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Gender and *Energy*

INTRODUCTION

In this part of the toolkit, we take a closer look at how gender is relevant in the specific field of *Energy* in FP7.

A first section briefly points out the broad **relevance of gender within the field**. The toolkit continues with a more specific discussion of the topics which have been put forward by the European Commission in the field's work programme. This is followed by suggestions regarding gender-relevant issues which may be taken up by the research teams.

To illustrate how planned research in the field of *Energy* can be made gender-sensitive, **three real-life examples** of projects are included. Each case consists of a short text presenting the project and a discussion of the gender-relevant issues in relation to the planned work, both in terms of equal opportunities and in terms of the content of the work. These examples are based on project summaries as they can be found on the CORDIS FP7 website[1] and relate to different topics within the field's work programme.

Finally, a selection of **useful references** dealing with gender in the field of *Energy* is provided.

[1] http://cordis.europa.eu/fp7/projects_en.html

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Gender and *Energy*

GENDER AND THE *ENERGY* RESEARCH FIELD

FP7 *Energy* objective

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

How is gender relevant to this field?

The more technology-orientated research is, the harder it is to discover gender impacts – and the greater the efforts that must be undertaken because of lacking data and research. Gender aspects are to be found or can be assumed in access to energy technologies, perception of (risk) technologies, energy needs and use and in particular in the very small share of women in energy technology-related areas, resulting in an exclusion of their perspectives in research and development.

Energy work programme

Emphasis will be given to the following activities:

- **Hydrogen and fuel cells** – supporting EU fuel cell and hydrogen industries, for stationary, portable and transport applications.
- **Renewable electricity generation** – technologies to increase overall conversion efficiency, cost efficiency and reliability, driving down the cost of electricity production from indigenous renewable energy resources.
- **Renewable fuel production** – fuel production systems and conversion technologies for the sustainable production and supply chains of solid, liquid and gaseous fuels from biomass (including the 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.
- **Renewables for heating and cooling** – technologies for cheaper, more efficient active and passive heating and cooling from renewable energy sources. The aim is to achieve substantial cost reductions, increase efficiencies, further reduce environmental impacts and optimise the use of technologies in different regional conditions where sufficient economic and technical potential can be identified.
- **CO2 capture and storage technologies for zero emission power generation** – technologies reducing the 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.
- **Clean coal technologies** – substantially improved power plant efficiency, higher reliability and lower costs through research, development and demonstration of cleaner coal and other solid fuel conversion technologies, also producing secondary energy carriers (including hydrogen) and liquid or gaseous fuels.
- **Smart energy networks** – increasing the efficiency, safety, reliability and quality of Europe's electricity and gas systems and networks in the context of a more integrated European energy market.

- **Energy efficiency and savings** – optimisation, validation and demonstration of new concepts, optimisation of proved and new concepts and technologies for buildings, transport, services and industry. Large-scale actions may be supported by innovative R&D addressing specific components or technologies. A key aim is the optimisation of the local community energy system, balancing a significant reduction in energy demand with the most affordable and sustainable supply solution, including the use of new fuels in dedicated fleets.

- **Knowledge for energy policy-making** – tools, methods and models to assess the economic and social issues related to energy technologies and to provide quantifiable targets and scenarios for medium and long-term horizons. Of particular importance is the impact of technological progress on Community policies. Activities will include scientific support for policy development.

- **Horizontal programme actions** – reinforcing the network of National Contact Points (NCPs).

How is gender relevant to these activities?

- *Access to and control over energy technologies by women and men are very dissimilar. This is due to different income levels of women and men, to gender stereotypes and society's attribution of assignments in the field of energy technologies and energy use, and to the low share of women in energy-related fields of work, in particular in technological professions.*

- *Energy needs are linked to gendered roles, responsibilities and identities as well. The question whether a new energy technology meets the needs and the interests only of those parts of societies who have power to define problems, design solutions and take decisions can be best solved by analytical approaches involving all stakeholders, including women and gender experts. Efficiency and effectiveness of energy technology and energy policy could be increased by reflecting on gender implications and taking participatory approaches.*

