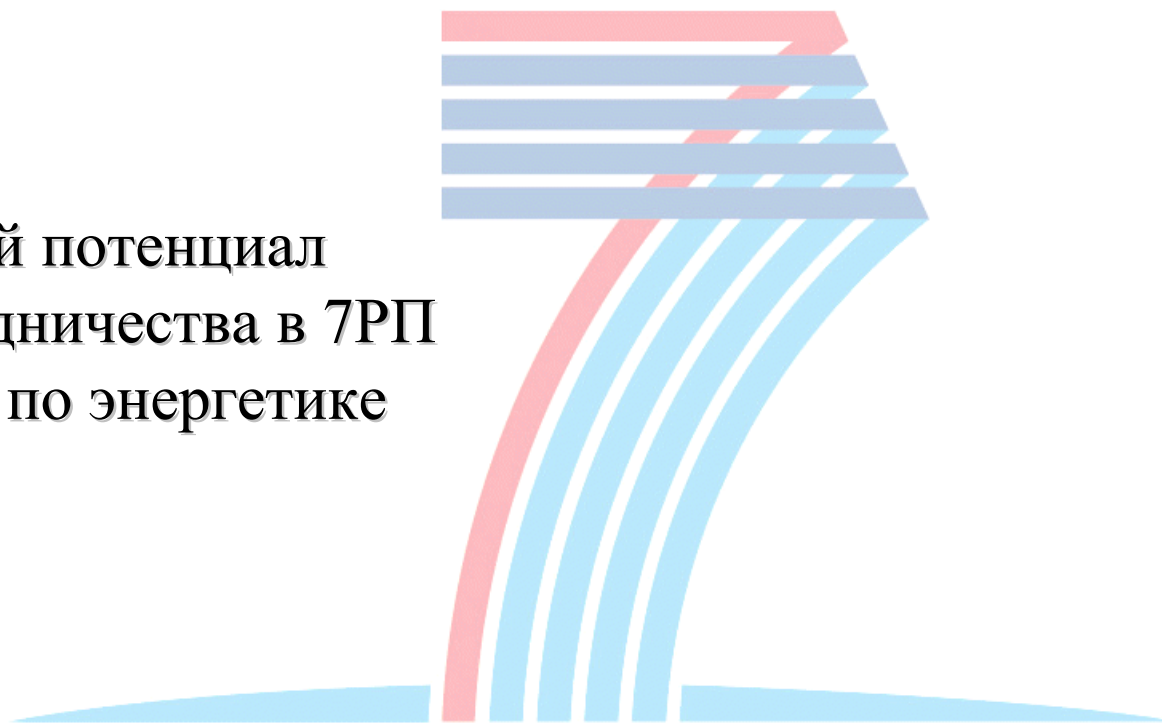


Научно-технический потенциал
Беларуси для сотрудничества в 7РП
в рамках конкурсов по энергетике
2009 года

Сергей Филатов

Институт тепло- и массообмена НАН Беларуси

Национальная контактная точка 7РП по энергетике, Беларусь



COOPERATION



Информационно-методический семинар по развитию
международного сотрудничества с ЕС в сфере окружающей среды и
энергетики, Минск 16 сентября 2008 г.



7РП «Энергетика»: рабочая программа на 2009

WORK PROGRAMME 2009

COOPERATION

THEME 5

ENERGY

- *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.*

(European Commission C(2008)4598 of 28 August 2008)



Информационно-методический семинар по развитию международного сотрудничества с ЕС в сфере окружающей среды и энергетики, Минск 16 сентября 2008 г.



7РП Энергетика: приоритеты 2009 года

Один из приоритетов программы – преодоление фрагментарности энергетических исследований в Европе и определение технологий наиболее перспективных в течение ближайших 10 лет:

- ❑ - биотоплива второго поколения
- ❑ - улавливание и накопления CO₂
- ❑ - солнечная энергетика
- ❑ - использование энергии ветра и
- ❑ - адаптивные (умные) электрические сети (Topic ENERGY.2009.9.1.1 European energy infrastructure networks and systems transition planning)

Основную часть исследований представляют следующие направления:

- Topic ENERGY.2009.2.1.1: Efficiency and material issues for thin-film photovoltaics
- Topic ENERGY.2009.3.2.2: Biowaste as feedstock for 2nd generation
- Topic ENERGY.2009.3.3.1: Sustainable Biorefineries
- Topic ENERGY.2009.7.3.2: High density /rapid release energy storage

Все исследования открыты для поддержки участия исследователей из третьих стран, в т.ч.

- Topic ENERGY.2009.2.1.1: Efficiency and material issues for thin-film photovoltaics
- Topic ENERGY.2009.3.2.2: Biowaste as feedstock for 2nd generation
- Topic ENERGY.2009.5.1.1: Innovative capture techniques
- Topic ENERGY.2009.5.2.1: Safe and reliable geological storage of CO₂
- Topic ENERGY.2009.5.2.2: Towards an infrastructure for CO₂ transport and storage



Информационно-методический семинар по развитию международного сотрудничества с ЕС в сфере окружающей среды и энергетики, Минск 16 сентября 2008 г.



ACTIVITY ENERGY.1: HYDROGEN AND FUEL CELLS

- Не поддерживаются в текущей рабочей программе ☹



Информационно-методический семинар по развитию международного сотрудничества с ЕС в сфере окружающей среды и энергетики, Минск 16 сентября 2008 г.



ENERGY.2009.2.1.1: Проблемы эффективности и материалов для тонкопленочных элементов

- Topic ENERGY.2009.2.1.1: Efficiency and material issues for thin-film photovoltaics**
 - Content/scope:** Thin-film photovoltaics has an inherent low-cost potential because its manufacture requires only small amounts of active materials and it is suited to fully-integrated processing and high throughputs. Research is needed to improve device quality and module efficiency, and to develop a better understanding of the relationship between the deposition processes and parameters, the electrical and optical properties of the deposited materials, and the device properties that result. Key issues to be addressed are improvement of understanding of electronic properties of materials and their interfaces, improvement of the quality and stability of transparent conductive oxides (TCOs), and development of advanced methods for optical confinement. Results should be transferred to production lines by the end of the project.
 - Funding scheme:** Collaborative project
- Потенциальные участники:**
- ГНПО "Химические продукты и технологии"
 - Институт порошковой металлургии
 - Институт прикладной физики
 - Институт физики им. Б.И.Степанова
 - Институт физико-органической химии
 - Институт химии новых материалов
 - НИЦ "Плазмотег"



ENERGY.2009.2.1.2: Солнечные фотоэлементы: производство и материалы для тонкопленочных элементов

