SET) Plan (support to carry out specific analyses needed to develop the SET-Plan).	One contract EUR 200 000	9 months	Second Quarter 2008
Support to the Impact Assessment of the governance alternatives for the European Strategic Energy Technology Plan (SET-Plan)	One contract EUR 250 000	6 months	Second Quarter 2008
Financing low carbon energy technologies development, market take up and early deployment – needs; sources; limitations; and public private partnerships	One contract EUR 250 000	9 months	First Quarter 2008

Regarding the calls for Tender above:

a) The umbrella structure for the EU flagship Programme will help focusing the programme on providing sufficient practical experience to support the development and deployment of zero emission power generation technology including safety of transport/storage and public awareness. The tasks will include for example:

- Selecting and managing the portfolio of projects including (up to 12) large scale demonstration projects by 2015;
- Providing the coordination, and organising exchange of information and the sharing of experience among the projects,
- Promoting common monitoring and verification methods at the various sites,
- Promoting a common approach to public acceptance issues,

- Organising a coherent and fruitful relation between the flagship programme and the framework programme (FP) research activities, facilitating quick implementation of FP results,
- Ensuring harmonised funding mechanisms,
- Providing secretariat services,
- Supporting the Commission activities with third countries on the issue of zero emission power generation.

b) The development of a set of energy research indicators will support the development of a common understanding of the state of the art and updated research objectives at European level for the whole portfolio of European research. In addition to building this set of indicators, the action will focus on gaining on going interest, credibility and acceptance from the research community and wider (research managers, industry, political decision makers, etc.) by building a wide European forum through exchange and communication activities. The Monitoring and mapping energy research activities should contribute to developing shared knowledge and understanding of the research portfolio in Member States main competitor regions and emerging regions. This would involve collecting, synthesising European activities and schemes on an ongoing basis with a view to share it and foster discussion between a wide range of stakeholders including industrialist, researchers and policy makers.

c) Regarding the Strategic Energy Technology (SET) Plan specific technology, market and other analyses are needed for its follow-up and implementation after its foreseen adoption. This is what the foreseen study is aiming to provide.

d) The SET plan will require a new way of working together in Europe; Member States, industry and the research community need to establish a governance structure that would allow decision makers to work collectively with the aim to optimise individual efforts. The Commission will analyse alternative options for this new governance, addressing in particular the effectiveness and costs involved. The foreseen study aims at providing the necessary elements to develop these options.

e) The resources needed to transform the energy system towards its decarbonisation are difficult to estimate, as they depend on the evolution of the market price of current resources and the results of on-going and future research, among many other factors. However, they are certainly larger than the current level of investment. Recent studies (e.g. the Stern Report, the Intergovernmental Panel on Climate Change reports and the International Energy Agency) confirm that increased investment, to at least double current levels, will deliver substantial benefits. The foreseen study will aim to provide a deeper understanding on the needs, possible sources of financing and their limitations and contribute to a better planning of research and innovation activities.

c) International Energy Agency

The Commission represents the European Community in the Implementing Agreements (hereinafter "IAs") concluded under the framework of the International Energy Agency where it participates in activities in certain areas of energy research.

The Commission will make annual financial contributions required by its participation, up to a total amount of EUR 400 000. The annual financial contributions will be paid to the entities responsible for managing the respective agreements. The table below shows only those IAs for which the financial contribution will be paid from the budget of this part of the Cooperation Work Programme. It is not an exhaustive list of all of the IAs to which the Commission participates.

The Commission may participate in additional activities agreed under the IAs mentioned above or in any other existing or future IA and in any other activities of the IEA where such participation is in the interest of the Community, in line with the objectives and priorities of the present Work Programme, and within the limits of the budgetary provisions. The table below will be updated in any future modifications of the Work Programme.

IEA Implementing Agreements financed under the Energy WP [5]:

Implementing Agreement	Date IA signed by the European Commission	Estimated Annual EC Contribution in nominal currency	Estimated Annual EC Contribution in Euro
IEA Implementing Agreement for Co-operation in the Research and Development of Wind Turbine Systems	Commission signature in 1996. Expires in 2008	USD 16.873	EUR 14 060
IEA Implementing Agreement for the Establishment of a Project on Solar Power and Chemical Energy Systems	Commission signature in 1998. Expires in 2011	EUR 5 250	EUR 5 250
IEA Implementing Agreement for a Programme of Energy Technology Systems Analysis	Commission signature in 1980. Expires in 2009	EUR 24 000	EUR 24 000
Programme to Develop and Test Solar Heating & Cooling Systems	Commission signature in 1979. Expires in 2009	USD 8 000	EUR 7 000
IEA Implementing Agreement for a Programme of Research, Development and Demonstration on Bioenergy	Commission signature in 1995. Expires in 2009	USD 88 500	EUR 80 000
IEA Geothermal Implementing Agreement	Commission signature in 1997. Extended until 2012	USD 14 000	EUR 12 000

[5] As a contribution from the Community in accordance with Article 108 (2) (d) of the Financial regulations applicable to the General Budget of the European Communities).

Implementing Agreement	Date IA signed by the European Commission	Estimated Annual EC Contribution in nominal currency	Estimated Annual EC Contribution in Euro
IEA Implementing Agreement on Photovoltaic Power System Programme	Commission signature in 1992. Extension procedure to 2012 under completion	EUR 8 500	EUR 8 500
IEA Implementing Agreement for the establishment if IEA Coal Research	Commission signature in 1989. Expires in 2008	GBP 64 300	EUR 95 200
IEA Implementing Agreement for a Co-operative Programme on Technologies Relating to Greenhouse Gases derived from Fossil Fuel Use	Commission signature in 1991. Expires in 2011	GPB 52 500	EUR 78 750
IEA Implementing Agreement for a Co-operative Programme on Ocean Energy Systems (OES)	Commission signature in 2002. Expires in 2011	EUR 10 000	EUR 10 000
IEA Implementing Agreement for Demand Side Management (DSM)	Expires in 2008	EUR 35 000	EUR 35 000
IEA Implementing Agreement on Efficient Electrical End-use Equipment	To be signed in 2007	EUR 20 000	EUR 20 000

d) Grant To A Named Beneficiary

A grant will be awarded to the 'Commissariat à l'Energie Atomique' to support the organisation of a conference on the European Strategic Energy Technology Plan (SET-Plan) under the French Presidency.

Further information on this is given under topic **ENERGY.2008.10.1.4.**

5.2. CONTENT OF CALLS IN 2008

This section describes only the topics for which proposals will be called for in 2008 in the five calls described in section 5.1.2. It will be updated on an annual basis.

Proposals may only be submitted to topics specifically identified in this Work Programme (i.e. explicitly labelled Topic ENERGY.2008.x.x.x). Proposals addressing other subjects will be considered to be ineligible (out-of-scope).

The description of each topic includes the technical content and scope, the applicable funding scheme and expected impact, as well as any other relevant information regarding participation requirements, relevance for SMEs or cooperation with third countries etc.

Funding schemes in the Energy Theme:

Regarding the Funding Schemes, the following information is provided to help applicants understand the expectations concerning project size.

(1) Collaborative Projects:

Collaborative projects can vary in size. Where the expected size of a project is stated in the description of a topic the definition is indicated in the specific call fiche. The call fiche might also indicate upper budgetary thresholds for projects when relevant.

Where no indications of collaborative project size are indicated in the description of a topic or in the relevant call fiche, then the applicant is free to choose the most appropriate size of the project.

(2) Coordination and support actions:

To assist applicants, a distinction is made between two types of actions, with the corresponding indications (non-binding) as regards the typical size of a project as follows:

- *'Coordination and support action (coordination type)'* typically might be in the range EUR 1 million – EUR 2 million (EC contribution), depending on the scale of the activity to be coordinated. For topics where this scheme is indicated, unless otherwise specified, it would normally be expected to finance only one project.

- *'Coordination and support action (support type)'* typically might be up to EUR 1 million (EC contribution). For topics where this scheme is indicated, it is intended to finance only one project, unless otherwise specified in the work programme.

Specific Requirements for demonstration projects

In the call FP7-ENERGY-2008-TREN-1 many topics require a "*predominant demonstration component*". This section describes the specific requirements which will also be considered in the evaluation.

The objective of these projects is to demonstrate and to validate, at industrial scale, new technologies, concepts and systems, in order to test and assess the technological and economic feasibility of innovative solutions; to identify best practices and to disseminate the results with the aim to encourage a wider take-up.

It is expected that a proposal with a predominant demonstration component has typically the following structure:

• about 70% of the budget for ***demonstration***, including costs for tests and supportive measurements,
• up to about 20% for ***research and development*** activities,
• up to about 5% for the ***dissemination and promotion*** of project results,
• up to about 2% for ***training*** (optional)
• up to about 7% for ***management.***

Demonstrations should involve a critical mass of resources and real industrial dimension in order to achieve not only the objectives of the particular topic, but also a significant contribution to the overall expected impact of the research area.

Research activities within a project should be directly linked to the preparation, implementation and assessment of the demonstrated solutions.

The demonstrated technologies, concepts or systems must go beyond existing state-of-the-art at European level and must have potential for wider replication and commercial exploitation in the future (before 2020) at European level. Where these advanced solutions are integrated in an environment of state-of-the-art and/or "off-the-shelf" solutions in the context of larger (investment) projects, this should be indicated. The evaluation of the proposal will concentrate on the innovative elements.

The assessment will address technical and performance criteria, in particular the effects on energy consumption, efficiency and emissions. Beyond project level, estimates regarding effects on more global scale should be made, i.e. the share of energy efficiency, market share of renewables and reduction of CO2 emissions when taking into account the market potential of the proposed solutions (time horizon +/-2020). In addition, the economic dimension will be covered (e.g. cost reductions). Technical and financial risks will be analysed, and it is expected that projects with public funding involve higher risks than comparable projects which are entirely financed from private sources, which requires a sound risk management in the projects.

The expected demonstration projects will often have a site and/or a community of different public and private stakeholders which entails funding from different public and private sources. The projects themselves will demonstrate the combination of funding from different sources (including e.g. national programmes, the EIB and the FP7 RSFF) and the development of innovative financing models will be part of the project or the exploitation plans.

The dissemination and envisaged exploitation of results are important elements in the description of the proposals as well as during the implementation of projects. This includes a strong dissemination strategy, a convincing assessment of the potential to exploit the results in a future commercial context (including a market study and overview on the sector) already in the proposals, and the elaboration of a solid exploitation plan for market take-up for successful results. Where appropriate, the dissemination and exploitation plans should also contain information on how the results will be communicated to the Managing Authorities of Structural Funds[6] and to recipients of Cohesion funding support for renewable energy and energy efficiency, including relevant trans-national and cross-border networks funded under the Structural Funds.

[6] see: http://ec.europa.eu/regional_policy/manage/authority/authority_en.cfm

The results of the projects should allow industry to conclude the research/development phase, to take decisions and to launch the further exploitation and subsequent commercialisation of the results. Therefore, industry should have a lead role in the management and decision structure of the projects, and ideally be the co-ordinator (except for CONCERTO, where also municipalities or bodies of the communities concerned could take the lead).

An important side aspect is the input from demonstration projects to the development of policies in related areas, and certain topics aim also at targeted conclusions for policy processes.

Evaluation criteria:

The evaluation criteria to be applied to proposals submitted to the Energy Theme are specified in Annex 2 of the Work Programme.

ACTIVITY ENERGY.1: HYDROGEN AND FUEL CELLS

NOTE: For 2008, the topics in this Activity are expected to be defined and selected in the programme of the Joint Technology Initiative (JTI) on fuel cells and hydrogen, on the basis of Article 171 of the Treaty, which will become fully operational beginning 2008. The JTI will be an industry led public private partnership which will define and manage a strategic, target-oriented research and development programme to support the broad market introduction of fuel cell and hydrogen technologies.

The JTI content will cover fundamental, industrial and applied research as well as demonstration and relevant cross-cutting activities. The detailed programme of activities of the JTI will be decided by its Governing Board. Therefore, such activities are not covered within the present version of the work programme.

However, in case of delay of the start up of JTI, a separate call may be published by the Commission.

ACTIVITY ENERGY.2: RENEWABLE ELECTRICITY GENERATION

Research into, development and demonstration of integrated technologies for electricity production from renewables, suited to different regional conditions where sufficient economic and technical potential can be identified, in order to provide the means to raise substantially the share of renewable electricity production in the EU. Research should increase overall conversion efficiency, cost efficiency, significantly drive down the cost of electricity production from indigenous renewable energy resources including biodegradable fraction of waste, enhance process reliability and further reduce the environmental impact and eliminate existing obstacles. Emphasis will be on photovoltaics, wind and biomass including CHP. Furthermore, research will aim at realising the full potential of other sources of renewable electricity: geothermal, solar thermal power (i.e. Concentrating Solar Power or CSP), ocean (e.g. wave, tidal power) and hydropower.

Policy context: this activity would facilitate the actual implementation of the "Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market (2001/77/EC, O.J. L283, 2./10.2001)" as well as its revision and medium-term application.

AREA ENERGY.2.1: PHOTOVOLTAICS

Photovoltaics is the most capital-intensive renewable source of electricity. Currently, the generation costs of grid-connected PV electricity in Europe range from EUR 0.25 /kWh to EUR 0.65 /kWh, depending on both local solar irradiation and market conditions. The work will include the development and demonstration of new processes for photovoltaic manufacturing, including the manufacturing of equipment for the PV industry, new photovoltaic-based building elements complying with existing standards and codes and the demonstration of the multiple additional benefits of photovoltaic electricity. Longer term strategies for next-generation photovoltaics (both high-efficiency and low-cost routes) will also be supported.

The content of this Area takes into consideration the Strategic Research Agenda (SRA) developed within the European Photovoltaic Technology Platform.

Overall expected impact: Through technological improvements and economies of scale, the cost of grid-connected PV electricity in Europe is expected to be lowered to a figure in the range of EUR 0.10 – EUR 0.25 /kWh by 2020. Research and development should lead to reduced material consumption, introduction of solar grade materials, higher efficiencies and improved manufacturing processes based on environmentally sound processes and cycles.

Topic ENERGY.2008.2.1.1: Enhancing strategic international cooperation initiatives in the field of concentration photovoltaics

Content/scope: This topic solicits proposals for international cooperation in the field of concentration photovoltaics with Mediterranean Partner Countries (MPCs). Project should address common research interests, building on ongoing initiatives to deliver synergy effects. Examples of tasks may include reciprocal field testing of devices, establishment of common materials database, inter comparison of system components.