- *Women's and men's views about the researched technology options and features might differ. For example this is relevant to research in Carbon Capture and Storage (CCS) and clean coal. Whether or not to develop technologies which might entail risks and shift problems to future generations is one of the fields where gender-disaggregated data are available. They clearly point to a stronger rejection of these technologies by those people, mostly women, who are or feel responsible for childcare, and who have a high level of health awareness.*

- *Increase of biofuel production and use might affect the provisioning of food, in particular in the developing world. Because women are responsible for securing the food for their families in most regions of the world, increased biofuel production may have long-term impacts on gender relations. Plantations of energy crops, in particular for export use, may compete with cultivation of food crops for local use.*

- *Sustainable energy technologies must reflect gender issues in the whole process, from extraction of energy resources to waste disposal, in order to detect possible implications which might occur at each of the stages. For example a study from Eastern Europe clearly shows the gender impacts of oil extraction, which range from increased poverty and dependency on men's incomes up to sexual harassment. Mining of uranium is followed by environmental degradation and pollution, which have different impacts on women's and men's livelihoods and health.*

- *Integrating sustainable energy consumption into energy scenarios and forecasts is a prerequisite in order to address gender issues in future energy policy. Identifying gendered energy needs as well as gendered perspectives towards sustainable production and consumption patterns might help to define the factors determining future energy need.*

- *Energy efficiency and saving measures are closely linked to economic situations: the lower the income, the less the ability to afford energy-efficient appliances, build energy-saving houses or purchase electricity and heat produced from renewable sources. Income gaps, a high share of single parent households, higher life expectancy and low pensions are the reasons for the high share of women in low-income or poor households.*

- *A cross-cutting problem throughout all the issues addressed in the energy research field, is the very small share of women – in research and development itself, in policy-making and implementation, as well as in the energy industry and business. This is true for conventional energy production as well as for renewables. As a consequence of this low share, women's perspectives, perceptions and expectations related to energy technologies and energy policy are completely disregarded in research, planning, and decision-making. The perspectives of the (mostly male) energy experts are seen as gender-neutral and as the "standard", whereas women's perspectives are marginalised and externalised. To work towards gender equality and gender balance in research is important, as well as to discover the underlying structures and patterns, in particular androcentrism.*

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Gender and *Energy*

THREE EXAMPLES

Case 1
Opportunities and needs in biofuels

Project outline

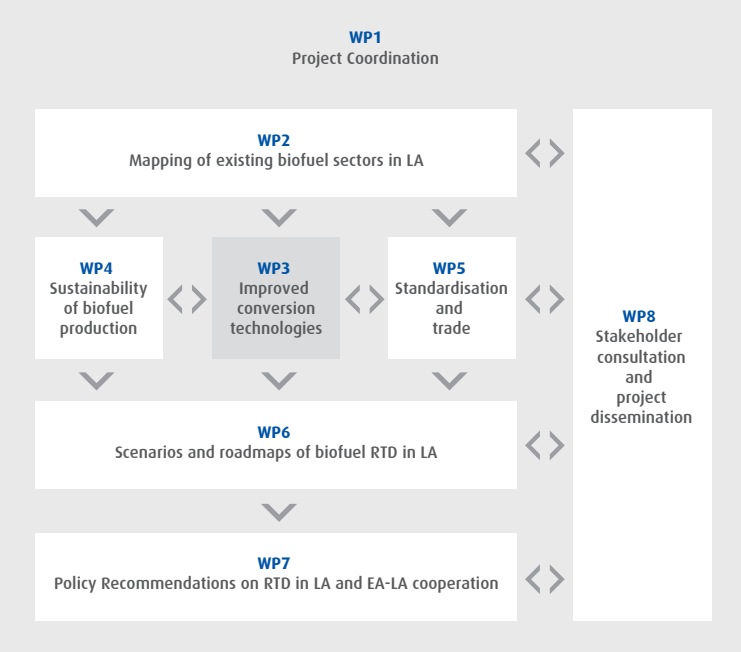
The overall objective of the project proposal is to identify technical opportunities and research needs for Latin America and to create and support specific RTD cooperation activities between Latin America (LA) and the European Union in order to maximize synergies in the biofuel sector.

The team will be an international consortium, covering the expertise needed, including seven male and two female researchers.