- **Topic ENERGY.2009.2.1.2: Solar Photovoltaics: Manufacturing and product issues for thin-film photovoltaics**
- **Content/scope:** Demonstration of standard production equipment and better processes to reduce materials and energy use, achieve higher throughputs and yields, increase recycling rates and improve both the environmental profile and the overall economics of thin-film photovoltaics. Quality assurance procedures, in-line monitoring techniques, integration and automation of production and processing steps are also needed to improve production yield and module efficiency and reduce production costs. Equipment manufacturers will play a leading role in this development. Knowledge gained in relevant industries outside PV should be also exploited.
- **Funding scheme:** Collaborative project

Потенциальные участники:

- Институт тепло- и массообмена им. А.В.Лыкова
- ГНПО "Химические продукты и технологии"
- Институт энергетики
- Физико-технический институт
- НИЦ "Плазмотег"
- **НПО Интграл**
- **Минпром**

COOPERATION



ENERGY.2009.2.1.3: Поддержка координации активности производителей в области фотоэлектричества

- Topic ENERGY.2009.2.1.3 Support to the coordination of stakeholders' activities in the field of Photovoltaics**
 - Content/scope:** Major stakeholders in the field of Photovoltaics have established the European Photovoltaic Technology Platform in order to foster cooperation in the field and to design and implement a Strategic Research agenda. This process should be supported by appropriate administrative and communication activities. Administrative activities include the organisation and management of workshops, conferences and meetings among stakeholders. Communication activities will focus on facilitating the flow and exchange of information within the Technology Platform, with other relevant Technology Platforms, and externally; on development and maintenance of IT tools, as well as on the preparation of information leaflets, brochures, reports and other relevant documents.
 - Funding Scheme:** Coordination and support action (supporting action)
- Потенциальные участники:**
- [Институт тепло- и массообмена им. А.В.Лыкова](#)
 - [ГНПО "Химические продукты и технологии"](#)
 - [Научно-практический центр по материаловедению](#)
 - [Институт общей и неорганической химии](#)
 - [Институт порошковой металлургии](#)
 - [Институт прикладной физики](#)
 - [Институт физики им. Б.И.Степанова](#)
 - [Институт физико-органической химии](#)
 - [Институт химии новых материалов](#)
 - [Научно-исследовательский центр проблем ресурсосбережения](#)
 - [Физико-технический институт](#)
 - [НИЦ "Плазмотек"](#)
 - НПО Интеграл
 - Минпром
 - Минэнерго
 - БГУ
 - Международный государственный экологический университет им. Сахарова



ENERGY.2009.2.2.1: Получение электрической энергии из биомассы зерновых культур и восстанавливаемых топлив

- **Topic ENERGY.2009.2.2.1: Biomass to electricity from energy crops and recovered fuels**
 - **Content/scope:** Innovative demonstration of the close linkage and complete supply chain of energy crop plantations (incl short rotation coppice and forestry) and waste recovered fuels in the medium to large scale (> 10 MW) cogeneration plants aiming to the efficient use of natural resources. Only projects that address CHP applications (or other projects addressing additional energy services to the community other than electricity only), will be considered.

These should be based on close-coupled energy crop plantations (including sustainable methods, machinery development, drying technologies, efficient conversion technologies etc) and waste separation plants with optimised production processes for energy efficiency.
 - **Funding scheme:** Collaborative project
 - **Expected impact:** Cost reduction through innovations in technology and plant efficiency.

Technological improvements and developments in the overall supply chain of non-traditional biomass and recovered fuels leading to cost and GHG efficient electricity and heat generation.
- Потенциальные участники:
- ОАО Гродно-Азот
 - БГУ
 - [Научно-практический центр по биоресурсам](#)
 - [Научно-практический центр по земледелию](#)
 - [Научно-практический центр по продовольствию](#)
 - [Гродненский зональный институт растениеводства](#)
 - [Институт биоорганической химии](#)
 - [Институт генетики и цитологии](#)
 - [Национальный координационный центр биобезопасности](#)
 - [Институт леса](#)
 - [Институт общей и неорганической химии](#)
 - [Институт почвоведения и агрохимии](#)
 - [Институт тепло- и массообмена им. А.В.Лыкова](#)
 - [Институт проблем использования природных ресурсов и экологии](#)
 - [Институт физико-органической химии](#)
 - [Институт экспериментальной ботаники им. В.Ф.Купревича](#)
 - [Центр проблем ресурсосбережения](#)
 - [Научно-производственный центр "Институт фармакологии и биохимии" Объединенный институт машиностроения](#)
 - [Полесский аграрно-экологический институт](#)



ENERGY.2009.2.4.1: Понимание и снижение наведенной сейсмичности

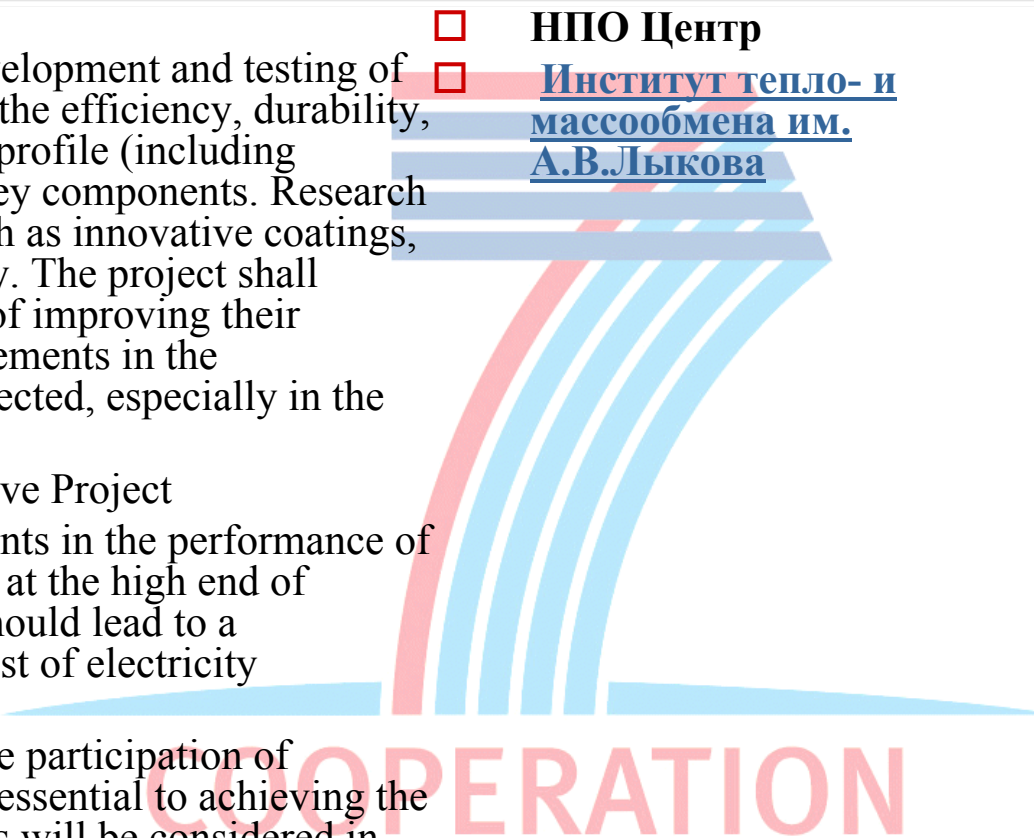
- Topic ENERGY.2009.2.4.1: Understanding and mitigation of induced seismicity associated with geothermal field development
- *Content/scope:* To develop a better understanding of the mechanisms of induced seismicity linked to the fracturing of deep rocks in EGS – Enhanced Geothermal Systems. To define clear strategies for fluid injection to improve control of the extraction of heat from geothermal reservoirs over a prolonged period.
- *Funding Scheme:* Collaborative project
- *Expected Impact:* Accelerated market development and deployment of EGS through avoidance of technical and social obstacles to the further development of this technique.
- *Other Information:* The active participation of industrial partners involved in the exploitation of EGS is essential to achieving the full impact of the project. This will be considered in the evaluation. **Up to one project may be funded.**