***Funding scheme*:** Collaborative project with a predominant research component.

Expected impact: Accelerated development of the still small, but emerging and promising, sector of concentration photovoltaics in the participating regions.

Other information: *This is a Specific International Cooperation Action* focused on EU cooperation with Mediterranean Partner Countries. This topic is also particularly well suited for cooperation with entities from United States and Australia, which can help maximising its impact. Mediterranean Partner Countries may receive a Community financial contribution. A maximum of one project will be financed under this topic.

Open in call: *FP7-ENERGY-2008-1*

Topic ENERGY.2008.2.1.3: Multiple benefits of PV systems

Content/scope: The objective of this topic is the demonstration of the additional multiple benefits of PV systems and the detailed technical and economic assessment of the value of PV electricity in case studies for various configurations including: i) Power quality improvement in industrial and residential environment; ii) Security of supply in residential and urban environments as well as for autonomous power supply systems. Production of educational and training material should be included.

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: The demonstration and quantification of the additional benefits and the detailed assessment of the value of PV electricity aim at identifying the more cost-competitive systems configurations, leading to enhanced deployment of PV technologies.

Other information: Participants should include utilities, system industry, research institutes, industrial, and users. In order to maximise industrial relevance and impact of the research effort, the active participation of SMEs represents an added value to this topic. This will be reflected in the evaluation.

Open in call**:** *FP7-ENERGY-2008-TREN-1*

AREA ENERGY.2.2: BIOMASS

Current costs of electricity generation from biomass are in the range of EUR 0.05 – EUR 0.08 /kWh. Development should aim at extending applications to a wider range of biomass materials by (1) solving specific problems hindering the use of biomass in direct co-firing and (2) addressing technical challenges for advanced biomass gasification systems for efficient power production.

Demonstration should aim at medium to large scale bio-electricity systems, covering the whole process chain from sustainable feedstock supply over energy conversion to the recovery of by-products. Preference will be given to the ambitious use of biofuels with still high exploitation potentials such as forest residues, energy crops, agricultural residues incl. straw, refuse derived fuels etc. Medium-to-large scale power generation from organic waste also comprises mass burning of solid municipal waste as well as the separate use of pre-treated and pre-separated municipal waste fractions. Emphasis is put on innovations with high penetration potential throughout Europe while also paying due attention to overall sustainability aspects. Stakeholders relevant for the commercialisation of the innovation are expected to participate. Proposals with bio-energy plants operating (at least partially) in combined heat and power (CHP) or combined heat, cooling and power (CCHP) will be preferred in case of similar performances in all other criteria.

Overall expected impact: Increased electricity production from biomass through the development and demonstration of improved biomass power generation and CHP plants which allow power generation costs below EUR 0.04 /kWh in 2020 whilst operating on a variety of sustainably produced biomass feedstocks.

Topic ENERGY.2008.2.2.1: Enhancing strategic international cooperation with Russia in the field of power generation from biomass

Content/scope: Research and technology development in the field of power generation from biomass. This collaborative research activity should be based on an assessment of ongoing research, the identification of best practices, gaps in knowledge, and barriers to implementation in both the EU and Russia.

Funding scheme: Collaborative project

Expected impact: Effective cooperation between key researchers and industries in the field of power generation from biomass should foster the development and uptake of innovative methods and technologies to expand the use of biomass in power generation.

Other information: The typical consortium should be a partnership between EU and Russian teams. In order to ensure a balance between EU and Russian participants a minimum number of two participants established in Russia is requested. This is an eligibility criterion. The funding of all participants will follow the rules established for the Energy EU-Russia Call. Participants being established in the EU or in an associated country may jointly receive up to EUR 2 million from the European Commission and the Russian partners may jointly receive up to EUR 2 million from the Federal Agency for Science and Innovation. The project duration is normally 3 years.

Cooperation is encouraged between academic and industrial organisations from the EU and Russia which are actively involved in research and development on power generation from biomass.

Open in call: *FP7-ENERGY-2008-RUSSIA*

Topic ENERGY.2008.2.2.2: High-efficiency medium-to-large scale electricity generation from biomass and waste

Content/scope: Demonstration of:

i) medium- to large scale power generation from biomass with increased net electric efficiency, high process reliability at levels which are competitive with those of fossil fuel based power generation, and low pollutant emissions is addressed. Depending on local fuel supply conditions such installations may have to be able to run on biomass feedstock of varying origin and quality.

ii) fully integrated innovative waste-to-energy installations with increased electric efficiency, high availability and the potential to reduce total cost of electricity generation on the short–to-medium term. This call is open to all waste fractions (with high market relevance in Europe), all waste pre-treatment options (e.g. mass burning, mechanical-biological pre-treatment with subsequent separate utilisation of the waste fractions). A very high environmental standard (e.g. minimising water needs and production of fly and bottom ashes), based upon the best-available-technology, is to be met. Furthermore, a professional

and robust life-cycle-analysis is to be carried out in order to compare the demonstrated system with commercial alternatives under a reasonable set of accepted environmental impact indicators.

This call is open to all conversion technologies (combustion, gasification, anaerobic digestion, etc.).

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: The objective is to offer to the market new and improved solutions for the medium to large scale power generation from biomass and waste.

Other information:

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.2.3: WIND

Innovative large scale on and off-shore wind power plants based on improved technologies, more robust, reliable and low-maintenance multi-MW turbines, combined with dependable output forecasting tools as well as with standards and certification schemes should bring wind power to higher levels of market penetration. Current costs for onshore wind-generated electricity are in the range of 0.04-0.09 EUR/kWh.

Overall expected impact:

Cost reductions through improvements in technology, up-scaling of turbines, large-scale deployment (including offshore) and grid connection should lead to a cost below 0.04 EUR/kWh in 2020.

Topic ENERGY.2008.2.3.1: Demonstration of large scale systems for on- and off-shore wind farms including their cost effective grid integration

Content/scope: The objective is to demonstrate a way to the future of innovative large scale wind energy systems for both on-shore and off-shore applications, including MW-size turbine, tower and foundation, electrical conversion system and wind farm, including the management of wind power plants, their grid integration and integrated storage systems. Issues to be addressed are the optimisation of logistics, manufacturing and maintenance strategies, design and operating principles for large-scale grid integration, including the related socio-economic, including public acceptance, and different environmental issues. The overall aim is to demonstrate new potential for cost reduction, increased reliability and reduced maintenance costs of wind farms.

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: The results should provide significant input to cost effective large-scale grid integration of wind energy systems into the European power system.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.2.4: GEOTHERMAL

Research and development should aim to develop enabling technologies for the exploitation of high-temperature resources, and to prove the feasibility and sustainability of Enhanced Geothermal Systems (EGS) technology in representative EU sites. The estimated current cost of electricity generation from the first-generation prototype plants is of the order of € 0.08-0.15/kWh. Demonstration projects should aim at improving geothermal reservoir detection technology, increasing the performance of fluid production systems (corrosion and scaling), and increasing the efficiency of electricity generating systems.

Overall expected impact: a continued reduction in cost through innovative developments, learning curve effects and co-generation of heat and power should lead to an electricity cost from enhanced geothermal systems of around 0.05 €/kWh in 2020.

Topic ENERGY.2008.2.4.1: Increased electricity production from Enhanced Geothermal Systems and from low enthalpy geothermal sources

Content/scope: The main objective for Enhanced Geothermal Systems (EGS) is to balance between efficiency and environmental soundness, in engineered Enhanced Geothermal Systems (EGS) sites and/or in less productive margins of geothermal fields under exploitation. The aim of this topic is the demonstration of increased, more efficient and environmentally sound electricity production from Enhanced Geothermal Systems (EGS); reduced costs; higher efficiency of energy extraction, conversion and end-use (electricity and heat); better understanding of plant operation.

The main objective for low/medium enthalpy geothermal power is to demonstrate the viability and efficiency of power generation from geothermal fluids of the lowest possible temperature, including hybrid solutions coupling geothermal with additional energy resources (solar, biomass, etc.) for improved efficiency.

Issues to be addressed include production levels and methods in plant operation, e.g.: balancing extraction and production rates; managing seismicity and other environmental risks; improving energy conversion efficiency and reducing parasitic loads; increasing the operational life of equipment etc. New or existing facilities should become operational within substantially shorter lead times and should make use of well-known and promising sites. Technologies and systems to be demonstrated should be environmentally sound and well-suited to their site.

Funding scheme: Collaborative project with a predominant demonstration component

Expected impact Development and demonstration of an increased range of potentially interesting geothermal sites for exploitation, leading to: a wider use of geothermal sources for electricity production and; significant contributions to the strategic objective of 20% renewable energy sources (RES) and CO_2 reduction in the EU energy mix by 2020.

Other information: Utilities and equipment manufacturers should have a leading role particularly in planning, monitoring, and analysing plant operation to reach the main objective. Consortia should develop and run training schemes to familiarise power plant operators with reservoir management and other specificities of geothermal plants. With a view to the strategic objective of 20% RES share and CO2 reduction, the following is required at the proposal stage: sound assessment of sites, technologies and replication

potential; strong and credible plans for exploitation and replication of results; industry-based consortia that can demonstrate an ability to exploit this potential and bring these technologies to the market on a large scale by 2020.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.2.5: CONCENTRATED SOLAR POWER

Concentrated solar power (CSP) has much scope for improvements in the optical and thermal efficiency of the solar components, power generation efficiency (including hybridisation with other fuel), and operational reliability. Current electricity generation costs for concentrating solar thermal are in the range of 0.16-0.20 EUR/kWh for the most southern regions of Europe.

A large reduction in both capital cost and maintenance cost, together with the improvement of the environmental profile, is necessary to make CSP systems more competitive with conventional and other renewable electricity sources. This includes development and demonstration of new receiver concepts; demonstration of heat transfer cycles with higher performances; development of low-cost high efficient storage systems; demonstration of lower cost, intermediate size power plants for decentralised electricity, heating and cooling generation; improvement of the environmental profile of the CSP installations (e.g. lower water consumption, more efficient land use, etc.).

Overall expected impact: Reductions in cost through the up-scaling of units, volume production and technological innovation should lead to an electricity cost of around 0.05 EUR/kWh in 2020 for areas with high irradiation levels**.**

Topic ENERGY.2008.2.5.1: Improve the environmental profile of the CSP installations

Content/scope: This topic has the objective to improve the environmental profile of the CSP installations by exploiting solutions with the potential to better the economics of the installations and allow their larger utilisation. This includes the reduction of water usage for the thermodynamic cycle by more efficient and sustainable solutions and a more efficient land utilisation; and/or the improvement of the performances of the heat transfer cycle by extending the temperature operating range to achieve better integration and/or more efficient operation conditions.

Funding scheme: One collaborative project with a predominant demonstration component.

Expected impact: Demonstration of solutions to improve the environmental profile of CSP installations in particular through lower use of water and more efficient land use and/or using heat transfer cycles with improved performances, to promote an increasing use of CSP.

Other information: *This is a Specific International Cooperation Action* focused on EU cooperation (of all interested EU Member States) with Mediterranean Partner Countries.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.2.6: OCEAN

Electricity generation from ocean currents, waves, salinity gradients, tidal stream systems and ocean thermal energy conversion will benefit from further cost reductions through technological improvements in new components and system designs, leading to higher efficiencies and lower operator and maintenance requirements. Estimated current cost of electricity generation from the first-generation prototype plants are of the order of EUR0.08-0.20/kWh. Demonstration of ocean energy technologies should mainly address their intrinsic technical and financial risks. Among them the proving of the energy conversion potentials and the technical problems associated to the site's harsh environment. The large scale success of ocean energy needs demonstration at full scale of reliable, efficient and cost-effective systems with a view to commercial exploitation.

Overall expected impact: A continued reduction in technology costs through innovative developments and learning curve effects should lead to an electricity cost of around 0.05 EUR/kWh in 2020.

Topic ENERGY.2008.2.6.1. Ocean: demonstration of innovative full size systems

Content/scope: Full scale demonstration of innovative ocean energy technologies, including wave, ocean current, and tidal stream technologies for electricity generation, with a view to their market potential and commercial exploitation. The systems could be bottom fixed, floating or shoreline/land based. Priority will be given to concepts for which a small scale prototype has already been tested (the main results should be presented). The systems should be connected to the grid. The proposals should describe in detail in particular the innovative component of the project, the monitoring of the operation, the reporting and the dissemination activities foreseen.

Funding scheme: Collaborative Project with a predominant demonstration component.

***Expected impact*:** Reduction of manufacturing and production costs, improved reliability and efficiency, lower O&M requirements; successful demonstration and quantification of the technical and economic performance, including improvements in these aspects, and effective dissemination of the results are expected to increase the visibility and to enhance the deployment of ocean energy technologies.

Other information: In order to maximise industrial relevance and impact of the research effort, the active participation of SMEs represents an added value to this topic. This will be reflected in the evaluation.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.2.7: HYDRO

In spite of the perception that hydropower is a mature technology, there are still technological challenges which should be addressed in order to develop further the technology and to exploit the remaining potential, composed mainly of low-head and very-low-head sites.

The main objective is to further improve the energy and cost-efficiency of hydropower plants, in particular smaller systems, while minimising the adverse environmental impact. There is a need for demonstration of innovative systems, equipment and design practices which could be at the same time economically and environmentally efficient. They should be easily customised for a site-specific use. The systems should improve the reliability and

efficiency with guaranteed performance. Innovative solutions which can maximise the energy production of existing plants should also be developed and demonstrated.

Overall expected impact: A continued increase in efficiency while reducing the environmental impact and the technology costs through innovation and learning curve effects.

Topic ENERGY.2008.2.7.1: Pre-normative research for hydropower

Content/scope: Pre-normative research aiming at harmonised testing methods and comparative assessment of small hydropower installations, in particular those based on new technologies and designs. Such pre-normative activities should include, inter alia, the monitoring of performance, life-cycle costs, environmental impact (including materials and production processes), and socio-economic assessment.

Funding scheme: Collaborative Project.

Expected impact: Harmonised testing and assessment of small hydropower installations will facilitate matching different system designs with various environments and accelerate their rate of deployment.

Other information: In order to maximise industrial relevance and impact of the research effort, the active participation of SMEs represents an added value to this topic. This will be reflected in the evaluation. Key players in the consortium should demonstrate their ability to productively interact with relevant stakeholders from governmental, public and private organisations. A maximum of one project will be financed under this topic.