Specific objectives are:

- to provide a broad overview of the existing biofuel sector in all Latin American countries;
- to identify priorities, needs and opportunities in the field of RTD for sustainable biofuel production and biomass conversion technologies in Latin America;
- to inform European and Latin American actors in the biofuel sector of opportunities for collaboration and partnerships;
- to harmonise the agenda between Latin America and the EU on sustain able biofuel production;
- to facilitate and advance mutual knowledge and technology transfer between biofuel stakeholders in LA and the EU;
- to make recommendations on RTD and policies for the production and use of biomass conversion technologies.

This leads to the following work packages:



Identification of relevant gender issues

Equal opportunities for women and men in research

The debate and research on biofuels have neglected the competition between agro-fuels and food production for a long time. However, there is a close link to agriculture and food security, two fields where female representation is higher than in most fields of energy policy. This might help the project to avoid the shortcomings of the early times of biofuel policy and research. Special attention should be paid to the gender balance in both regions: Europe and Latin America.

Gender in research content

Biofuel production is a highly gender-relevant field. Worldwide, the majority of agricultural food for subsistence purposes is produced by women.[2] Use of forests and their products is essential for the survival of local communities, including women. In many countries women's access to land is limited.[3] Patrilinear inheritance customs regulate land ownership and property rights and thereby influence control over land and food sovereignty. At the same time, women make up half of the agricultural labour force worldwide, and significantly more in the developing world.
Biofuel production may affect food production, increase monoculture plantations and environmental degradation and thus have an impact on the livelihoods of local people. Because of gendered roles, it is mostly women who are responsible for the nutrition of their families and for food production for local markets, while men tend to carry out more of the crop production. Therefore, women and men might be differently affected by biofuel production: women might be disadvantaged due to reduced access to resources, while men might tend to benefit from new jobs.

When looking at the sustainability of the biofuel production sector, gendered impacts should be examined regarding the source of the fuel, the need to improve women's situation and to contribute to gender equality, and the participation of women at all levels of planning and decision-making.
Biofuel research and production is a highly male-dominated sector (as is the project team), though traditional use of biomass for energy purposes is often women's business. Therefore the project would benefit from integrating a gender expertise. Important questions to be raised are, for example, whose needs are taken into account, and whose experiences and concerns are considered – regarding both the production and consumption of biofuels as well as participation in the related labour markets.

When identifying the RTD needs and opportunities, gender issues should be integrated into each of the sections, in particular in standardisation and trade and in sustainability of the technologies. Both will be more effective if gender issues are taken into account. Gender equality is one of the essentials for sustainability, if the social dimension is to be taken seriously. Therefore, in the project, more importance should be attached to gender and social aspects in general.

The outreach of the project and the dissemination of results in both regions should be done in a gender-sensitive way, aiming to involve more women, in order to work towards a gender balance in the biofuel sector.

[2] Rojas, M.H. (2004), *Women make the difference.* Agriculture, IUCN Factsheet, http://generoyambiente.org/admin/admin_biblioteca/documentos/Agriculture.pdf

[3] World Bank, Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development (2008) *Gender in Agriculture Sourcebook*, http://www.ifad.org/gender/pub/sourcebook/gal.pdf

Case 2
Scenarios for the evolution of energy technologies

Project outline

The goal of the project is to devise robust scenarios for the evolution of energy technologies over the next 50 years. This will be achieved by means of a package of quantitative and analytical tools that are designed to produce the best possible forecasts based on different scenarios of future environmental and energy policies. Focused technological assessments will provide the necessary guidance for technology availability and competitiveness.

Given the long-term nature of the analysis, not to mention the many uncertainties surrounding the natural, technological and socio-economic determinants, the scenario development will be accompanied by probabilistic and stochastic modelling analysis to quantify the most determinant sensitivities. For this purpose, a range of state-of-the-art energy-economy-climate models will be brought together.

The model portfolio spans varieties of regional coverage, technological detail and economic interrelations. Dedicated integrated assessments will explore the technological options that are most likely to play a role over the time horizon under investigation, and the critical issues that are needed for their competitive deployment. The project will research the future of energy systems by examining environmental and energy policies at the European and global levels.

This project will also analyse the linkage between European and world perspectives on the future of energy technology, in particular in terms of issues such as economic competitiveness and the capacity to export clean technology.