Потенциальные участники:

- [Научно-инженерное предприятие "Геоинформационные системы"](#)
- [Институт тепло- и массообмена им. А.В.Лыкова](#)
- [Научно-исследовательский центр проблем ресурсосбережения](#)
- [Центр геофизического мониторинга](#)
- [Институт проблем использования природных ресурсов и экологии](#)



ENERGY.2009.2.5.1: Ключевые компоненты для солнечных концентраторов

- Topic ENERGY.2009.2.5.1: Key components for Concentrated Solar Power**
 - Content/scope:** Research, development and testing of CSP technologies to improve the efficiency, durability, reliability and environmental profile (including cooling aspects) of selected key components. Research may cover new materials, such as innovative coatings, and the use of nanotechnology. The project shall demonstrate the added value of improving their selected components. Improvements in the environmental profile are expected, especially in the need for cooling water.
 - Funding scheme:** Collaborative Project
 - Expected impact:** Improvements in the performance of key components, in particular at the high end of current temperature ranges, should lead to a substantial reduction in the cost of electricity generation from CSP.
 - Other information:** The active participation of relevant industrial partners is essential to achieving the full impact of the project. This will be considered in the evaluation.
- Потенциальные участники:**
- НПО Центр
 - Институт тепло- и массообмена им. А.В.Лыкова
- 



ENERGY.2009.2.9.1: Многоцелевое возобновляемое преобразование энергии

- **Topic ENERGY.2009.2.9.1: Deep off-shore multi-purpose renewable energy conversion platforms for wind/ocean energy conversion**
 - **Content/Scope:** Deep offshore renewable electricity generation will raise new challenges in maritime planning and permitting in Europe and in the sustainable development of Europe's marine resources. Offshore renewable electricity generation has certain advantages, such as no competition for land use, higher and more predictable wind speeds, and higher ocean power levels. However, costs for deep offshore projects are understandably higher than for onshore or other developments, so research and economies of scale are needed to bring them down to a more competitive level. Research on multiple uses of the sea at the same location shall be carried out: in particular, deep off-shore floating multi-purpose renewable energy production platforms able to host wind/ocean energy converters shall be investigated. The project shall address, inter alia, new platform design, component engineering, risk assessment, spatial planning, platform-related grid connection and possible use of off-shore renewable energy conversion platforms also for non-energy purposes such as environmental measurements.
 - **Funding scheme:** Collaborative project
 - **Expected impact:** Improve the cost/benefit ratio of the off-shore technologies through multiple use of the infrastructures. This will bring off-shore renewable energy applications closer to the market.
 - **Other Information:** The effective involvement of industrial partners active in off-shore developments is essential to achieve the full impact of the project. This will be considered in the evaluation.
- Потенциальные участники:
- [Институт тепло- и массообмена им. А.В.Лыкова](#)
 - [ГНПО "Химические продукты и технологии"](#)
 - [ГНПО "Химический синтез и биотехнологии"](#)
 - [Институт биоорганической химии](#)
 - [Институт биофизики и клеточной инженерии](#)
 - [Институт микробиологии](#)
 - [Институт общей и неорганической химии](#)
 - [Институт порошковой металлургии](#)
 - [Институт прикладной физики](#)
 - [Институт проблем использования](#)
 - [Институт химии новых материалов](#)
 - [Институт экспериментальной ботаники им. В.Ф.Купревича](#)
 - [Объединенный институт машиностроения](#)
 - [Объединенный институт энергетических и ядерных исследований - "Сосны" Физико-технический институт](#)
 - [НИЦ "Плазмотер"](#)



ENERGY.2009.2.9.2: Координационные действия в области возобновляемой энергии

- Topic ENERGY.2009.2.9.2: Coordination action on off-shore renewable energy conversion platforms**
- Content/scope:** The project shall focus on establishing the state of research, technological development and demonstration activities on off-shore renewable energy conversion platforms and on the definition of strategic priorities, including socio economics aspects, for the development of off-shore renewable energy conversion.
- Funding scheme:** Coordination and support action (coordinating action)
- Expected impact:** Improved information exchange and promotion of specific research cooperation in this field between academia and industry, public and private actors.
- Other Information:** Up to one project may be funded. The review of relevant activities outside the EU, alongside the EU review will be welcomed. Because of the need to have results in time to inform future research policy the maximum duration of the project is considered to be 18 months. The effective involvement of industrial partners active in offshore developments is essential to achieve the full impact of the project. This will be considered in the evaluation.

Потенциальные участники:

- Минэнерго
- Белэнерго
- Белнефтехим
- НАН Беларуси
- ГКНТ
- Институт тепло- и массообмена им. А.В.Лыкова
- Институт проблем использования природных ресурсов и экологии
- Институт энергетики
- Объединенный институт энергетических и ядерных исследований - "Сосны"



ENERGY.2009.3.2.2: Биоотходы и сбросы для вторичной генерации (энергии)

- Topic ENERGY.2009.3.2.2: Biowaste as feedstock for 2nd generation**
 - Content/scope:** To use waste as a feedstock for 2nd generation biofuel production. The research activities shall address, depending on the type of biowaste as feedstock, the development of collection systems, sorting, pre-treatment, fuel conversion technologies that are energy efficient, environmentally friendly and cost efficient, and the end-user requirements.
 - Funding Scheme:** Collaborative project
 - Expected Impact:** Development of new energy conversion technologies; better understanding of using biowaste to produce fuel
 - Other Information:** In order to maximise industrial relevance and impact of the research effort, besides research organisations, the active participation of SMEs and private and public communities is seen as essential. This will be reflected in the evaluation. The active participation of relevant Indian partners could add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken; this will also be considered by the evaluators.
- Потенциальные участники:
- Минэнерго
 - Минприроды
 - [ГНПО "Химические продукты и технологии"](#)
 - [ГНПО "Химический синтез и биотехнологии"](#)
 - [Научно-практический центр по биоресурсам](#)
 - [Институт тепло- и массообмена им. А.В.Лыкова](#)
 - [Институт микробиологии](#)
 - [Институт общей и неорганической химии](#)
 - [Институт порошковой металлургии](#)
 - [Институт физико-органической химии](#)
 - [Институт химии новых материалов](#)
 - [Институт энергетики](#)
 - [Научно-инженерное предприятие](#)
 - [Научно-исследовательский центр проблем ресурсосбережения](#)