Open in call: *FP7-ENERGY-2008-1*

AREA ENERGY.2.8: INNOVATIVE INTEGRATION OF RENEWABLE ENERGY SUPPLY AND ENERGY EFFICIENCY IN LARGE BUILDINGS AND/OR CONCERTO COMMUNITIES

For the possibility to submit CONCERTO proposals, please see the topics under ENERGY 8.4, open in the Call FP7-ENERGY-2008-2.

AREA ENERGY.2.9: CROSS-CUTTING ISSUES

Topic ENERGY.2008.2.9.1. Storage for intermittent electricity

Content/scope: Flexible, reliable and low cost energy storage continues to be a barrier to deployment of most renewable energy technologies. Demonstration of advanced and cost effective electricity storage systems which would decouple the source availability from the power demand is needed The storage devices should also improve the energy management addressing several functions to broaden the use of renewable power generation plants also in terms of power quality (security, improved grid interface etc).

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: Development of simple, reliable, efficient and cost-effective energy storage systems

Other information:

Open in call: FP7-ENERGY-2008-TREN-1

ACTIVITY ENERGY.3: RENEWABLE FUEL PRODUCTION

Research into, development and demonstration of improved fuel production systems and conversion technologies for the sustainable production and supply chains of solid, liquid and gaseous fuels from biomass (incl. biodegradable fraction of waste). Emphasis should be on new types of biofuels in particular for transport and electricity as well as on new production, storage and distribution routes for existing biofuels, including the integrated production of energy and other added-value products through biorefineries. Aiming to deliver 'source to user' carbon benefits, research will focus on improving energy efficiency, enhancing technology integration and use of feedstock. Issues such as feedstock logistics, pre-normative research and standardisation for safe and reliable use in transport and stationary applications will be included. To exploit the potential for renewable hydrogen production, biomass, renewable electricity and solar energy driven processes will be supported.

The structure and content of this Activity takes into consideration the Strategic Research Agenda (SRA) of the Biofuels Technology Platform.

Policy context: this research activity would facilitate the actual implementation of the Directive on the promotion of the use of bio-fuels or other renewable fuels for transport (2003/30/EC, O.J. L125, 17.05.2003).

AREA ENERGY.3.1: FIRST GENERATION BIOFUEL FROM BIOMASS

Biodiesel (fatty acid methyl ester), bioethanol from starch and sugar crops and biomethane from anaerobic digestion of dedicated energy crops and wase streams are commercially available, however, their cost is still relative high and in comparison European based production has a higher cost that US and Brazilian based production. Activities will focus on new and innovative technologies that can maximise the energy use of process by-products and residues, increase the overall conversion efficiency to biofuels and improve significantly the energy and green house gas emissions balances. Projects may also comprise elements of demonstration of the biofuels in fleets.

Overall expected impact: The results are expected to reduce significantly the overall biofuels production costs and improve the energy balance and environmental performance of the first generation biofuels and make them more competitive. These technology improvements could result in the long term utilisation of these biofuels.

Topic ENERGY.2008.3.1.1: Biofuels from high moisture content biomass – Biomethane production

***Content/scope*:** Demonstration at industrial scale of bio-methane produced from high moisture content biomass and/or waste effluents via anaerobic fermentation or other biological processes and subsequent upgrading of the biogas. The biomethane could be used for transport applications or supplied to natural gas grids.

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: Reduced production costs for biomethane, and improved environmental performance with higher energy and CO2 balances.

Open in call: *FP7-ENERGY-2008-TREN-1*

AREA ENERGY.3.2: SECOND GENERATION FUEL FROM BIOMASS

Second generation biofuels comprise a range of alternatives such as lignocellulosic ethanol, syngas gas based fuels, pyrolysis-oil based biofuels and others. Activities will cover process development and system integration focusing on the conversion process, with a view to improve cost-competitiveness of biofuels while minimising the environmental impact of biofuel production. Results are expected to expand the biomass feedstock available for biofuel production, assisting the take-off of a large biofuel industry while helping to avoid food/fuel competition for the land use.

***Overall expected impact*:** Technology development should bring about substantial cost reduction to pave the way for large scale production of second generation biofuels by 2020, while improving the energy balance and environmental impact of biofuel production.

Topic ENERGY.2008.3.2.1: Enhancing international cooperation between the EU and Latin America in the field of biofuels

Content/scope: International cooperation in the field of biofuel technologies. Proposals could address the characterisation of feedstock and pre-treatment technology, optimisation of the production processes for 1st and 2nd generation biofuels, sustainability issues and co-production of biofuels and bioproducts.

***Funding scheme*:** Collaborative Project with a predominant research component

Expected impact: Significant enhancement of the cooperation between key researchers and industries from the EU and Latin America in the field of biofuels.

Other information: *This is a Specific International Cooperation Action.* At least four legal entities must participate, two from EU Member States or Associated Countries, and two from Latin America. The consortium should include in a balanced way both Latin American and European partners with solid experience and competence in the field and strong project management skills. Key players in the consortium should have a proven track record of EU-LA collaboration. The partnership should demonstrate the added value of EU-LA collaboration in the proposed action. Expertise in the international context and knowledge of Latin America for European partners and vice-versa is important. Preference will be given to actions involving countries having a S&T bilateral agreement with the EU and/or specific arrangements.

Open in call: FP7-ENERGY-2008-1

Topic ENERGY.2008.3.2.2: Bioethanol production from lignocellulosics

Content/scope: Demonstration at industrial scale of the production path of lignocellulosic biomass/enzymatic hydrolysis, fermentation/ethanol, with emphasis in the hydrolysis and fermentation steps. The final bioethanol could also be used for hydrogen production wherever market conditions allow and more specifically in distributed generation. The bioethanol should also be tested in appropriate engines in order to check technical standards, commercial possibilities and engine compatibilities.

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: Reduced production costs for bioethanol, and improved environmental

performance with significantly higher energy and CO2 balances.

Other information: SMEs are expected to be important contributors to such technology development.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.3.3: BIOREFINERY

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.3.4: BIOFUELS FROM ENERGY CROPS

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.3.5: ALTERNATIVE ROUTES TO RENEWABLE FUEL PRODUCTION

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.3.6: BIOFUEL USE IN TRANSPORT

In this Are, no topics are open in calls published in this work programme.

AREA ENERGY.3.7: CROSS-CUTTING ISSUES

In this Area, no topics are open in calls published in this work programme.

ACTIVITY ENERGY.4: RENEWABLES FOR HEATING AND COOLING

AREA ENERGY.4.1: LOW/MEDIUM TEMPERATURE SOLAR THERMAL ENERGY

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.4.2: BIOMASS

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.4.3: GEOTHERMAL ENERGY

In this area, no topics are open in calls published in this work programme

AREA ENERGY.4.4: INNOVATIVE INTEGRATION OF RENEWABLE ENERGY SUPPLY AND ENERGY EFFICIENCY IN LARGE BUILDINGS AND/OR CONCERTO COMMUNITIES

The topics which are open under this area are described under the AREA ENERGY 8.4.

AREA ENERGY.4.5: CROSS-CUTTING ISSUES

In this Area, no topics are open in calls published in this work programme.

ACTIVITY ENERGY.5: CO2 CAPTURE AND STORAGE TECHNOLOGIES FOR ZERO EMISSION POWER GENERATION

Research, development and demonstration of technologies to drastically reduce the adverse environmental impact of fossil fuel use aiming at highly efficient and cost effective power and/ or steam generation plants with near zero emissions, based on CO2 capture and storage technologies, in particular underground storage.

Areas and topics in the two partly complementary activities ENERGY.5 and ENERGY.6 are based on previous actions initiated under the 5th and 6th framework programmes and take into account results as well as work under way. Their common aim is to enable the arrival of an integrated technological solution allowing for zero emission power generation from fossil fuels. Priorities have also been determined in accordance with those identified by the work of the Technology Platform for zero emission, with a view to getting to the vision established by the ZEP platform of having integrated solutions for zero emission fossil fuel based power available by 2020. This requires large scale demonstration in place by 2015 at the latest.

Besides this common aim, each activity also includes particular priorities of its own merit which can be seen as parallel, although not unrelated, to the aim of an integrated solution for zero-emission power generation.

The activities under the Framework Programme must also be seen in complementarity with those carried out by the Research Fund for Coal and Steel. Following a Protocol annexed to the Treaty of Nice, the RFCS disposes of own budgetary means outside the Framework Programme, part of which are used to fund coal research activities ranging from coal mining to coal conversion and coal combustion/applications.

Expected impact: *The development of more cost effective zero emission fossil fuel based power plants would enable the use of fossil fuel reserves with a substantially reduced environmental impact, in particular in terms of greenhouse gas emissions. The same capture techniques would often also be applicable to other energy intensive industries.*

The development of safer storage techniques, monitoring and verification techniques for geological storage would further secure the large scale deployment of zero emission fossil fuel power plants with a wide public acceptance. It would also enable the qualification of such plants into the European Emission Trading Schemes or indeed into any other form of incentive scheme.

The development of clean coal technologies with a view to delivering zero emission would enable the wider use of indigenous solid hydrocarbon (hard coal, lignite, oil shale and other solid fossil fuel) resources, as well as widely abundant traded coal, compatible with the environment.

All these actions would put the European industry in these sectors in a better competitive position for markets in the EU and outside, in a carbon-constrained world.

AREA ENERGY.5.1: CO2 CAPTURE

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.5.2: CO_2 STORAGE

Projects in this area should address the safety of geological CO2 storage at all relevant timescales, the liability issues, for different kinds of CO2 storage underground, e.g. saline aquifers, depleted oil or gas fields, enhanced oil or gas recovery, enhanced coal bed methane.

Overall expected impact: It is expected that this will give full confidence in geological CO2 storage and will help the further development of the legal and regulatory requirements allowing the deployment of large scale near zero emission power generation technology using underground CO2 storage.

Topic ENERGY.2008.5.2.1: CO2 Capture and Storage – Capacity building with the large emerging economies

Content/scope: Research is required in order to have a first global estimate of the potential CO2 storage capacity available in the large emerging economies. The matching of sources and sinks should complement the capacity assessment studies to identify a few potential storage sites in the vicinity of large emission point sources. Capacity building in CO2 capture and storage, including the development of the necessary transport infrastructure should also be covered in subjects of mutual interest.

Funding scheme: Collaborative Project

Expected impact: The results of this project would allow the deployment of zero emission fossil fuel based power plants in large emerging economies with sufficient pre-requisite knowledge of the CO2 storage potential, and based on improved capture know-how resulting from the capacity building actions.

Other information: This is a Specific International Collaboration Action The typical consortium should be a well balanced partnership between institutions of the EU and of the large emerging economy members of the Carbon Sequestration Leadership forum. The participation of institutions from developed countries also members of the CSLF is encouraged.

Open in call: FP7-ENERGY-2008-1

Topic ENERGY.2008.5.2.2 : CO2 transport and storage infrastructure development

Content/scope: Work is required to develop the various aspects of transport and storage infrastructure to allow the large scale deployment of zero emission plants in the EU. This should cover the infrastructure to collect CO2 from large point sources, intermediate short term storage technologies, large scale CO2 compression installations, and the design of large scale final injection facilities, both on-shore and off-shore. The societal, legal, environmental, financial and technical aspects of the previous installations and infrastructures should be addressed.

Funding scheme: one Collaborative Project.

Expected impact: The project would facilitate the large scale deployment of zero emission plants in the EU by generating the necessary knowledge associated to all the intermediate steps between the capture plant and the final geological repository.

Other information: a maximum of one project will be funded under this topic.

Open in call: FP7-ENERGY-2008-1

<u>Topic ENERGY.2008.5.2.3 : CO2 capture and storage – public acceptance</u>

Content/scope: Work is required to study the acceptance of CO2 capture and storage technologies in the general public. The work should cover the necessary information needs, the impact of the information given, the role of opinion shapers, as well as the local dimension of public acceptance, compared to the more abstract general perception.

Funding scheme: **C**oordination and support action (support type).

Expected impact: The project would facilitate the large scale deployment of zero emission power plants in the EU by addressing the issue of public acceptance, which is a potential show stopper.

Other information: a maximum of one project will be funded under this topic.

Open in call: FP7-ENERGY-2008-1

<u>Topic ENERGY.2008.5.2.4: Development of a suitable methodology for the qualification of deep saline aquifers for CO2 storage</u>

Content/scope: Development of a suitable methodology (seismic testing, exploratory drilling, etc) to assess the quality of a given site for geological storage. The aim will be to develop a common generic methodology to address the various criteria put in place by the regulatory authorities with the ultimate view of satisfying the certification criteria that they will enforce.

***Funding scheme*:** collaborative Project with a predominant research component.

Expected impact: Such a project will deliver site qualification methodologies which will feed into the regulatory process for site qualification. This will ultimately contribute to the use of deep saline aquifers for CO2 storage in Europe, and therefore ease the penetration of fossil fuel based zero emission power plants.

Other information: It is envisaged that such a project could be developed in connection with one or more of the specific sites for CO2 storage emerging in Europe, where a deep saline aquifer could be used for the storage part. Cooperation is encouraged with organisations from the member countries of the Carbon Sequestration Leadership Forum.

Open in call: FP7-ENERGY-2008-1

ACTIVITY ENERGY.6: CLEAN COAL TECHNOLOGIES

Research, development and demonstration of technologies to substantially improve plant efficiency firstly, but also reliability and cost, of coal and other solid hydrocarbon (including oil shale) conversion technologies producing also secondary energy carriers (including hydrogen) and liquid or gaseous fuels. "Clean coal" in this context really means a sustainable solid hydrocarbon value chain with a focus on efficient and clean coal utilization, i.e. coal use aiming at zero or significantly reduced emissions by means of enhanced plant efficiency and CO2 capture and storage.

Areas and topics in the two partly complementary activities ENERGY.5 and ENERGY.6 are based on previous actions initiated under the 5th and 6th framework programmes and take into account results as well as work under way. Their common aim is to enable the arrival of an integrated technological solution allowing for zero emission power generation from solid fuels. Priorities have also been determined in accordance with those identified by the work of the Technology Platform for zero emission, with a view to getting to the vision established by the ZEP platform of having integrated solutions for zero emission fossil fuel based power available by 2020. This requires large scale demonstration in place by 2015 at the latest.