Topic ENERGY.2009.3.3.1: Возобновляемые биоресурсы

□ Topic ENERGY.2009.3.3.1: Sustainable Biorefineries

- **Scope:** Development of advanced biorefineries for sustainable processing of biomass into building blocks for the production of bio-based chemicals, materials, second generation biofuels, power and heat. The biorefineries shall demonstrate their performance, sustainability and feasibility at least at pilot scale in an integrated approach. Part of the biorefinery complex that is closer to the market shall be demonstrated at industrial pilot plant scale. All proposals shall address the entire value chain from biomass feedstock production, logistics and pre-treatment to the development of thermo-chemical and bio-chemical technologies, including bio-technological routes, for the conversion of different types of biomass feedstock into bio-based products and energy. The utilisation and upgrading of residues and process waste streams and the purification and upgrading of the various products into final marketable services to consumers shall also be addressed. Bio-technological tools for the development of new non-food industrial crops and/ or biomass sources as feedstock may be applied. The upgrading and integration of new stable materials as well as of new nonenzymatic high-selective catalysts may be considered. The integration and optimisation aspects of all the main biorefinery sub-systems shall be described and show progress beyond the state-of-the-art. With regard to sustainability, all proposals shall assess for the entire value chain the environmental, economic and social sustainability, including consequences due to the competition for food and biomass resources, the impact on water use and quality, changes in land-use, soil carbon stock balance and fertility, net balance of greenhouse gases, impact on biodiversity, potential toxicological risks, energy efficiency. Impacts on international and regional dynamics, end-users and consumer needs, investment feasibility may also be considered.

- **Funding Scheme:** Collaborative Project

Потенциальные участники:

- Минприроды
- Минжилккмхоз
- Минэкологии
- НПО Центр
- [ГНПО "Химические продукты и технологии"](#)
- [ГНПО "Химический синтез и биотехнологии"](#)
- [Институт тепло- и массообмена им. А.В.Лыкова Научно-практический центр по биоресурсам](#)
- [Научно-практический центр по животноводству](#)
- [Институт биоорганической химии](#)
- [Институт биофизики и клеточной инженерии](#)
- [Национальный координационный центр биобезопасности](#)
- [Институт механики металлополимерных систем им. В.А.Белого](#)
- [Институт микробиологии](#)
- [Институт общей и неорганической химии](#)
- [Институт порошковой металлургии](#)
- [Институт почвоведения и агрохимии](#)
- [Институт плодородия](#)
- [Институт физико-органической химии](#)
- [Институт химии новых материалов](#)
- [Институт экспериментальной ботаники им. В.Ф.Купревича](#)
- [Научно-исследовательский центр проблем ресурсосбережения](#)
- [Объединенный институт энергетических и ядерных исследований - "Сосны" Полесский аграрно-экологический институт](#)
- [Физико-технический институт](#)



ENERGY.2009.3.3.2: Обмен информацией и знаниями между проектами в области возобновляемых энергетических биоресурсов

- **Topic ENERGY.2009.3.3.2: Enhancing exchange of information, synergies and crossfertilisation between projects in the field of Biorefineries**
 - **Scope:** The aim is to promote coordination of on-going research at European and national levels across Biotechnology, Energy, Industrial Technologies and Environment on distinctive features of the biorefinery concept. Information exchange and cross fertilisation may concern any aspect of the feedstock, the conversion and fractionation technologies, the integration of processes and uses of side-streams, the biofuels and the bio-based products, the energy efficiency, the economic, socio-economic and environmental performance, as well as other sustainability issues (impacts on food production schemes, impact on water use and quality, changes in land-use, access to resources, impact on biodiversity, and the net balance of greenhouse gases). Activities should aim to overcome fragmentation in this multidisciplinary field and develop cross-thematic synergies, identifying gaps and overlaps, defining research priority needs and infrastructure. In addition, activities shall involve dissemination of results.
 - **Funding Scheme:** Coordination and support action (coordinating action)
 - **Expected Impact:** Significant improvement is expected in the exchange and use of the information available on biorefinery concepts within the thematic projects, in the identification of complementary research results and the cross-fertilisation to make best use of them, and in the synergies between the thematic projects. Significant enhancement is also expected in the cooperation between key researchers and industries that are active in biorefinery research funded by EU and national programmes.
- Потенциальные участники:**
- Минприроды
 - Минжилккмхоз
 - Минэкологии
 - НПО Центр
 - ГНПО "Химические продукты и технологии"
 - ГНПО "Химический синтез и биотехнологии"
 - Институт тепло- и массообмена им. А.В.Лыкова
 - Научно-практический центр по биоресурсам
 - Научно-практический центр по животноводству
 - Институт биоорганической химии
 - Институт биофизики и клеточной инженерии
 - Национальный координационный центр биобезопасности
 - Институт механики металлополимерных систем им. В.А.Белого
 - Институт микробиологии
 - Институт общей и неорганической химии
 - Институт порошковой металлургии
 - Институт почвоведения и агрохимии
 - Институт плодоводства
 - Институт физико-органической химии
 - Институт химии новых материалов
 - Институт экспериментальной ботаники им. В.Ф.Купревича
 - Научно-исследовательский центр проблем ресурсосбережения
 - Объединенный институт энергетических и ядерных исследований - "Сосны" Полесский аграрно-экологический институт
 - Физико-технический институт



ENERGY.2009.3.7.1 Поддержка координации действий производителей биотоплива

Topic ENERGY.2009.3.7.1 Support to the coordination of stakeholders' activities in the field of Biofuels

- Content/scope:** Major stakeholders in the field of Biofuels have established the Biofuels European Technology Platform in order to foster cooperation in the field and to design and implement a Strategic Research agenda. This process should be supported by appropriate administrative and communication activities. Administrative activities include the organisation and management of workshops, conferences and meetings among stakeholders.

Communication activities will focus on facilitating the flow and exchange of information within the Technology Platform, with other relevant Technology Platforms, and externally; on development and maintenance of IT tools, as well as on the preparation of information leaflets, brochures, reports and other relevant documents.

- Funding Scheme:** Coordination and support action (supporting action)

- Expected Impact:** A further deepening of the cooperation of relevant stakeholders would contribute to increase the efficiency and competitiveness of research in the field of biofuels.