Besides this common aim, each activity also includes particular priorities of its own merit which can be seen as parallel, although not unrelated, to the aim of an integrated solution for zero-emission power generation.

The activities under the Framework Programme must also be seen in complementarity with those carried out by the Research Fund for Coal and Steel. Following a Protocol annexed to the Treaty of Nice, the RFCS disposes of own budgetary means outside the Framework Programme, part of which are used to fund coal research activities ranging from coal mining to coal conversion and coal combustion/applications.

Expected impact:

The development of more cost effective zero emission fossil fuel based power plants would enable the use of fossil fuel reserves with a substantially reduced environmental impact, in particular in terms of greenhouse gas emissions. The same capture techniques would often also be applicable to other energy intensive industries.

The development of safer storage techniques, monitoring and verification techniques for geological storage would further secure the large scale deployment of zero emission fossil fuel power plants with a wide public acceptance.

The development of clean coal technologies with a view to delivering zero emission would enable the wider use of indigenous solid hydrocarbon (hard coal, lignite, oil shale and other solid fossil fuel) resources, as well as widely abundant traded coal, compatible with the environment.

All these actions would put the European industry in these sectors in a better competitive position for markets in the EU and outside, in a carbon-constrained world.

AREA ENERGY.6.1: CONVERSION TECHNOLOGIES FOR ZERO EMISSION POWER GENERATION

Projects in this area should address the necessary research, development and demonstration of conversion technologies required for solid hydrocarbons, such as hard coal, lignite, oil shale, including co-utilisation of biomass, with a view towards zero emission power

generation and further advanced efficiency. Work is required on the mainstream technologies, pulverised fuel combustion, gasification, as well as on the application of fluidised bed technologies. Work is also required on poly-generation and liquefaction based on coal and other solid fossil fuels.

Pulverised coal will remain competitive if the ultra-supercritical steam conditions can be made reliable and affordable. Integrated coal gasification combined cycles need to be made more reliable, affordable, and are an obvious route to zero emission, as are fluid bed schemes. The development of poly-generation based on coal would enable coal to play a greater role in terms of energy security by addressing the transport sector.

Overall expected impact: The development of both coal gasification and ultra-supercritical coal combustion will enable coal and other solid hydrocarbons to play a greater role in the EU power generation sector, thereby helping the EU supply security. Through improved efficiency of the conversion process it will create necessary precondition for integration of power production with CCS. Ultra-supercritical coal plants will be deployed more widely because of their efficiency advantage over subcritical plants, and integrated coal gasification plants will be adopted because of an increased efficiency and reliability compared to the present units. This would allow an easier deployment of zero emission plants, since gasification units are natural candidates for CO2 capture.

Topic ENERGY.2008.6.1.1: Advanced Fluidized Bed Combustion Technology

Content/scope: Under this topic further development is envisaged of the fluid bed combustion technology to ascertain fuel flexibility (including co-firing of biomass) and scalability. This requires further research work on all technical issues from feeding system to ash/slag removal systems. But also costs, efficiency and reliability issues have to be addressed. Consideration should also be given to the need to capture or separate CO_2 from fluid bed based solid fuel power generation plants. Research and development is required on the potential addition of material to the bed to ease the subsequent separation of the CO_2.

Funding scheme: Collaborative Project

Expected impact: Fluidised Bed offer promising potential as a technology to efficiently convert coal and lignite into electricity. Projects under this topic are expected to further develop and demonstrate this technology in order to make it competitive in view of zero emission operations.

Open in call: FP7-ENERGY-2008-TREN-1

Topic ENERGY.2008.6.1.3: Efficiency Improvement of Oxygen-based combustion

Content/scope**:** Further research and demonstration work is needed on oxygen based combustion technologies with respect to the CO2 capture process in order to make this technology available for large scale power plants. Work in this area should include – but should not be limited to - issues like advanced burner designs, slagging, fouling and corrosivity of flue gases, the identification of the optimal CO2 capture rate, combination of CO2 capture with other gas cleaning processes and processes for separation, compression and conditioning of CO2.

It is envisaged that a project under this topic will test, demonstrate and further develop existing technologies in a medium sized test environment. Scalability of the results to large scale power plants has to be in the focus of the activities.

Funding scheme: Collaborative project

Expected impact: Oxygen-based combustion technologies can play an important role for CCS. Projects under this topic shall further develop these technologies and test them in small scale demonstration plants and thereby pave the way for their use in industrial scale power plants.

Open in call: FP7-ENERGY-2008-TREN-1

Topic ENERGY.2008.6.1.4: Advanced Gas Turbines for Solid Fuel Gasification Processes

***Content/scope*:** Pre combustion CO2 capture requires the combustion of hydrogen rich syngases in gas turbines. Research and demonstration is required in order to develop highly efficient gas turbines in combined cycle power plants (IGCC) which are capable of combusting such syngases and which also allow for high fuel flexibility. To reach this goal the development of advanced materials is essential. This includes the design of ultra high-strength materials (e. g. for turbine rotors or blades) and associated production technology for (large) components as well as the compilation of assessment methods for material properties and new materials. In addition, further research is needed in high temperature coating and cooling systems as well as in improved combustion systems. The development of thermo-mechanical models and simulation tools for evaluating material properties as well as enhanced lifetime modelling are important foundations for work in this area. Developments on any methods providing integrated maintenance would be an advantage.

Funding scheme: Collaborative project

Expected impact: Highly efficient IGCC power plants are natural candidates for Carbon capture. Research and demonstration under this topic shall set the ground for the use of novel gas turbines in large scale demonstration plants.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.6.2: COAL-BASED POLY-GENERATION

In this Area, no topics are open in calls published in this work programme.

CROSS-CUTTING ACTIONS BETWEEN ACTIVITIES ENERGY.5 AND ENERGY.6 (Activity ENERGY.5&6)

This Section includes areas and topics that are cross cutting between "CO2 capture and storage for zero emission power generation" and "clean coal technologies", which in many ways are complementary activities.

AREA ENERGY.5&6.1: POWER GENERATION TECHNOLOGIES FOR INTEGRATED ZERO EMISSION SOLUTIONS

Projects in this area should address complete power plant concepts, using fossil fuels, and aiming at zero emissions through high-efficiency conversion technologies coupled with CO_2 capture and storage. This requires a holistic approach to the issues associated with power plant simulation, design and optimisation. Work is required to improve power plant efficiency, reliability and costs. Fuel flexibility and products flexibility are also important.

***Overall expected impact*:** Zero emission plants concepts with overall net efficiencies higher than 55% for gas and higher than 45% for coal should be developed, with reliabilities

comparable to current technology, and total costs below EUR 15 per tonne of CO2 avoided. This would allow the deployment of fossil fuel based zero emission power plants in Europe in line with the recommendations of the zero emission platform.

Topic ENERGY.2008.5&6.1.1: Feasibility and engineering study for development of an integrated solution for a large scale zero emission fossil fuel power plant

Content/scope: Work is required to develop integrated concepts for fossil fuel zero emission power plants. A feasibility and detailed engineering study is envisaged for an industrial scale fossil fuel based zero emission plant which will comprise analysis and selection of technical design, technologies for all components for power generation, planning, sitting, integration, economic appraisal and environmental impacts. The work should also cover the specification of CO2 capture equipment, transport, and storage site. The technological solution should combine the results of the "clean coal" research in conversion technologies with the research in capture and storage of CO2 from power generation to deliver an integrated solution allowing for the construction of a zero-emission power plant

***Funding scheme*:** Collaborative Project

Expected impact: Projects under this topic are expected to contribute directly to the first of its kind large scale demonstration plant in Europe which will be able to produce electricity from fossil fuels with near zero CO2 emissions. The capture, transport and storage techniques must be fully integrated into the power generation plant. This is required in order to guarantee that the overall plant has the best possible performance in terms of efficiency, cost and reliability. The study will provide the basis for the implementation of a large scale demonstration project.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.5&6.2: CROSS CUTTING AND REGULATORY ISSUES

Projects in this area should contribute to address general economic, social, environmental and infrastructural development issues essential to the large scale commercial deployment of CCS technologies. Results should contribute to further development of the proposed regulatory framework for CCS technology in the EU[7]. Research will also identify, assess and recommend ways to overcome non-technical and non-regulatory barriers to the deployment of CCS as identified in the Communication on supporting early demonstration of sustainable power generation from fossil fuels[8].

Overall expected impact: Projects in these areas will provide support for the international cooperation actions in activities 5 and 6, as well as for non-community research activities, notably those carried out in the Member States. This will deliver a better coordination, of both the European activities (Commission and Member States) and of the European activities with the international ones, avoiding duplication of efforts and aligning priorities.

Topic ENERGY.2008.5&6.2.1: Extending the value chain for GHG emissions other than CO2

[7] COM(2008)18 of 23 January 2008

[8] COM(2008)18 of 23 January 2008

Content/scope: Uncontrolled release of natural greenhouse gases such as methane from coal deposits and other methane containing sources to the atmosphere represents a potentially important, yet often disregarded threat to the fight against climate change. On the other hand, such specific natural sources of methane can represent important hydrocarbon resources. Research is needed to develop strategies and technologies to extract methane in a controlled way methane from these sources and to verify the possibility of sustainable commercial exploitation for energy usage of these resources for the benefit of EU's security of energy supply. Work could include an analysis of opportunities for commercial exploitation of methane and/or methane hydrates present in the marine environment**.**

Funding scheme: Collaborative project

Expected impact: The development of a viable strategy to recover methane and use it as an energy source shall reduce the danger of release of methane to the atmosphere and contributes to the EU's security of energy supply.

Other information: It is envisaged that a maximum of one project could be funded under this topic.

Open in call: FP7-ENERGY-2008-TREN-1

ACTIVITY ENERGY.7: SMART ENERGY NETWORKS

To facilitate the transition to a more sustainable energy system, a wide-ranging R&D effort is required to increase the efficiency, flexibility, safety, reliability and quality of the European electricity and gas systems and networks notably within the context of a more integrated European energy market. For electricity networks, the goals of transforming the current electricity grids into a resilient and interactive (customers/operators) service network, controlling the real time flows and removing the obstacles to the large-scale deployment and effective integration of renewable energy sources and distributed generation (e.g. fuel cells, microturbines, reciprocating engines), will necessitate the research, development and demonstration of key enabling technologies (e.g. innovative ICT solutions, storage technologies for RES, power electronics and superconducting devices) including the development of new control and reliability tools for electricity systems. For gas networks, the objective is to demonstrate more intelligent and efficient processes and systems for gas transport and distribution, including the effective integration of renewable energy sources and the use of biogas in the existing networks.

This Activity has been structured into three Research Areas, which have been identified taking into consideration the Vision and recommendations of the Strategic Research Agenda developed within the Technology Platform SmartGrids, as well as the inputs of the existing Coordination Actions active in the area.

AREA ENERGY.7.1: DEVELOPMENT OF INTER-ACTIVE DISTRIBUTION ENERGY NETWORKS

To fully exploit the potential advantages of renewable energies, distributed generation and demand respond techniques it is necessary to re-think the basic philosophy governing the electricity distribution systems. Distributed generation sources should not only be connected, but must be fully integrated into the distribution system. At the same time, full use must be made of the customers' demand flexibilities, and appropriate economic signals, such as real time pricing, must be developed to exploit these flexibilities. The future active network will efficiently link small and medium scale power sources with consumer demands, allowing both to decide how best to operate in real time. The level of control required to achieve this is much higher than in the present distribution systems. Power flow assessment, voltage control, protection and intelligent metering solutions require cost-competitive technologies and new communication systems with more sensors and actuators than presently seen in the distribution systems.

Overall expected impact: To contribute to the penetration of renewable energies and distributed generation into the distribution grids, improving the security of supply of critical loads, increase the load factor of distribution feeders, and enable real-time electricity pricing for all network users.

Topic ENERGY.2008.7.1.1: Open-access Standard for Smart Multi-Metering Services

Content/scope: The large scale adoption of Smart Multi-Metering equipment, potentially covering electricity, gas and any other network service and commodity, is today hampered by the lack of widely accepted open-standards, capable to guarantee the interoperability of systems and devices produced by different manufacturers.

The main objective of this topic is to fill the knowledge gaps necessary to enable the relevant industries to agree on the required standards**.**

(Pre-normative) Research activities should cover formal definition of protocols, data formats and all the necessary modules of integrated open-access Integrated Automatic Meter Management Systems. Among the functions covered will be automatic meter reading, remote (re)connection, flexible tariff management, demand side management and demand response to market and network signals, and integration of Distributed Generation.

***Funding scheme*:** Collaborative Project.

Expected impact: Adoption of these standards will open up the market of smart multi-metering system, enabling active customer participation to energy markets, and at the same time allowing EU-industry to take world leadership.

***Other information*:** The typical consortium should be a well balanced partnership between network industries, equipment suppliers, research centres and regulatory and standardisation bodies. A maximum of one project will be funded under this topic.

Open in call: *FP7-ENERGY-2008-1*

AREA ENERGY.7.2: PAN-EUROPEAN ENERGY NETWORKS

The Energy Green Paper 2006 identifies the need to develop a flexible single European Grid as one of the most important priorities of the EU energy policy for the next few years. A single European Grid is needed to support the proper functioning of the Internal Electricity & Gas Market, to facilitate the large scale deployment of new generation technologies, like wind power and distributed generation, to increase security of supply, to avoid black-outs and to support mechanisms of solidarity between Member States.

Overall expected impact: The expected results of this area will be focused on the development of the technical and regulatory solutions necessary for the rapid establishment of a *de facto* single European Grid. This will require the development of technologies to increase the observability, controllability, stability and security of the overall system, to increase the current-carrying capacities of existing and new lines, and to strengthen the cooperation between network operators, both on research and operational issues.

Topic ENERGY.2008.7.2.1: Innovative operational and monitoring tools for large power systems

Content/scope: Development and validation of new of innovative operational and/or monitoring software tools and hardware equipment for large power systems.

***Funding scheme*:** Collaborative Project

Expected impact: The possible future interconnection between the Pan-European and Russian electricity transmission system would be greatly simplified if common/compatible software tools, hardware equipment and operational procedures are adopted by all Transmission System Operators involved. The joint development of these tools and equipments will promote their adoption.