- Other Information:** Up to one project may be funded. For this topic, the EC contribution will be up to 50% of the total eligible costs of the project for all participants, with a maximum contribution of EUR 500 000 for a period of three years.

Потенциальные участники:

- Минэнерго
- Белэнерго
- Белнефтехим
- Белжилкомхоз
- Минприроды
- ОАО Гродно-Азот
- НПО Центр
- БГУ
- [ГНПО "Химические продукты и технологии"](#)
- [ГНПО "Химический синтез и биотехнологии"](#)
- [Институт тепло- и массообмена им. А.В.Лыкова](#)
- [Институт проблем использования природных ресурсов и экологии](#)
- [Институт физико-органической химии](#)
- [Институт химии новых материалов](#)
- [Научно-исследовательский центр проблем ресурсосбережения](#)
- [Объединенный институт энергетических и ядерных исследований - "Сосны"](#)



ENERGY.2009.4.1.1: Низко – и среднетемпературные солнечные системы для промышленных процессов

- **Topic ENERGY.2009.4.1.1: Low/medium temperature solar thermal systems for industrial Process Heat**

- **Content/scope:** Demonstrate collectors optimised for temperatures in the range of 80 to 250°C and large scale integration of those collectors into existing industrial heat process systems (> 5 MWth). Special efforts should be devoted to define and carry out the strategies and tools to integrate the solar thermal technology into industrial heat demand. Test and validate the complete integration of solar system in the heat management processes. Projects could include a combination of existing low-temperature collectors and novel medium/high temperature collectors in a hybrid system or cascade design.

- **Funding scheme:** Collaborative project

- **Expected impact:** Develop market deployment of the huge potential of solar thermal source for industry heat supply. Demonstrate that solar thermal heating is a secure and reliable complementary supply source to conventional heat production process at acceptable competitive costs.

- **Other information:** The active participation of key industrial partners and technology suppliers is essential to achieve the full impact of the project. This will be considered in the evaluation. The guidelines for demonstration projects figure in the guide for applicants. Up to two projects may be funded.

Потенциальные участники:

- Минэнерго

- Минстрой

- НПО Центр

- БГУ

- БАТУ

- [Институт тепло- и массообмена им. А.В.Лыкова](#)

- [Научно-исследовательский центр проблем ресурсосбережения](#)



ENERGY.2009.4.5.1: Гибридные системы для солнечно и теплового энергоснабжения с использованием биомассы и геотермальной энергии

- Topic ENERGY.2009.4.5.1: Hybrid systems based on solar thermal heating/ cooling, backed up by biomass or geothermal to compensate heat load intermittence**
 - Content/scope:** demonstrate innovative large scale (> 10 MWth) hybrid system combination with compact storage system to achieve close to 100% RES supply. The primary source should be Solar thermal with complementary supply from biomass and/or geothermal heat/cooling load.
 - Funding scheme:** Collaborative project **Expected impact:** develop advanced synergies and use complementarities between solar thermal and biomass/ geothermal in order to achieve a close to 100 % RES supply with overall significant cost reduction, increased technology reliability and improved environmental impact from biomass.
 - Other information:** The active participation of key industrial partners and technology suppliers is essential to achieve the full impact of the project. This will be considered in the evaluation. The guidelines for demonstration projects figure in the guide for applicants. Up to one project for Solar Thermal-Biomass and/or up to one project for solar thermal/ Geothermal and/or up to one project for all the three sources together may be funded.
- Потенциальные участники:**
- Минприроды
 - Белгео
 - Минэнерго
 - [Институт тепло- и массообмена им. А.В.Лыкова](#)
 - [Научно-исследовательский центр проблем ресурсосбережения](#)
 - [Полесский аграрно-экологический институт](#)
 - [Центр геофизического мониторинга](#)



ENERGY.2009.5.1.1:Инновационная техника поглощения диоксида углерода

Topic ENERGY.2009.5.1.1: Innovative capture techniques

- Content/scope:** Capture is the most costly component of CCS, but has also the most scope for cost reduction. RTD is needed on innovative capture (including oxyfuel) techniques.

Proposals could focus on specific solvents/sorbents, components or systems and may include their integration in the power plant (both for new and retrofit applications). Projects need to aim for ambitious and clearly defined objectives, including the contribution to the increase of the overall power plant efficiency.

- Funding scheme:** Collaborative project.

- Expected impact:** Progress in this area should result in a significant reduction of the efficiency penalty of CO₂ capture for power plants and in a substantial decrease of the cost of capture. This would allow accelerating the commercial deployment of large scale near zero emission power generation technology based on CCS.

- Other information:** The active participation of relevant partners from the Carbon Sequestration Leadership Forum could add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken; this will be considered by the evaluators.

- Open in call:** FP7-ENERGY-2009-1

Потенциальные участники:

- Белнефтехим

- Белэнерго

- НПО Центр

- Институт тепло- и массообмена им. А.В.Лыкова

- ГНПО "Химические продукты и технологии"

COOPERATION



ENERGY.2009.5.2.1: Безопасное и надежное геологическое хранение CO₂

- Topic ENERGY.2009.5.2.1: Safe and reliable geological storage of CO₂**
- Content/scope:** One of the prime prerequisites for geological CO₂ storage is to provide evidence that it is safe and reliable. RTD is needed on all relevant aspects of safety of geological CO₂ storage. Projects could deal with one or all phases of the storage process, and address all relevant timescales for different storage options. RTD should be placed in the context of the accounting techniques and monitoring principles put forward by the Commission Directive on CO₂ storage, and should pay due attention to raising public awareness and creating acceptance for geological storage.
- Funding scheme:** Collaborative project.
- Expected impact:** A methodical approach to storage safety will provide the analytical base needed for an accountable stewardship for the stored CO₂. It is expected that this will build confidence in - and addressing public acceptance of - geological storage as a means to reduce CO₂ emissions, allowing the safe and commercial deployment of large scale near zero emission power generation technology based on CCS.

Потенциальные участники:

- Белгеология,
- Институт тепло- и массообмена им. А.В.Лыкова
- ГНПО "Химические продукты и технологии"
- Институт проблем использования природных ресурсов и экологии
- Научно-инженерное предприятие "Геоинформационные системы"
- Научно-исследовательский центр проблем ресурсосбережения
- Центр геофизического мониторинга



Topic ENERGY.2009.5.2.2: Требования к инфраструктуре транспорта и хранения CO₂

Topic ENERGY.2009.5.2.2

- Content/scope:** The large scale deployment of CCS involves connecting one or more large stationary CO₂ sources to one or more geological storage sites. Optimising transport costs for any given case requires a balanced decision on transport modes and a rigorous matching of CO₂ source and sink. Safe transport of CO₂ requires that the different components of the infrastructure (e.g. pipeline, ship and equipment materials) are sufficiently advanced to meet safety and environmental requirements. Projects may address transport cost, safety of components or systems, infrastructure lifetime or a combination of these issues.
- Funding scheme:** Collaborative project with a predominant research component.
- Expected impact:** progress in this area would allow the safe and commercial deployment of large scale near zero emission power generation technology based on CCS.
- Other information:** The active participation of relevant partners from the Carbon Sequestration Leadership Forum could add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken; this will need to be considered by the evaluators.

Потенциальные участники:

- Белэнерго,
- Белнефтехим,
- Институт галлургии,
- [Институт тепло- и массообмена им. А.В.Лыкова](#)
- [ГНПО "Химические продукты и технологии"](#)
- [Институт прикладной физики](#)
- [Институт проблем использования природных ресурсов и экологии](#)
- [Институт технической акустики](#)
- [Физико-технический институт](#)
- [Центр геофизического мониторинга](#)



ENERGY.2009.6.1.1: Увеличение эффективности существующих и будущих технологий угольных энергостанций

- Topic ENERGY.2009.6.1.1: Efficiency increases in existing and new build pulverised coal power plants with a view to CCS.**
- Scope:** Development and demonstration of innovative solutions in components and/or overall processes in pulverized coal fired power plants in order to increase their efficiency. Work under this topic could for example address demonstration of new materials/coatings in ultra supercritical conditions.
- Funding scheme:** Collaborative project
- Expected impact:** The efficiency of pulverized coal fired power plants needs to be increased to allow for deployment of CCS technologies. Projects under this topic shall go beyond state of the art and contribute to achieve net efficiencies of more than 45% in coal fired power plants using CCS.

Потенциальные участники:

- Минэнерго
- Минэкологии
- Минприроды
- Белэнерго
- БелТЭИ
- Институт тепло- и массообмена им. А.В.Лыкова
- НПО Центр

COOPERATION



ENERGY.2009.5&6.2.1 Поддержка производителей в области систем с «нулевым» выбросом

- Topic ENERGY.2009.5&6.2.1 Support to the coordination of stakeholders' activities in the field of Zero Emission Energy Production**
- Content/scope:** Major stakeholders in the field of Zero Emission Energy Production have established the ZEP European Technology Platform in order to foster cooperation in the field and to design and implement a Strategic Research agenda. This process should be supported by appropriate administrative and communication activities. Administrative activities include the organisation and management of workshops, conferences and meetings among stakeholders. Communication activities will focus on facilitating the flow and exchange of information within the Technology Platform, with other relevant Technology Platforms, and externally; on development and maintenance of IT tools, as well as on the preparation of information leaflets, brochures, reports and other relevant documents.
- Funding Scheme:** Coordination and support action (supporting action)
- Expected Impact:** A further deepening of the cooperation of relevant stakeholders would contribute to increase the efficiency and competitiveness of research in the field of Zero Emission Energy Production.
- Other Information:** Up to one project may be funded. For this topic, the EC contribution will be up to 50% of the total eligible costs of the project for all participants, with a maximum contribution of EUR 500 000 for a period of three years.

Потенциальные участники:

- Минэнерго,
- Белэнерго,
- Институт тепло- и массообмена им. А.В.Лыкова
- Объединенный институт энергетических и ядерных исследований - "Сосны" Полесский аграрно-экологический институт
- Центр геофизического мониторинга

COOPERATION



ENERGY.2009.7.1.1: Оптимизация электрических сетей для возобновляемых источников и систем хранения энергии

- Topic ENERGY.2009.7.1.1: Optimisation of the electricity grid with large scale renewables and storage**
- Content/scope:** Increase the stability and the security of the electricity grid through improvements in power system planning and the management of the grid for an improved matching between supply and demand and addressing all possible bottlenecks; direct and indirect storage should be integrated into the management; prepare the grid for the uptake of a massive amount of all renewable electricity, and mainly large and off-shore wind parks; demonstrate new grid management tools to match the varying supply with a varying demand on an EU-wide scale. Storage may be direct storage of electricity or indirect storage in the system, improved management of existing pump stations, etc. Existing wind production forecasting tools and power planning tools shall be used together with existing grid management tools to ensure best integration with grid connection, its needs and limits; taking into account the best use of high voltage lines.
- Funding scheme:** Collaborative project **Expected impact:** substantial overall improvement of the stability, the security of supply and reduction in the cost of electricity transmission and distribution
- Other information:** The effective participation of Transmission System Operators (TSOs) as well as of key industrial partners and technology suppliers is essential to achieve the full impact of the project. This will be considered in the evaluation. The guidelines for demonstration projects figure in the guide for applicants. Up to two projects may be funded.

Потенциальные участники:

- Минэнерго,
- Белэнерго,
- Белгеология,
- Институт тепло- и массообмена им. А.В.Лыкова
- Институт проблем использования природных ресурсов и экологии
- Институт энергетики
- Научно-исследовательский центр проблем ресурсосбережения
- Объединенный институт энергетических и ядерных исследований - "Сосны"



ENERGY.2009.7.3.1: Сверхпроводящие устройства для электрических сетей

- ❑ **Topic ENERGY.2009.7.3.1: HTS Devices for Electricity Networks**
 - ❑ **Contents/scope:** High-temperature superconducting (HTS) based devices have the potential to improve the performance, stability, and efficiency of electricity networks. However, cost and reliability of the technology are major barriers to their commercialisation. Projects should focus on developing devices which are most promising for implementation in the next 10 years, and should address both costs and reliability issues.
 - ❑ **Funding scheme:** Collaborative Project.
 - ❑ **Expected impact:** Progress in this area should enable the establishment of a market for HTS based devices for electricity networks.
 - ❑ **Other information:** The proposal should demonstrate the technical and economic potential of the proposed solution compared to competing technologies.
- Потенциальные участники:
- ❑ [Институт тепло- и массообмена им. А.В.Лыкова](#)
 - ❑ [Институт порошковой металлургии](#)
 - ❑ [Институт прикладной физики](#)
 - ❑ [Институт химии новых материалов](#)
 - ❑ [Физико-технический институт](#)



ENERGY.2009.7.3.2: Энергетические источники большой плотности хранения и быстрого использования

Topic ENERGY.2009.7.3.2: High density /rapid release energy storage

Content/scope: Research is required on the development of innovative high density energy storage devices with rapid release. The effort should focus on increasing the power density and reducing response time for energy storage, either for stationary or for dual-use (stationary and transport) applications. Technologies covered may include batteries, flywheels and capacitors suitable for applications in the power range of several tens of **KW to 1 MW**. The aim is to develop integrated systems and components that can be adapted or re-configured to meet the different applications requirements.

Funding scheme: Collaborative Project.

Expected impact: Energy storage is increasingly being recognised as a key element in improving grid reliability and stability in the future electricity delivery system, as well as hybrid drivetrain vehicles. The research and development of cost-effective energy storage systems, based on different technologies, should contribute to the reliability, efficiency, security and environmental impact of these different applications.