Other information: The typical consortium should be a partnership between EU and Russian teams. In order to ensure a balance between EU and Russian participants a minimum number of two participants established in Russia is requested. This is an eligibility criterion. The funding of all participants will follow the rules established for the Energy EU-Russia Call. Participants being established in the EU or in an associated country may jointly receive up to EUR 2 million from the European Community and Russian partners may

jointly receive up to EUR 2 million from the Federal Agency for Science and Innovation. The project duration is normally 3 years.

Open in call: FP7-ENERGY-2008-RUSSIA

Topic ENERGY.2008.7.2.2: Innovative concepts and technologies for sustainable gas networks

Technical content/scope: Research should focus on the development of innovative concepts and technologies for reliable and flexible European gas networks, tackling for example the integration of renewable energy alternatives into the networks, novel solutions for monitoring, maintenance, and system issues.

***Funding scheme*:** Collaborative Project with a predominant R&D component

***Expected impact*:** The resulting technologies should open new pathways for sustainable gas networks, while addressing the pressing challenges of security of supply and climate change

Open in call: FP7-ENERGY-2008-1

Topic ENERGY.2008.7.2.3 Diagnostics, Surveillance, Maintenance and Control of Power Transmission and Grid Connections

Content/scope: Design, programming, testing and implementation of improved models and tools for electricity transmission network regarding their monitoring, maintenance and operation is intended. A more efficient interfacing of the physical network models with the market operation models should be developed and tested, integrating also capacity calculation, prediction and allocation in all relevant operations of power exchanges. Real-time tools for an efficient handling of intra-day and balancing markets should be elaborated and tested.

***Funding scheme*:** Collaborative Project with a predominant demonstration component.

Expected impact: Improved tools for TSOs for network modelling, capacity calculation and allocation and network monitoring and for application of corrective measures to be used in regional network management should be resulting from the project.

Other information: A strong involvement of European TSOs is essential for the success of the project. Furthermore, international cooperation is particularly encouraged, especially with EU neighbouring countries which are physically connected to the European grid. The project should contain a substantial demonstration part.

Open in call: FP7-ENERGY-2008-TREN-1

Topic ENERGY.2008.7.2.4 Assessment of needs for reliable and flexible future European gas networks

Content/scope: Starting with an overall assessment of needs and potentials in the EU for gas networks the project should identify needs and potentials for network simulation and planning tools, construction, diagnostics, monitoring, maintenance and controlling technologies. The project should tackle problems of gas quality, pipeline and gas up-grading (methanisation, purification, mixing), multiple flows, feed-in options, energy recovery, lowering gas and pressure losses, increasing the efficiency of the network through intelligent

capacity allocation, linking the gas network operation to gas trading and balancing, increasing safety and security on pan-European and national network levels.

***Funding scheme*:** Coordination and Support Action (coordination type)

Expected impact: The results should set up a roadmap for gas infrastructure and technology development in Europe until 2030 based also on current EU directives and the EU Strategic Energy Technology Plan , should give guidance to energy policy decision makers regarding different gas options (LNG, biogas, synthetic gas, CO2, Hydrogen etc.) , gas storage and trading facilities and should provide technical advice to gas network providers in terms of criteria, benchmarks, standards and tools for future gas projects on European and national levels.

Other information: A strong involvement of European TSOs is essential for the success of the project. Furthermore, international cooperation is particularly encouraged, especially with EU neighbouring countries which are physically connected to the European grid.

Open in call: FP7-ENERGY-2008-TREN-1

ACTIVITY ENERGY.8: ENERGY EFFICIENCY AND SAVINGS

The vast potential for final and primary energy consumption savings and improvements in energy efficiency[9] need to be harnessed through the research into optimisation, validation and demonstration of new concepts, optimisation of proved and new concepts and technologies for buildings, transport, services, and industry. This incorporates the combination of sustainable strategies and technologies for increased energy efficiency, the use of renewable energy and co- and poly-generation, the integration of demand management measures and devices at large scale in cities and communities, and the demonstration of minimum climate impact buildings (eco-buildings). These large-scale actions may be supported by innovative R&D addressing specific components or technologies, e.g. for poly-generation and eco-buildings (including lighting). A key aim is the optimisation of the local community energy system through innovation, balancing a significant reduction in energy demand with the most affordable and sustainable supply solution, including the use of new fuels in dedicated fleets[10].

Policy context: this research activity would facilitate the actual implementation of the Directive on the energy performance of buildings (2002/91/EC, O.J. L 1 of 4.1.2003), the Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market (2004/8/EC, L 52 of 21.2.2004), the Directive on eco-design requirements for end-use energy-using products (2005/32/EC, O.J. L 191 of 22.7.2005) and the Directive on energy end-use efficiency and energy savings (2006/32/EC, O.J. L 114 of 27.4.2006).

Next to the reimbursement of eligible costs the form of grant applied in area 8.4. "Concerto" is "flat rate financing in the form of scale of unit costs ". Flat-rate financing will apply to additional energy efficiency measures in buildings and additional installed capacity of renewable energy sources and/or polygeneration. The flat rates financing is determined on the basis of scale of unit costs as set out in the table below. The eligible cost per building and per renewable source used in the projects are fixed costs; The evaluation of proposals will consider the degree of excellence and innovation of the technology used and the best cost effectiveness (euros/efficiency gain; euros/CO2 reduction; euros/kWh of RES supplied). Not innovative buildings measures, not innovative integration of PV, not innovative integration of solar collectors or not innovative RES technology will not be eligible.

The amounts of scale of unit cost of Community financial contribution by type of expenditure[11]**:**

Eligible cost for buildings **[EUR/m² built or refurbished]**	100
For installed capacity of renewable energy sources and polygeneration systems (with the exception of photovoltaic systems and solar collectors) **[EUR/kW installed]**	1200

[9] As recognised by the Green Paper on Energy Efficiency or "Doing More for Less" - COM(2005) 265, 22.6.2005, as well as the 'Action Plan for energy efficiency: realising the potential' – COM(2006)545 of 19.10.2006.

[10] Building upon the experience of the CONCERTO and CIVITAS initiatives supported in the 6th Framework Programme.

[11] The flat rate for costs are calculated on the basis of those costs directly related to “additional energy efficiency measures” or "installation of renewable energy sources", both of them excluding profit. These rates were adopted for the 6th Framework Programme (Commission Decision DL(2006)3110 of 4/9/2006) and are applied without any changes in the 2008 call.

For photovoltaic systems **[EUR/kW installed]**	5500
For solar collectors **[EUR/m² installed]**	500
Calculation: S per m² = Energy saved (kwh/m²) * cost of the energy * 15 years (S being the eligible cost)	

The total of Community financial contribution based on scale of unit costs per proposal may not exceed EUR 6 millions for one demonstration site or community (CONCERTO). This will be assessed in the evaluation.

Energy savings should derive from interventions on all the building parts, where energy for heating, energy for domestic hot water and electricity can be saved.

"Additional energy efficiency measures" are defined as follows:

- For new buildings: measures which are implemented to make the building 30% more energy efficient than required under the applicable national legislation as anticipated for 2010.
- For refurbished buildings: measures which are implemented to make the building more energy efficient than required for new buildings according to the applicable national legislative standards anticipated for 2010.

Innovation has to be linked either to the individual technologies which are to be demonstrated in the projects or to the systems integration of the different technologies, components, measures, etc.

AREA ENERGY.8.1: EFFICIENT ENERGY USE IN THE MANUFACTURING INDUSTRY[12]

The manufacturing industry is consuming large quantities (percentage of primary energy) of energy - electricity, heat, cold, fuels - for the production of industrial and consumer goods; any increase in energy efficiency in the manufacturing processes would deliver significant benefits on security of energy supply as well as reduction of green house gases emissions while reducing the cost of the manufactured goods. This has been highlighted in all industrial technology platforms (Steel industry, Chemical industry and Forest products industry). Activities will focus on the demonstration of innovative production processes in the manufacturing industry with significant energy savings and improved environmental performance. Emphasis will be given on innovative recovery of waste heat in industrial processes and efficient management of industrial and community waste and residues while maximising the overall energy efficiency.

Topic ENERGY.2008.8.1.1: Energy efficiency of industrial heat exchangers and boilers

Content/scope: Long term generic research and technology development to increase significantly the efficiency of heat exchangers and boilers It would aim at developing new concepts for these key components in view of improving energy efficiency in a large number

[12] In this Area, the term 'manufacturing industry' is used in its broadest sense, including process industries.

of industrial sectors It could address various aspects such as materials, thermodynamics, fluid dynamics and engineering.

Funding scheme: Collaborative Project with predominant R&D component.

Expected impact: Significantly increase energy efficiency in a large number of industrial sectors.

Other information: In order to maximise industrial relevance and impact of the research effort SMEs are expected to be important contributors to such technology development. This will be reflected in the evaluation

Open in call: FP7-ENERGY-2008-1

AREA ENERGY.8.2: HIGH EFFICIENCY POLY-GENERATION

Polygeneration has the objective of providing more than two energy vectors - any combination of electricity, heat, cooling, and biofuels (solid, liquid or gaseous) - for energy applications as well as materials. The overall aim is to maximise the energy efficiency of any given process and to optimise the use of natural resources. Activities will focus on the demonstration of application driven innovative poly-generation technologies for the industrial and tertiary sector. The projects should demonstrate high technical reliability and economic viability improving the market strength of the European industry. Emphasis will be given to the innovative combination of technologies and processes in existing applications which can significantly improve the overall energy efficiency of the utility (during production, distribution and use) or an industry sector. The supported projects should have high visibility and provide solutions to existing problems (such as high volatile energy prices, lack of high quality grids etc.) limiting the performance of the European industry. Priority will be given to sustainable solutions.

Topic ENERGY.2008.8.2.1: High efficiency poly-generation - renewable energies for applications in industry

Content/scope: The objective is to demonstrate and validate poly-generation technologies using renewable energy resources for applications in an industrial environment. Emphasis should be on optimising the use of natural resources and to improve (maximise) the overall efficiency of industrial energy systems. Validation will cover also the economic viability aspects of the proposed technologies. Solid dissemination and exploitation plans are important, aiming at the dissemination and take-up of best practices in relevant targeted industrial sectors.

Funding scheme: Collaborative project with predominant demonstration component.

Expected impact: Best practice for innovative poly-generation using renewable energy sources for industrial applications, demonstrating improved energy and environmental performance and efficient use of natural resources is expected to raise awareness to improve the potential for investments of enterprises in such energy technologies.

Other information: SMEs are expected to be important contributors to such technology development. The participation of industrial and/or tertiary users in key roles is a requirement which will be considered in the evaluation.

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.8.3: LARGE-SCALE INTEGRATION OF RENEWABLE ENERGY SUPPLY AND ENERGY EFFICIENCY IN BUILDINGS: ECO-BUILDINGS

In this Area, no topics are open in calls published in this work programme

AREA ENERGY.8.4: INNOVATIVE INTEGRATION OF RENEWABLE ENERGY SUPPLY AND ENERGY EFFICIENCY IN LARGE COMMUNITIES: CONCERTO

CONCERTO is a European initiative to bring considerable amounts of renewables and energy efficiency into cities. CONCERTO supports very short term demonstration and validation of new and innovative approaches that create highly energy efficient and highly RES based "low carbon" communities. The energy efficiency measures have to demonstrate a drastic reduction in energy consumption of the whole community. A significant share of the remaining energy is supplied by renewable energy sources. An important and compulsory element is the optimisation of the overall community through an intelligent integration of innovative elements in order to minimise energy consumption and to optimise the energy management on a community wide level: innovative Community Energy Management Systems (CEMS) need to be developed and demonstrated.

All CONCERTO projects will demonstrate technological excellence, innovative integration of self-standing innovative solutions (beyond existing state-of-the-art at European level) and creative holistic approaches to optimise the energy management in cities aiming at reducing energy consumption and improving the environment and the citizens' daily life. Innovative financing mechanisms (based e.g. on energy services) should lead to improved cost-effectiveness. Innovative approaches to the socio-economic dimension, Research on social aspects (such as acceptability, comfort, health and quality of life) are also compulsory elements in order to guarantee that the citizen is in the core of the projects.

Networking between different CONCERTO projects and communities and dissemination and exploitation activities will ensure high European visibility. A reasonable share of the budget should be earmarked to this activity.

CONCERTO is a joint initiative covering and integrating activity energy 2. "Renewable electricity generation", activity energy 4. "Renewables for heating and cooling", and activity energy 8., "Energy efficiency and energy savings" (see topic description below).

Expected overall impact: The most ambitious cities should achieve reductions of CO2 of 70% and more for the whole community at realistic pay-back times and disseminate the results worldwide so that other ambitious cities and private investors can replicate these best practice examples.

Topic ENERGY 2008.8.4.1: CONCERTO communities: the way to the future

Content/Scope**:** The overall objective of CONCERTO projects is that communities demonstrate and validate advanced, innovative and sustainable energy solutions in which energy efficiency and renewable energy sources are integrated from an economic

perspective, which show the possible range of applications of renewables at community level, and which deliver high quality energy services and high value for the citizens.

To achieve this sustainable development, a general optimisation of the system should be done, not only in terms of energy issues but also in terms of urban planning, transportation and social issues. For example, the communities should include a convincing mobility plan into the proposals. This mobility plan will not be co-financed by CONCERTO, but it should ensure that the energy saved in buildings will not be compromised by an increased need for mobility or use of transport fuels.

Community wide advanced models and ICT based solutions shall also be used for the design, measurement (including remote metering), assessment and management of energy flows.

The ambitious and innovative systems configuration will allow for high performance with improved socio-economic implications, i.e. cost-optimisation through integrated solutions instead of parallel stand-alone solutions, and shorter pay-back periods through high savings on energy and social costs. In this respect, the projects will include an assessment of technological and energy performance, and an assessment of costs and benefits from a socio-economic point of view. The results should be attractive for future replication and market deployment. The Concerto Plus project and its follow-up initiative will provide support (input data, indicators) to this analysis as well as for innovative investment / contracting / financing schemes.

Detailed, high quality and convincing plans for dissemination (also in co-operation with horizontal actions related to the CONCERTO Plus initiative) and the exploitation of results for market deployment will be important elements in the evaluation of the proposals. With the aim to speed up the take-up in the market, this should include communicating the results of the projects and communities to local and regional authorities, the renewable energy and energy efficiency projects funded through the Structural Funds[13] and the relevant trans-national and cross-border networks[14]. This will be done in close cooperation with the CONCERTO Plus initiative and subsequent actions.