Потенциальные участники:

- Минэнерго,
- Белтрансгаз,
- Белнефтехим,
- Институт тепло- и массообмена им. А.В.Лыкова
- ГНПО "Химические продукты и технологии"
- Институт прикладной физики
- Институт проблем использования
- Институт технологии металлов
- Институт физико-органической химии
- Институт химии новых материалов
- Объединенный институт энергетических и ядерных исследований - "Сосны"
- Физико-технический институт



ENERGY.2009.7.3.3: Стратегическое проникновение электрического и гибридного транспорта в сетевую инфраструктуру

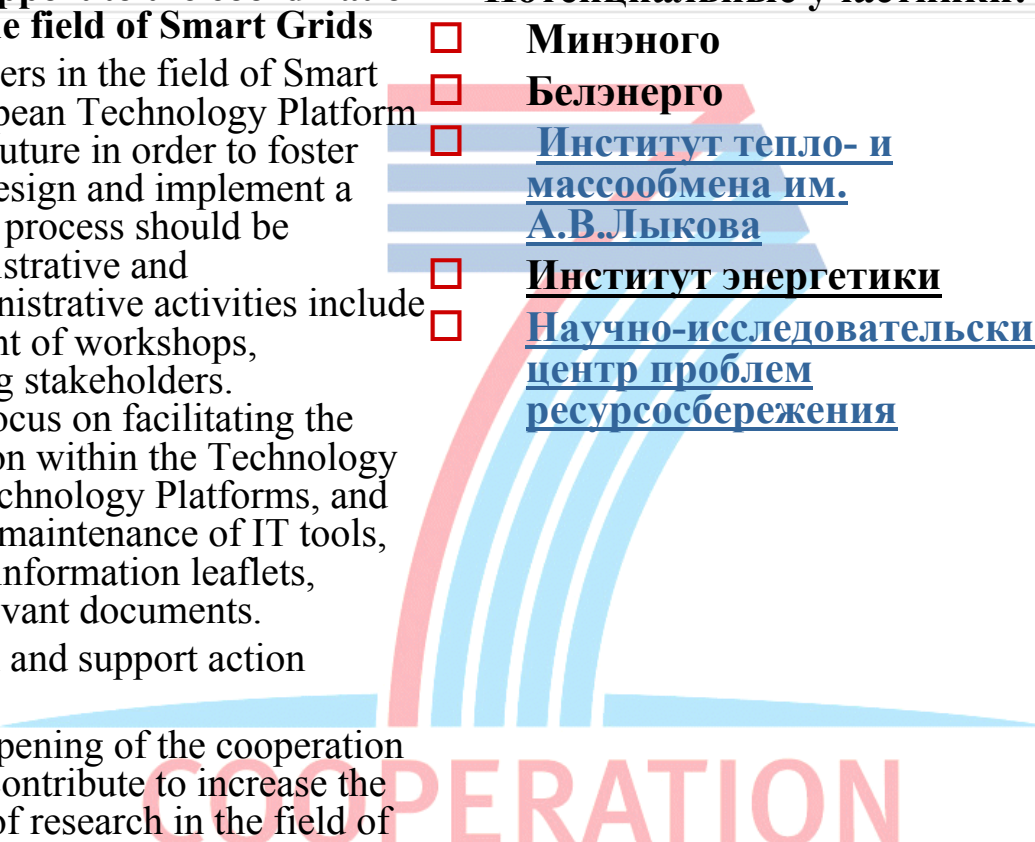
- **Topic ENERGY.2009.7.3.3: Strategic impact of the roll-out of electric and plug-in hybrid vehicles on grid infrastructure.**
- **Contents/Scope:** Electric and plug-in hybrids vehicle have a significant potential in increasing energy efficiency, the penetration of RES and hydrogen in the transport sector, as well as to contribute to the reduction of CO2 emissions. They are likely to gain a considerable market share in the next ten to twenty years. The large scale introduction of electric and plug-in hybrids will have a major impact on the Smart Electricity Networks, in terms of planning, operation and market functioning. Proposals should address all effects of the introduction of plug-in hybrids that are directly relevant to the future development of the power system, including planning of electricity generation and transport infrastructure, impact on RES-Electricity integration, system control and balancing, defence and black restart plans, regulatory aspects and potential consequences on market arrangements.
- **Funding scheme:** Collaborative Project.
- **Expected impact:** A methodical approach to the proper evaluation of the impact of electric and plug-in hybrid vehicle on the electricity system will provide the analytical base needed to develop the necessary electricity network related policy and regulations, as well as to properly plan the technical evolution of the required network infrastructure.

Потенциальные участники:

- Министерство транспорта,
- Минэнерго,
- Белкоммунмаш,
- Институт тепло- и массообмена им. А.В.Лыкова
- Объединенный институт машиностроения



ENERGY.2009.7.3.4 Поддержка координации действий производителей в области «умных» сетей

- Topic ENERGY.2009.7.3.4 Support to the coordination of stakeholders' activities in the field of Smart Grids**
 - Content/scope:** Major stakeholders in the field of Smart Grids have established the European Technology Platform on Electricity Networks of the Future in order to foster cooperation in the field and to design and implement a Strategic Research agenda. This process should be supported by appropriate administrative and communication activities. Administrative activities include the organisation and management of workshops, conferences and meetings among stakeholders. Communication activities will focus on facilitating the flow and exchange of information within the Technology Platform, with other relevant Technology Platforms, and externally; on development and maintenance of IT tools, as well as on the preparation of information leaflets, brochures, reports and other relevant documents.
 - Funding Scheme:** Coordination and support action (supporting action)
 - Expected Impact:** A further deepening of the cooperation of relevant stakeholders would contribute to increase the efficiency and competitiveness of research in the field of Smart Grids.
- Потенциальные участники:**
- Минэнерго
 - Белэнерго
 - Институт тепло- и массообмена им. А.В.Лыкова
 - Институт энергетики
 - Научно-исследовательский центр проблем ресурсосбережения
- 



ENERGY.2009.8.1.1: Энергоэффективность в энергетически интенсивном производстве

Topic ENERGY.2009.8.1.1: Energy efficiency in energy intensive industry

Content/scope: innovative solutions for significant improvement of energy intensity and CO2 intensity of the processes or reduction of energy and exergy embedded in products in the energy intensive manufacturing industry (such as for example iron and steel; non-metallic minerals; chemical and petrochemical; glass and ceramics, paper and pulp and others). Innovative solutions for overall site/facility management and optimisation through energy and product management systems (use of existing EMS tools). Site optimisation integrating several industries or processes (e.g. petrochemical or chemical complexes; industrial parks, etc.) is considered as bringing added value to the project. Proposals could include CHP and district heating/cooling systems exchanging waste heat and cold between buildings and processes with overall monitoring and optimised planning or establishment of ESCOs for site optimisation.

Funding scheme: Collaborative project

Expected impact: to move to low carbon manufacturing processes or site/facility management

Other information: The active participation of key industrial partners is essential to achieving the full impact of the project. This will be considered in the evaluation. The guidelines for demonstration projects figure in the guide for applicants. Up to two projects may be funded.

Потенциальные участники:

Минэнерго

Минпром

Министерство строительства

Белтрансгаз.

Институт тепло- и массообмена им. А.В.Лыкова

ГНПО "Химические продукты и технологии"

Институт защиты растений
Институт проблем использования природных ресурсов и экологии

Институт энергетики

Научно-исследовательский центр проблем ресурсосбережения



ENERGY.2009.9.1.1 Европейская энергетическая сетевая инфраструктура и системное планирование

- **Topic ENERGY.2009.9.1.1 European energy infrastructure networks and systems transition planning**
 - **Scope:** In the context of the European Strategic Energy Technology Plan (SET-Plan), the objective is to build the foundations for a durable European 'capacity' to contribute to the process of transition to a low carbon economy. Activities could include: mapping, coordination and networking of on-going activities in Europe relating to low carbon integrated energy systems, energy infrastructure and systems transition analysis and planning; evaluation of existing tools and development of capacity to model the evolution of the European energy system; development of European transition planning techniques and tools; development of a common and transparent assessment framework for benchmarking the potential roll-out of energy technologies; development of a roadmap of activities that will be necessary to provide Europe with the tools necessary to plan and develop future infrastructures and policies; developing the basis of a good understanding of the full implications and logistics of new energy technology options.
 - **Funding Scheme:** Coordination and support action (coordinating action and supporting action)
 - **Expected Impact:** to contribute, to optimise and harmonise the development of low carbon integrated energy systems across the EU and its neighbouring countries. Better understanding of the overall issue and appropriate techniques and tools would give greater confidence with regard to suitable transition strategies and assist policy makers in making complex and far reaching decisions on a rational basis.
 - **Other Information:** up to one Coordinating project may be funded
- Потенциальные участники:**
- **МИНЭНЕРГО,**
 - **Энергетическая стратегия,**
 - **Институт тепло- и массообмена им. А.В.Лыкова**
 - **Научно-исследовательский центр проблем ресурсосбережения**
 - **Объединенный институт энергетических и ядерных исследований - "Сосны"**



ENERGY 2009.9.2.1 Европейская научная мультидисциплинарная энергетическая политика

- **Topic ENERGY 2009.9.2.1 European scientific multidisciplinary "think-tank" to support energy policy and to assess the potential impacts of its measures.**
- **Content/scope:** The new integral energy and climate change policy brings many new intellectual challenges, in particular, the need to develop a multidisciplinary approach to issues that are increasingly interconnected. For instance, to achieve the **20% renewables** target entirely new approaches and a paradigm shift on the energy system will be needed. Environmental, economic, technical, trade and legal issues need to be addressed urgently. Similarly new multidisciplinary approaches will be needed regarding energy efficiency, the Internal Energy Market, and oil and gas security stock, but to name a few, are needed.
The 'think tank' will cooperate with the EU's Joint Research Centre. The 'think tank' will work on the basis of an annual work plan that anticipates and corresponds with the policy agenda; it could be supported by a network of energy policy research organisations that will analyse the issues in hand, prepare for and stimulate the debate of the 'think tank' and thus enable for and facilitate its ideas and perspectives. **Funding scheme:** Coordination and support action (coordinating action)
- **Expected impact:** To improve the knowledge support to policy making and assessing policy options.
- **Other information:** Consortium composition could include universities, research centres and industry representative organisations

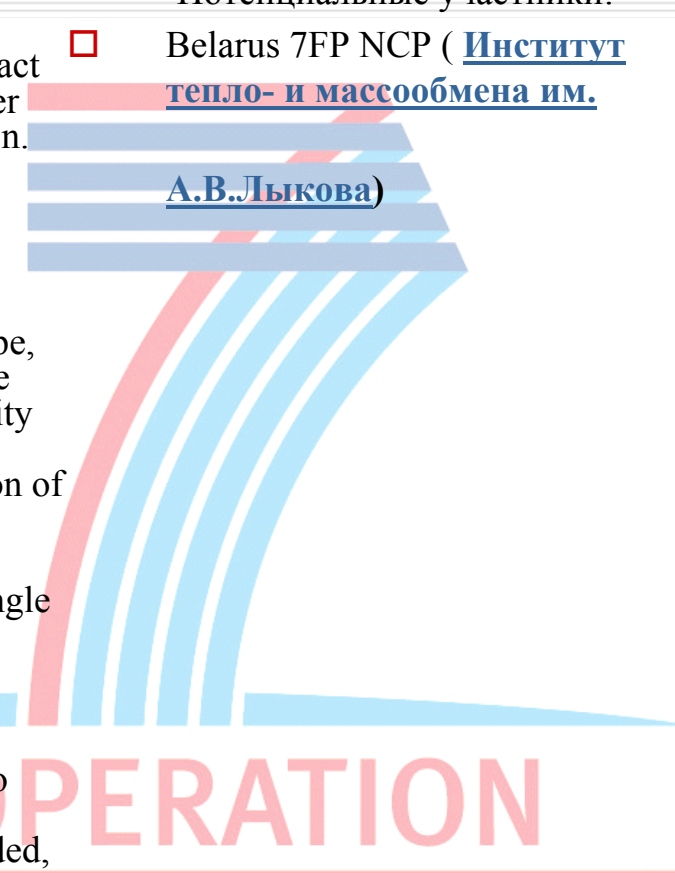
Потенциальные участники:

- НАН Беларуси,
- ГКНТ,
- МИНОБР,
- МИНЭНЕРГО

COOPERATION



ENERGY.2009.10.1.1: Международная координация деятельности национальных контактных точек

- **Topic ENERGY.2009.10.1.1: 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..
 - **Funding scheme:** Coordination and support action (coordinating 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 may finance one single proposal under this heading for a duration of 36 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.
- Потенциальные участники:
- Belarus 7FP NCP ([Институт тепло- и массообмена им. А.В.Лыкова](#))
- 



Conclusion...

- ❑ Особенность современных проектов – участие предприятий всех форм собственности и не только научных центров и вузов... Необходимо участие государства (ГКНТ) в организации участия предприятий и министерств...
- ❑ Роль национальных «контактных точек» исключительно велика
- ❑ Желательно создание республиканского центра, который возьмет на себя всю подготовку документов в соответствие со стандартами EU и будет финансироваться за счет успешных проектов
- ❑ Времени на подачу проектов мало – надо спешить...



COOPERATION



Спасибо за внимание



Информационно-методический семинар по развитию международного сотрудничества с ЕС в сфере окружающей среды и энергетики, Минск 16 сентября 2008 г.