Such holistic approach requires that all relevant players at all levels – local and regional policy makers and authorities, energy service providers, real estate developers, investors, public service facilities, construction companies and planners, technology providers and economists – play together to achieve this goal of truely sustainable communities.

Requirements for innovative approaches in Concerto demonstration activities

Priority will be given to proposals which involve trans-national technological cooperation and demonstrate innovations leading to highly improved cost effectiveness, either via improvements to individual technologies and/or via innovative integrations of technologies and/or via measurement and management of energy flows in CONCERTO communities.

In order to substantially improve the overall performance of energy systems in new and / or existing communities, CONCERTO projects should involve technologies beyond existing

[13] see Managing Authorities: http://ec.europa.eu/regional_policy/manage/authority/authority_en.cfm

[14] see: http://www.interreg4c.net/index.html and http://urbact.eu/home.html

state-of-the-art and/or integrated demonstration actions, which aim to be economically attractive for future replication (not only tailor-made local solutions) .

The following three components are compulsory in a CONCERTO project:

1. ***Renewable energies***: The projects should demonstrate the achievement of a significant ***increase in the share of renewable energy*** sources specifically produced for and mainly consumed by the CONCERTO community (green electricity, heating / cooling). The size of each Renewable Energy demonstration plant (and energy storage system where appropriate) should be clearly specified, together with the cost per MW installed. The renewable energy produced should be managed in an optimised way to fit with the local energy demands. Where appropriate, ***energy storage*** may be included to cover the intermittence of Renewable Energy supplies.

2. ***Energy efficiency and savings***: ***Buildings*** in CONCERTO demonstration projects shall fulfil the following requirements:

– for new buildings: the energy consumption (per m2) should be at least 30% lower than the applicable legislation based on the Energy Performance of Buildings Directive (for 2010).

– For refurbished/retrofitted buildings: the energy consumption should achieve at least the limit values for new buildings according to the same legislation (for 2010). Demonstrations involving retrofitting are preferred to new buildings. The gross floor area of each type of building should be specified together with the predicted annual energy consumption per m2, (broken down by space heating, cooling, water heating, lighting, etc), and the energy consumption targets according to national regulations for new buildings based on the Energy Performance of Buildings Directive (for 2010). Details should also be provided of the energy efficiency measures to be employed

3. ***Intelligent integration:*** This includes the optimisation from a technological, energy, economic and socio-economic perspective, of the entire planning for the community, i.e. energy supply configuration, energy demand management, and the ***management, control and measurement*** of the energy flows.

Polygeneration *(optional for CONCERTO communities)* involves co-generation / tri-generation and/or district heating, preferably using renewable energy sources, which should demonstrate more competitive technological solutions or innovative combinations of existing technologies. Poly-generation demonstrations should address the interaction between suppliers of electricity, heat, cold, energy carriers or other useful products and the corresponding demands. They should lead to an overall improvement in energy efficiency, in cost-effectiveness, and in the quality and security of supply. The size of each element (electricity, heating, cooling, other) of the poly-generation demonstration plant should be clearly specified, together with the cost per MWe installed. The proposal should explain how the energy delivered by the poly-generation plant will be utilised by the CONCERTO community.

Requirements for research activities in a Concerto project:

Research actions should be directly linked to the objectives of the CONCERTO project concerned, typically addressing the management, measurement and analysis of the energy flows in the community. Where appropriate, research in a CONCERTO project may also

address specific issues related to the innovative technologies or integration schemes that are being demonstrated.

***Funding scheme*:** Collaborative projects with a predominant demonstration component

***Expected impact*:**

- To enable all relevant stakeholders to change their attitude and. approach to the planning and investments for energy solutions in communities in the urban environment.
- To encourage industry to reap the benefits of sustainable solutions by investing in economically viable technology and systems to act as driving force in the use, implementation and opening of the markets for new systems. Energy service companies (ESCOs) will demonstrate the economic viability of such large scale investment in energy efficiency and optimised share of renewable energy sources.
- To set new standards in energy efficiency and integration of renewables and to drive new standards and regulations on European, national and local level.

***Other information*:**

Definition of communities and composition of CONCERTO project consortia :

For the CONCERTO initiative, "communities" are defined as cities/towns or clearly defined areas in cities/towns, within which all relevant energy flows (including centralised and decentralised) can be identified for measurement and research / assessment purposes.

CONCERTO proposals should provide evidence of a strong commitment from the relevant authorities, local market actors and decision makers. Typical CONCERTO project consortia will also include utilities, energy technology providers, energy service providers, energy agencies, energy research and analysis teams, socio-economists and energy users. Energy service companies should be set up or be deeply implicated. The involvement of SMEs in CONCERTO projects is important, whether they participate as partners or as sub-contractors, and their roles should be clearly explained. CONCERTO project consortia are also expected to include and give a clear role to associated communities, which are committed to participate in the evaluation in view of the potential transfer and take-up of the identified "best practices" in their communities.

CONCERTO proposals should demonstrate substantial European added value from the cooperation between partners from different countries. If more than one community participates in a proposal, special emphasis should be put on the exchange of experience, and cross-site evaluation. Proposals from communities in countries or regions, where renewable energy and energy efficiency policies and commitments need to be strengthened, are particularly welcome and will be considered in the evaluation with regard to the expected impact of the proposal.

Expected results:

Projects are expected to produce well monitored field experience of energy flows (supply and demand patterns), in local communities having a high percentage of renewable energy supply, together with detailed information on the performance and reliability of the innovative energy supply and end use technologies involved.

A socio-economic research component should analyse the local trends in energy costs, prices and savings, as well as the social impacts, quality and added values of the energy services provided. The projects are also expected to include analyses of technical and market risks, cost reduction potentials and future market potentials.

The results from such projects will demonstrate the high potential for improving the sustainability of energy systems in cost effective ways in local communities. They should also result in new "good practices", which can be used in the future as examples to raise the confidence of potential decision-makers, investors and final users.

In addition, the technical and socio-economic analyses from such projects will provide input to support the future development and implementation of energy policy measures, including:

• developing new regulations (e.g. for distributed electricity generation, energy efficiency),

• improving the local security of energy supplies,

• the further development of support schemes for Renewable Energy and Energy Efficiency, technologies (e.g. feed in laws, green certificate schemes, energy taxation),

• and for planning guidance

• and assessment of the potential for cost reductions for energy and technologies.

All selected projects will be cooperating in CONCERTO PLUS, an umbrella project that fosters the synergy between all CONCERTO communities. The selected projects will also participate in cross-site evaluations (with co-ordination of the impact evaluation) and dissemination activities at the level of the CONCERTO initiative envisaged in a future call.

Proposals should include a description of the activities for the full duration of the projects,

Additional information on how to prepare proposals for CONCERTO projects is available in the form of a "Guidance Note for CONCERTO Proposers" on the web site:

http://ec.europa.eu/dgs/energy_transport/rtd/7/index_en.htm

Open in call: FP7-ENERGY-2008-TREN-1

AREA ENERGY.8.5: INNOVATIVE STRATEGIES FOR CLEAN URBAN TRANSPORT: CIVITAS-PLUS

(To be also covered by: Transport Work Programme SST.2008.3.4)

In this Area, no topics are open in calls published in this work programme

AREA ENERGY.8.6: SOCIO-ECONOMIC RESEARCH AND INNOVATION

In this Area, no topics are open in calls published in this work programme.

AREA ENERGY.8.7: THEMATIC PROMOTION AND DISSEMINATION

In this Area, no topics are open in calls published in this work programme

ACTIVITY ENERGY.9: KNOWLEDGE FOR ENERGY POLICY MAKING

Development of tools, methods and models to assess the main economic and social issues related to energy technologies. Activities will include the building of databases and scenarios for an enlarged EU and the assessment of the impact of energy and energy-related policies on security of supply, environment, society, competitiveness of the energy industry and issues of public acceptability. Of particular importance is the impact of technological progress on Community policies. Activities will include scientific support for policy development.

AREA ENERGY.9.1: KNOWLEDGE TOOLS FOR ENERGY-RELATED POLICY MAKING

In this Area, no topics are open in calls published in this work programme

AREA ENERGY.9.2: SCIENTIFIC SUPPORT TO POLICY

In this Area, no topics are open in calls published in this work programme.

ACTIVITY ENERGY.10: HORIZONTAL PROGRAMME ACTIONS

The topics described in the section have a horizontal character not linked specifically to any particular technology. The challenge for policy-makers in the field of research, technology and innovation, particularly in the Energy context, is the timely identification of new directions that have a high potential for significant breakthrough and may become tomorrow's energy robust technologies.

In order to foster highly creative research groups in the European Research Area, enabling them to pursue promising research avenues as these arise bottom-up, a substantial part of the budget will be devoted to this **two-stages-open-call**, addressing the widest possible spectrum of research topics that closely relate to Energy science and technologies. As such, this activity takes as foundations the FP6 NEST-ADVENTURE activities, as their natural inspiration for this new programme tool.

The research supported with an orientation towards the long term is "purpose driven" and not "blue-sky". The project objectives need to be tangible, highly ambitious and challenging. This means either reaching a clearly defined scientific goal and/or creating a new basic technology, which in either case has the potential to open up new fields of enquire and lies well beyond the international state of the art.

Being EC-funded research under the Cooperation programme, projects will involve multinational partnership, often from different scientific disciplines and/or different technological sectors, in order to work across traditional boundaries. But there should be no "superfluous" partners who will hinder effective management and research flexibility.

On the other hand, the following types of research will not be considered for funding:

- any research that does not involve significant and clearly identifiable novel aspects;
- any research that constitutes a technology demonstration or a combination of existing technologies;
- any open-ended blue-sky research - "increased understanding" alone would not be considered sufficiently tangible;
- any research directed towards hypothetical phenomena, with no plausible or convincing evidence as to their real or potential existence, or research that is inconsistent with the most basic laws of science.

Topic ENERGY.2008.10.1.1: Future Emerging Technologies (FET)

Technical content/scope: The development of energy technologies is often impeded by bottlenecks which require the development and application of basic science and cross-cutting technologies. This topic aims at ensuring a genuine chance for "emerging ideas" to be funded based on the strategic need to utilise the creative spirit in European research. It covers all the areas of the Theme and is to provide rewards for "high risk / high impact" science and to vigorously promote multi-disciplinarity on a European collaborative basis.

Funding scheme: Collaborative projects.

Special features: In order to maximise industrial relevance and impact of the research effort, the active participation of High technology SMEs represents an added value to this topic. This will be reflected in the evaluation.

Expected impact: To explore new paths leading to highly innovative novel technologies for energy applications and, to contribute to the establishment of a strong scientific and technical base for European science and technology in energy emerging areas.

Open in call: FP7-ENERGY-2008-FET

Topic ENERGY.2008.10.1.2: Novel materials for energy applications (Joint Call NMP)

Technical content/scope: In most cases, real breakthroughs in the energy sector can only come from progress in basic materials science that underpins energy technologies. Research should focus on a wide spectrum of novel materials and nanomaterials for energy applications with an orientation towards long-term innovation. The research activities supported should go beyond conventional approaches, and be highly novel, very ambitious and of long term nature. The expected impact of these projects will be judged in the first instance on the radical upgrade in the properties of the materials, but this improved performance must be in areas where energy technology benefits are to be expected and, in this context, multidisciplinary approaches are of particular interest. Projects should contribute to the establishment of strong strategic positions for Europe in emerging materials science areas of technological relevance. Important fields of application for energy technology are energy conversion and storage, photon capture and CO_2 capture and storage

Funding scheme: Collaborative projects.

Special features: Joint Call with Theme 4 – topic NMP-2008-2.6-1, under activity 4.2.6. This joint call is particularly well suited for cooperation with top class research groups from Third Countries in particular Emerging Economies and Industrialised Countries which can help ensure a wider impact. It is also encouraged to include in the projects activities related to benchmarking and validation (testing) of the new materials, which would have a positive effect on the industrial impact. Projects under this call shall have a maximum requested EC contribution of EUR 3 Million. This is an eligibility criterion.

Expected impact: Exploration of radically new paths leading to highly innovative, high risk, long term research in the field of materials for energy applications and contribution to the establishment of strong strategic positions for European science and technology in emerging areas. The potential impact on the energy system has to be clearly demonstrated.

Open in call: FP7-ENERGY-NMP-2008-1

Topic ENERGY.2008.10.1.3: Trans-national co-operation among NCPs

Content/scope: Reinforcing the network of National Contact Points (NCP) for the Seventh Framework Programme under the Energy Theme, by promoting trans-national cooperation. The action will focus on identifying and sharing good practices. This may entail various mechanisms such as benchmarking, joint workshops, training, and twinning schemes. Practical initiatives to benefit cross-border audiences may also be included, such as trans-national brokerage events. The specific approach should be adapted to the nature of the theme and to the capacities and priorities of the NCPs concerned. Special attention will be given to helping less experienced NCPs rapidly acquire the know-how accumulated in other countries.

Funding scheme: Coordination and Support Action (coordination action)

Expected impact: An improved NCP service across Europe, therefore helping simplify access to FP7 calls, lowering the entry barriers for newcomers, and raising the average quality of submitted proposals. A more consistent level of NCP support services across Europe. More effective participation of organisation from third countries, alongside European organisations, in line with the principle of mutual benefit.

Other information: The Commission will finance a single proposal under this heading for a duration of 12 months. Proposals should include NCPs who have been officially appointed by the relevant national authorities. This is an eligibility criterion. Other participants from the EU and associated countries are ineligible. If certain NCPs wish to abstain from participating, this fact should be explicitly documented in the proposal. Third countries may be included, where there is mutual benefit.

Open in call: FP7-ENERGY-2008-1

Topic ENERGY.2008.10.1.4: Support to the French Presidency Conference on the European Strategic Energy Technology Plan (SET-Plan).

The French Presidency is organising a conference 'European Strategic Energy Technology Plan'. The conference will take place in France in October 2008 and will allow the participation of about 250 – 350 people. The objective of the conference will be to give momentum to the implementation of the SET-Plan, which was adopted by the Commission on 22 November 2007. In particular, the conference will seek to drive forward the process of setting up a European Energy Research Alliance and generate impetus for the proposed European Industrial Initiatives.

The named beneficiary for the grant is:

Commissariat à l'Energie Atomique (CEA)

Bâtiment le Ponant,

rue Leblanc, 25

75015 Paris

France

The EC contribution will not represent more that 50% of the total cost of the conference and is limited to a maximum of EUR 150 000.

The EC contribution will be implemented as a grant through a support action, funding scheme: *Coordination and support action (support type)*, to a named beneficiary. It will be evaluated in accordance with the standard FP7 evaluation criteria (including weight and thresholds) and sub-criteria, together with an eligibility, selection and award criteria for the funding scheme as set out in Annex 2 of this work programme.

Budget Overview

Budget for the calls closed in 2007 for the Energy Theme for the 2007 Work Programme

Call/activity	RTD Total million EUR	RTD 2007 million EUR	RTD 2008 million EUR	TREN 2007 million EUR
FP7-ENERGY-2007-1-RTD	144.3	109.3	35	
FP7-ENERGY-2007-1-TREN				128
FP7-ERANET-2007-RTD (see Annex 4)	7.5		7.5	
General Activities (see Annex 4)	9.2	9.2		7.36
Other Activities	4.3	4.3		0.56
Evaluation costs	1.0	1.0		1.2
Estimated total budget allocation	166.3	123.8	42.5	137.1

Indicative budget for the Energy Theme for the 2008 Work Programme

Call/ activity	RTD 2008 Million EUR	TREN 2008 Million EUR
FP7-ENERGY-2008-1[15]	26.3	
FP7-ENERGY-2008-TREN-1		**147***
FP7-ENERGY-2008-RUSSIA	4	
FP7-ENERGY-2008-FET	15	
FP7-ENERGY-NMP-2008-1	15	
General Activities (see Annex 4)	2.015	2.1
Other Activities[16]	2.95	3.15
Grant to a Named Recipient	0.15	
Evaluation costs	0.89	1.5
Estimated total budget allocation	**66.305***	**153.75***

* This budget might be increased in the case where 'recettes de tiers' become available

Summary of budget allocation to general activities for 2008 (cf. Annex 4):

	DG RTD EUR	**DG TREN EUR**
Cordis	250 456	262 022
Eureka/Research Organisations	10 734	11 230
COST	1 073 385	1 122 951
ERA-NET (horizontal)	679 810	711 202
RSFF	-	-
Total	2 014 385	2 107 405

[15] Any savings from previous activities launched under the previous RTD calls in the Energy work programme would be assigned to call FP7-2008-1.

[16] As set out in Sections 5.1.3 (b) and (c) of the Work Programme and covering also the monitoring of ongoing FP projects.

5.3. IMPLEMENTATION OF CALLS

Call title: Energy Call Part 1

Call identifier: FP7-ENERGY-2008-1

Date of publication: 30 November 2007

Deadline: 26 February 2008 at 17.00.00, (Brussels local time)

Indicative budget [17]*: EUR 26.3* million from the 2008 budget[18]

The final budget awarded to this call, following the evaluation of projects, may vary by up to 10% of the total value of the call.

All budgetary figures given in this call are indicative. The repartition of the sub-budgets awarded within this call, following the evaluation of projects, may vary by up to 10% of the total value of the call.

Funding Distribution	
Collaborative project for specific international cooperation actions (SICA)	EUR 13 million
Trans National Cooperation among NCPs	EUR 0.3 million
Others	EUR 13 million

Topics called:

Activity/ Area	Topics called	Funding Schemes
ACTIVITY ENERGY.2: RENEWABLE ELECTRICITY GENERATION		
AREA ENERGY.2.1: PHOTOVOLTAICS	ENERGY.2008.2.1.1: Enhancing strategic international cooperation initiatives in the field of concentration photovoltaics	Collaborative project for specific international cooperation actions (SICA)
AREA ENERGY.2.7: HYDRO	ENERGY.2008.2.7.1: Pre-normative research for hydropower	Collaborative Project
ACTIVITY ENERGY.3: RENEWABLE FUEL PRODUCTION		
AREA ENERGY.3.2: SECOND GENERATION FUEL FROM BIOMASS	ENERGY.2008.3.2.1: Enhancing international cooperation between the EU and Latin America in the field of biofuels	Collaborative project for specific international cooperation actions (SICA)
ACTIVITY ENERGY.5: CO2 CAPTURE AND STORAGE TECHNOLOGIES FOR ZERO EMISSION POWER GENERATION		
AREA ENERGY.5.2:	ENERGY.2008.5.2.1: CO2 Capture and	Collaborative project for

[17] A reserve list will be constituted if there is a sufficient number of good quality proposals. It will be used if extra budget becomes available.

[18] Any savings from previous activities launched under the previous RTD calls in the Energy work programme would be assigned to call FP7-2008-1.

CO_2 STORAGE	Storage – Capacity building with the large emerging economies	specific international cooperation actions (SICA)
	ENERGY.2008.5.2.2 : CO2 transport and storage infrastructure development	Collaborative Project
	ENERGY.2008.5.2.3 : CO2 capture and storage – public acceptance	Coordination and support action (support type)
	ENERGY.2008.5.2.4: Development of a suitable methodology for the qualification of deep saline aquifers for CO2 storage	Collaborative project with a predominant research component
ACTIVITY ENERGY.7: SMART ENERGY NETWORKS		
AREA ENERGY.7.1: DEVELOPMENT OF INTER-ACTIVE DISTRIBUTION ENERGY NETWORKS	ENERGY.2008.7.1.1: Open-access Standard for Smart Multi-Metering Services	Collaborative Project
AREA ENERGY.7.2: PAN-EUROPEAN ENERGY NETWORKS	ENERGY.2008.7.2.2: Innovative concepts and technologies for sustainable gas networks	Collaborative Project
ACTIVITY ENERGY 8: ENERGY EFFICIENCY AND SAVINGS		
AREA ENERGY 8.1 EFFICIENT ENERGY USE IN THE MANUFACTURING INDUSTRY	ENERGY.2008.8.1.1: Energy efficiency of industrial heat exchangers and boilers	Collaborative Project
ACTIVITY ENERGY.10: HORIZONTAL PROGRAMME ACTIONS		
	ENERGY.2008.10.1.3: Trans-national co-operation among NCPs	Coordination and support action (coordination type)

Evaluation procedure:

The evaluation shall follow a two stages procedure.

The first stage proposal, of a maximum of 10 A4 pages (font size 12.2 cm margins) should focus on the S&T content and on clear identification of the intended results, their intended use and the expected impact (economic, social, environmental, etc.) and 2 additional pages to describe the consortium and the estimated financial resources involved. This is an eligibility criterion. Longer proposals will not be evaluated

It should focus on the S&T content and on clear identification of the intended results, their intended use and the expected impact (economic, social, environmental, etc.) and 2 additional pages to describe the consortium and the estimated financial resources involved.

First stage proposals will be evaluated on the basis of their *scientific quality*. They will be evaluated remotely with the consensus session being held in Brussels. Stage 1 proposals shall be submitted at the closure date mentioned above.

Coordinators of retained proposals in stage 1 ("go" proposals) will be invited to submit a complete proposal that will be then evaluated against the entire set of evaluation criteria. The closure date of the second submission will be specified in the invitation to submit the complete proposal. The indicative closure date is 29.05.2008.

- The evaluation criteria and subcriteria, together with the eligibility, selection and award criteria, for the different funding schemes are set out in Annex 2 to this work programme
- Proposals will not be evaluated anonymously.
- For Collaborative Projects (large-scale integrating projects), coordinators of proposals that pass the evaluation thresholds may be invited to a hearing.
- At the Panel stage, proposals with equal overall scores will be prioritised according to their scores for the Quality criterion. If they are still tied, they will be prioritised according to their scores for the Impact criterion, and then by their scores for the Implementation criterion. If any proposals are still tied, then overall Work Programme coverage will be used to decide the priority order.

Indicative evaluation and contractual timetable:

Evaluation Stage 1 proposals: March/April 2008

Evaluation stage 2 proposals: June 2008. Evaluation results: estimated to be available within two months after the closure date. A reserve list of projects might be established.

Consortia agreements: Participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement

Particular requirements for participation, evaluation and implementation:

For this call, implemented via a two stage procedure, the following criteria and thresholds are applied:

Evaluation criteria and thresholds for stage 1 proposals:

Stage 1 proposals are evaluated on the basis of **S/T quality.** A mark from 0 to 5 will be given, with the possibility of half-point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	**4/5**

Evaluation criteria and thresholds for stage 2 proposals:

Stage 2 proposals are evaluated on the basis of the following three criteria: **1. S/T quality; 2. Implementation; 3. Impact.** For each criterion marks from 0 to 5 will be given, with the

possibility of half-point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	**4/5**
Implementation	**3/5**
Impact	**3,5/5**
Overall threshold required	**12/15**

Forms of grant and maximum reimbursement rates for projects funded through the Cooperation work programme are given in Annex 3

The minimum number of participating legal entities required, for all funding schemes, is set out in the Rules for Participation. They are summarised in the table below[19]:

Funding scheme	**Minimum conditions**
Collaborative project	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Collaborative project for specific international cooperation actions (SICA)	At least 4 independent legal entities. Of these, 2 must be established in different MS or AC. The other two must be established in different international cooperation partner countries.
Coordination and support action (coordination type)	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and support action (support type)	At least 1 independent legal entity.

The following points will reflected in the evaluation

ENERGY.2008.2.7.1 Pre-normative research for hydropower: In order to maximise industrial relevance and impact of the research effort, the active participation of SMEs represents an added value to this topic.

ENERGY.2008.8.1.2 Energy efficiency in industry: In order to maximise industrial relevance and impact of the research effort SMEs are expected to be important contributors.

[19] MS = Member States of the EU; AC = Associated country. Where the minimum conditions for an indirect action are satisfied by a number of legal entities, which together form one legal entity, the latter may be the sole participant, provided that it is established in a Member State or Associated country.

Topic ENERGY.2008.10.1.3: Trans-national co-operation among NCPs Proposals should include the NCPs who have been officially appointed by the relevant national authorities. This is an eligibility criterion

Call title: Energy Call Part 2

Call identifier: FP7-ENERGY-2008-TREN-1

Date of publication: 29 April 2008 [20]

Deadline: 8 October 2008 at 17.00, Brussels local time[21]

Indicative budget: EUR 147 million from the 2008 budget

The budget for this call is indicative. The final budget awarded to this call, following the evaluation of projects, may however vary by up to 10% of the total value of the call. All budgetary figures given in this call are also indicative. The repartition of the sub-budgets awarded within this call, following the evaluation of projects, may vary by up to 10% of the total value of the call.

Activity	Funding Schemes	Indicative Amount (EUR million)
ACTIVITY ENERGY.2: RENEWABLE ELECTRICITY GENERATION	Collaborative projects	EUR 42 million
ACTIVITY ENERGY.3: RENEWABLE FUEL PRODUCTION	Collaborative projects	EUR 35 million
ACTIVITY ENERGY.6: CLEAN COAL TECHNOLOGIES AND ACTIVITY ENERGY.5&6 CROSS-CUTTING ACTIONS	Collaborative projects	EUR 20 million
ACTIVITY ENERGY.7: SMART ENERGY NETWORKS	Collaborative projects and Coordination and Support Actions	EUR 5 million
ACTIVITY ENERGY.8: ENERGY EFFICIENCY AND SAVINGS - AREA ENERGY.8.2: HIGH EFFICIENCY POLY-GENERATION	Collaborative projects	EUR 5 million
ACTIVITY ENERGY.8: ENERGY EFFICIENCY AND SAVINGS – AREA ENERGY 8.4	Collaborative projects	EUR 40 million

[20] The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

[2122] MS = Member States of the EU; AC = Associated country. Where the minimum conditions for an indirect action are satisfied by a number of legal entities, which together form one legal entity, the latter may be the sole participant, provided that it is established in a Member State or Associated country.

Topics called:

Activity/ Area	Topics called	Funding Schemes
ACTIVITY ENERGY.2: RENEWABLE ELECTRICITY GENERATION		
AREA ENERGY.2.1: PHOTOVOLTAICS	**ENERGY.2008.2.1.3 : Multiple benefits of PV systems**	**Collaborative project**
AREA ENERGY.2.2: BIOMASS	**ENERGY.2008.2.2.2: High-efficiency medium-to-large scale electricity generation from biomass and waste**	**Collaborative project**
AREA ENERGY.2.3: WIND	**ENERGY.2008.2.3.1: Demonstration of large scale systems for on- and off-shore wind farms including their cost effective grid integration**	**Collaborative project**
AREA ENERGY.2.4: GEOTHERMAL	**ENERGY.2008.2.4.1: Increased electricity production from Enhanced Geothermal Systems and from low enthalpy geothermal sources**	**Collaborative project**
AREA ENERGY.2.5: CONCENTRATED SOLAR POWER	**ENERGY.2008.2.5.1.: Improve the environmental profile of the CSP installations**	**Collaborative project**
AREA ENERGY.2.6.: OCEAN	**ENERGY.2008.2.6.1. Ocean: demonstration of innovative full size systems**	**Collaborative project**
AREA ENERGY.2.9.: CROSS-CUTTING ISSUES	**ENERGY.2008.2.9.1. Storage for intermittent electricity**	**Collaborative project**

ACTIVITY ENERGY.3: RENEWABLE FUEL PRODUCTION		
AREA ENERGY.3.1: FIRST GENERATION BIOFUEL FROM BIOMASS	**ENERGY.2008.3.1.1: Biofuels from high moisture content biomass – Biomethane production**	**Collaborative project**

AREA ENERGY.3.2: SECOND GENERATION BIOFUELS FROM BIOMASS	**ENERGY.2008.3.2.2.: Bioethanol production from lignocellulosics**	**Collaborative project**

ACTIVITY ENERGY.6: CLEAN COAL TECHNOLOGIES AND ACTIVITY ENERGY.5&6 CROSS-CUTTING ACTIONS		
AREA ENERGY.6.1: CONVERSION TECHNOLOGIES FOR ZERO EMISSION POWER GENERATION	**ENERGY.2008.6.1.1. : Advanced Fluidized Bed Combustion technology**	**Collaborative project**
	ENERGY.2008.6.1.3.: Efficiency Improvement of Oxygen-based combustion	**Collaborative project**
	ENERGY.2008.6.1.4.: Advanced gas turbines for solid fuel gasification processes	**Collaborative project**
AREA ENERGY.5&6.1: **POWER GENENRATION TECHNOLOGIES FOR INTEGRATED ZERO EMISSION SOLUTIONS**	**ENERGY.2008.5&6.1.1. : Feasibility and engineering study for development of an integrated solution for a large scale zero emission fossil fuel power plant**	**Collaborative project**
AREA ENERGY.5&6.2: CROSS CUTTING AND REGULATORY ISSUES	**Energy.2008.5&6.2.1.: Extending the value chain for GHG emissions other than CO2**	**Collaborative project**

ACTIVITY ENERGY.7: SMART ENERGY NETWORKS		
AREA ENERGY.7.2: PAN-EUROPEAN ENERGY NETWORKS	**ENERGY.2008.7.2.3.: Diagnostics, Surveillance, Maintenance and Control of Power Transmission and Grid Connections**	**Collaborative project**
	ENERGY.2008.7.2.4.: Assessment of needs for reliable and flexible future European gas networks	**Coordination and Support Action (co-ordination type)**

ACTIVITY ENERGY.8: ENERGY EFFICIENCY AND SAVINGS		
AREA ENERGY.8.2: HIGH EFFICIENCY POLY-GENERATION	**ENERGY.2008.8.2.1.: High efficiency poly-generation - renewable energies for applications in industry**	**Collaborative project**
AREA ENERGY.8.4:	**ENERGY.2008.8.4.1.: CONCERTO communities: the way to the future**	**Collaborative project**

Evaluation procedure:

- The evaluation shall follow a single stage procedure.
- The evaluation criteria (including weights and thresholds) and subcriteria, together with the eligibility, selection and award criteria, for the different funding schemes are set out in Annex 2 to this work programme.
- Proposals will not be evaluated anonymously.
- Ranked lists of proposals will be established for each activity as well as for the CONCERTO related topic in area 8.4. At the Panel stage, proposals with equal overall scores will be prioritised according to their scores for the Quality criterion. If they are still tied, they will be prioritised according to their scores for the Impact criterion, and then by their scores for the Implementation criterion. If any proposals are still tied, then overall Work Programme coverage will be used to decide the priority order. A reserve list will be constituted if there is a sufficient number of good quality proposals. It will be used if extra budget becomes available.

Indicative evaluation and contractual timetable:

Evaluations are expected to be carried out in November 2008. It is expected that the contract negotiations for the short-listed proposals will start in January 2009 at the earliest.

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Consortium agreements:
Participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.

Particular requirements for participation, evaluation and implementation:
The minimum number of participating legal entities required, for all funding schemes, is set out in the Rules for Participation. They are summarised in the table below[22]:

Funding scheme	**Minimum conditions**
Collaborative project	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and support action (coordination type))	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and support action (support type)	At least 1 independent legal entity.

- Where required in the topic description, "predominant" demonstration component requires that the elements described in section 5.2 are taken into account.
- Where indicated in the topic description that the participation of SMEs represents an added value or they are particularly welcome the SMEs participation will be considered in the evaluation.
- The evaluation of proposals related to area 8.4 will take into account that the total of Community financial contribution based on scale of unit costs per proposal may not exceed EUR 6 millions for one demonstration site or community (CONCERTO). The evaluation will consider the degree of excellence and innovation of the technology used and the best cost effectiveness (euros/efficiency gain; euros/CO2 reduction; euros/kWh of RES supplied). Not innovative buildings measures, not innovative integration of PV, not innovative integration of solar collectors or not innovative RES technology will not be eligible.

Forms of grant:
The forms of grant and maximum reimbursement rates which will be offered are specified in Annex 3 to the Cooperation work programme. The specific application of flat rates is described in Area 8.4.

Call title: Energy EU Russia Call

Call identifier: FP7-ENERGY-2008-RUSSIA

Date of publication: 30. November 2007

Deadline: 26 February.2008 at 17.00.00 (Brussels local time)

Indicative budget [23]*: EUR 4* million from the 2008 budget

For information, the Federal Agency for Science and Innovation has agreed to dedicate to this call a similar budget of 4 EUR million for the funding of the Russian participants.

The final budget awarded to this call, following the evaluation of projects, may vary by up to 10% of the total value of the call.

Topics called:

Activity/ Area	Topics called	Funding Schemes
ACTIVITY ENERGY.2: RENEWABLE ELECTRICITY GENERATION		
AREA ENERGY.2.2: BIOMASS	ENERGY.2008.2.2.1:Enhancing strategic international cooperation with Russia in the field of power generation from biomass	Collaborative Project
ACTIVITY ENERGY.7: SMART ENERGY NETWORKS		
AREA ENERGY.7.2: PAN-EUROPEAN ENERGY NETWORKS	ENERGY.2008.7.2.1: Innovative operational and monitoring tools for large power systems	Collaborative Project

The Russian participants in each project have to submit their corresponding Russian proposal (in Russian) to the Russian call to be launched by the Federal Agency for Science and Innovation[24]for to the part of the project they are going to carry out..

The Russian call will have a submission deadline later than the FP7 Energy EU-Russia call. The Russian participants are advised to submit the corresponding Russian proposals at the same time, or as soon as possible after, the overall proposal has been submitted by the EU coordinator to the EC.

Particular requirements for participation, evaluation and implementation:

- The minimum number of participating legal entities required for this call is summarised in the table below[25]:

[23] A reserve list will be constituted if there is a sufficient number of good quality proposals. It will be used if extra budget becomes available.

[24] The Russian call is expected to be launched in January – February 2008 (www.fasi.gov.ru).

Funding scheme	Minimum conditions
Collaborative project	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC. At least two participants established in Russia

Collaborative Projects under this call shall have a maximum requested EC contribution of EUR 2 million. This is an eligibility criterion – proposals above this limit will not be evaluated.

The Russian participants will be funded by the Russian Funding Agency. The EC may contribute to the funding of the total eligible costs of Russian participants not covered by the Russian Funding Agency that can represent a maximum of 5% of the total eligible costs.

For other participants, forms of grant and maximum reimbursement rates for projects funded through the Cooperation work programme are given in Annex 3.

Evaluation procedure:

- The evaluation shall follow a single stage procedure.
- The evaluation criteria (including weights and thresholds) and subcriteria, together with the eligibility, selection and award criteria, for the different funding schemes are set out in Annex 2 to this work programme.
- Proposals will not be evaluated anonymously.
- At the Panel stage, proposals with equal overall scores will be prioritised according to their scores for the Quality criterion. If they are still tied, they will be prioritised according to their scores for the Impact criterion, and then by their scores for the Implementation criterion.
- In addition, the corresponding Russian proposals will be evaluated by the Russian Federal Agency for Science and Innovation according to its procedures.

Additional Selection Criterion:

- Only proposals which have passed the EC evaluation and have been selected for funding by the Russian Federal Agency for Science and Innovation may be funded.

Indicative evaluation and contractual timetable:

Evaluations are expected to be carried out in March / April 2008. It is expected that the contract negotiations for the short-listed proposals will open by May 2008.

Consortium agreements:

Participants in Collaborative Projects are required to conclude a consortium agreement.

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[25] MS = Member States of the EU; AC = Associated country. Where the minimum conditions for an indirect action are satisfied by a number of legal entities, which together form one legal entity, the latter may be the sole participant, provided that it is established in a Member State or Associated country.

Call title: Energy FET Call

Call identifier: FP7-ENERGY-2008-FET

Date of publication: 30 November 2007

Deadline: 26 February 2008 at 17.00.00, Brussels local time

Indicative budget [26]***:*** *EUR 15* million from the 2008 budget

The final budget awarded to this call, following the evaluation of projects, may vary by up to 10% of the total value of the call.

Topics called:

Activity/ Area	Topics called	Funding Schemes
ACTIVITY ENERGY.10: HORIZONTAL PROGRAMME ACTIONS		
	ENERGY.2008.10.1.1: Future Emerging Technologies (FET)	Collaborative Project

Evaluation procedure:

The evaluation shall follow a two stages procedure. The first stage proposal, of a maximum of 10 A4 pages (font size 12, 2 cm margins) should focus on the S&T content and on clear identification of the intended results, their intended use and the expected impact (economic, social, environmental, etc.) and 2 additional pages to describe the consortium and the estimated financial resources involved. This is an eligibility criterion – proposals above this limit will not be evaluated.

First stage proposals will be evaluated on the basis of their *scientific quality*. They will be evaluated remotely with the consensus session being held in Brussels. Stage 1 proposals shall be submitted at the closure date mentioned above.

Coordinators of retained proposals in stage 1 ("go" proposals) will be invited to submit a complete proposal that will be then evaluated against the entire set of evaluation criteria. The closure date of the second submission will be specified in the invitation to submit the complete proposal. The indicative closure date is 29.05.2008.

- The evaluation criteria and subcriteria, together with the eligibility, selection and award criteria, for the different funding schemes are set out in Annex 2 to this work programme
- Proposals will not be evaluated anonymously.
- At the Panel stage, proposals with equal overall scores will be prioritised according to their scores for the Quality criterion. If they are still tied, they will be prioritised according to their scores for the Impact criterion, and then by their scores for the Implementation criterion. If any proposals are still tied, then overall Work Programme coverage will be used to decide the priority order.

Indicative evaluation and contractual timetable:

Evaluation Stage 1 proposals: March/April 2008

[26] A reserve list will be constituted if there is a sufficient number of good quality proposals. It will be used if extra budget becomes available.

Evaluation stage 2 proposals: June 2008. Evaluation results: estimated to be available within two months after the closure date. A reserve list of projects might be established.

Consortia agreements: Participants are strongly encouraged to conclude a consortium agreement.

Particular requirements for participation, evaluation and implementation:

For this call, implemented via a two stage procedure, the following criteria and thresholds are applied:

Evaluation criteria and thresholds for stage 1 proposals:

Stage 1 proposals are evaluated on the basis of their **S/T quality**

A list of proposals for 250% of the available budget will be invited to proceed to stage 2. If there is a tie between the proposals with the lowest mark to enter the list of proposals to proceed to stage 2, all those proposals with the same mark will be added to the list.

Evaluation criteria and thresholds for stage 2 proposals:

Stage 2 proposals are evaluated on the basis of the following three criteria: **1. S/T quality; 2. Implementation; 3. Impact.** For each criterion marks from 0 to 5 will be given, with the possibility of half-point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	**4/5**
Implementation	**3/5**
Impact	**4/5**
Overall threshold required	**12/15**

Forms of grant and maximum reimbursement rates for projects funded through the Cooperation work programme are given in Annex 3

The minimum number of participating legal entities required, for all funding schemes, is set out in the Rules for Participation. They are summarised in the table below[27]:

[27] MS = Member States of the EU; AC = Associated country. Where the minimum conditions for an indirect action are satisfied by a number of legal entities, which together form one legal entity, the latter may be the sole participant, provided that it is established in a Member State or Associated country.

Funding scheme	Minimum conditions
Collaborative project	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.

In order to maximise the industrial relevance and the impact of the research effort, the active participation of High Technology SMEs represents an added value. This will be reflected in the evaluation.

Call title: Joint Energy NMP Call

Call identifier: FP7-ENERGY-NMP-2008-1

Date of publication: 30 November 2007

Deadline: 26 February 2008 at 17.00.00 Brussels time

Indicative budget [28]***:*** *EUR 25* million from the 2008 budget (of which EUR 10 million for Theme 4 – NMP and EUR 15 million from Theme 5 Energy)

The budget for this call is indicative. The final budget awarded to this call, following the evaluation of projects, may however vary by up to 10% of the total value of the call.

Topics called:

Activity/ Area	**Topics called**	**Funding Schemes**
ACTIVITY ENERGY.10: HORIZONTAL PROGRAMME ACTIONS		
ENERGY.2008.10.1.2	Novel materials for energy applications (Joint Call NMP)	Collaborative Projects
ACTIVITY 4.2 MATERIALS		
NMP-2008-2.6-1	Novel materials for energy applications (Joint Call with Energy)	Collaborative Projects

Evaluation procedure:

The evaluation shall follow a two stages procedure. The first stage proposal, of a maximum of 10 A4 pages (font size 12, 2 cm margins) should focus on the S&T content and on clear identification of the intended results, their intended use and the expected impact (economic, social, environmental, etc.) and 2 additional pages to describe the consortium and the estimated financial resources involved.

Proposals will be evaluated on the basis of two evaluation criteria, i.e.: *scientific quality and expected impact.* Stage 1 proposals will be evaluated remotely. Stage 1 proposals shall be submitted at the closure date mentioned above.

Coordinators of retained proposals in stage 1 ("go" proposals) will be invited to submit a complete proposal that will be then evaluated against the entire set of evaluation criteria. The closure date of the second submission will be specified in the invitation to submit the complete proposal. The indicative closure date is 29.05.2008.

Indicative evaluation and contractual timetable:

Evaluation Stage 1 proposals: March/April 2008

Evaluation stage 2 proposals: June 2008. Evaluation results: estimated to be available within two months after the closure date. A reserve list of projects might be established.

Consortia agreements: Participants are required to conclude a consortium agreement.

Particular requirements for participation, evaluation and implementation:

[28] A reserve list will be constituted if there is a sufficient number of good quality proposals. It will be used if extra budget becomes available.

For this call, implemented via a two stage procedure, the following criteria and thresholds are applied:

Evaluation criteria and thresholds for stage 1 proposal:

Stage 1 proposals are evaluated on the basis of the following two criteria: **S/T quality and Impact.** For each criterion marks from 0 to 5 will be given, with the possibility of half-point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	**4/5**
Impact	**3/5**
Overall threshold required	**8/10**

Evaluation criteria and thresholds for stage 2 proposals:

Stage 2 proposals are evaluated on the basis of the following three criteria: **1. S/T quality; 2. Implementation; 3. Impact.** For each criterion marks from 0 to 5 will be given, with the possibility of half-point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	**4/5**
Implementation	**3/5**
Impact	**4/5**
Overall threshold required	**12/15**

Forms of grant and maximum reimbursement rates for projects funded through the Cooperation work programme are given in Annex 3

The minimum number of participating legal entities required, for all funding schemes, is set out in the Rules for Participation. They are summarised in the table below[29]:

Funding scheme	**Minimum conditions**
Collaborative project	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.

Projects under this call shall have a maximum requested EC contribution of EUR 3 million. This is an eligibility criterion – proposals above this limit will not be evaluated.

[29] MS = Member States of the EU; AC = Associated country. Where the minimum conditions for an indirect action are satisfied by a number of legal entities, which together form one legal entity, the latter may be the sole participant, provided that it is established in a Member State or Associated country.