Finally, the project will aim to broadly disseminate information and data on possible EU energy technology futures, by setting up a website that will present the different scenarios. A large number of stakeholders from science, industry, government etc. will be provided with peer-reviewed publications and a final general-audience conference will be organised.

Identification of relevant gender issues

Equal opportunities for women and men in research

Energy is a highly male-dominated field of research and policy, in particular as regards energy technologies. Special efforts are therefore required to include female researchers in such projects. Female and male researchers might have different approaches towards the modelling of scenarios, and different assumptions and parameters for sustainable energy technologies addressing future energy needs. Thus, the participation of women is essential in producing a more comprehensive project design.

Gender in research content

At first glance, it seems that scenarios are gender-neutral. But when one takes a closer look at them, it becomes obvious that in the field of energy technology, scenarios are highly gender-relevant. The prospects of various energy technologies are closely linked to (gendered) risk perception and (gendered) trust in technological solutions to global challenges. Women are in general much less likely to accept technological solutions than men. In particular women strongly reject high-risk technologies such as nuclear energy[4] or carbon capture and storage, owing to their higher regard for the precautionary principle, health, the safety of future generations etc.

Additionally, large-scale technologies often do not meet women's energy requirements, in particular in the developing world. Taking these aspects into account might help the project to design more comprehensive and therefore robust scenarios for future energy technologies.

Socio-economic parameters are probably the ones that are most uncertain, even though they have huge impacts on future energy requirements and, consequently, energy technologies. For example if, in the future, a better gender balance in decision-making is achieved, technological choices and policies might dramatically change, to the disadvantage of high-risk technologies. Anyway, it is essential to examine how structural changes will impact on future energy requirements in order to find adequate models.

Apparently, the project is focused on the supply side of energy technologies. However, in technology development (and technology transfer), the demand side plays a crucial role. For example taking technologies for demand side efficiency into account would help the project to become more gender-sensitive by covering the questions of needs, acceptance, and additional work burdens. Moreover, it would also lead to a more comprehensive approach in terms of sustainable development.

Because, currently, there is little gender research or appropriate gender-disaggregated data available, it is suggested that the project should install a gender board, which should train the partners and assess methodologies and results.

[4] Röhr, U. (2006), *Women Against Nuclear Power Data, Facts and Arguments.* In: Röhr, Ulrike/genanet (ed.), Women active against nuclear energy – from rage to visions. 20 years Chernobyl. Frankfurt http://www.genanet.de/fileadmin/downloads/themen/Themen_en/chernobyl_en.pdf;
Finucane, M.L. and Slovic, P. (2000) *Gender, race, and perceived risk: the white male effect.* In: Healthy Risk and Society, Vol.2 No 2/2000:159-172.

Case 3
A common method for gathering biomass information

Project outline

The main objective of the project is to develop a common methodology for gathering information on biomass potential using terrestrial and earth observations. Several types of satellite are currently being extensively used for assessing land cover and corresponding biomass potential.

This objective will be achieved by implementing a systematic assessment workplan and will result in the establishment of a harmonised approach and an e-training tool for dissemination. The e-training environment will be an important instrument for achieving European harmonisation, which is greatly needed, while a stakeholder platform will facilitate access to reliable common datasets on biomass potential. It will enable the more efficient use of the available European biomass feedstock and the better monitoring of sustainability as well as competitiveness aspects.

The project thus intends to provide services and products that are combined, customised, and supplemented by various information elements to create deliverables designed to meet specific policy-makers' needs and user requirements. Based on the identified user requirements and the methods available for combining earth observation and terrestrial inventory data, a concept for a harmonised approach for biomass assessment will be developed.

The project will:

- Develop a common methodology for gathering information on biomass potential using terrestrial and earth observation;
- Disseminate information, best practices and methodology on the use of earth observation in the assessment of biomass potential;
- Use e-technologies to disseminate information and best practices on the use and applicability of the harmonised methodology developed.

Identification of relevant gender issues

Equal opportunities for women and men in research

As in the other areas, a gender-balanced team would be of importance not only in terms of gender equality and work-life balance for males and females, but also for the outcomes of the project. It might be helpful to involve networks like the Earth Science Women's Network[5] in order to identify female researchers in this field.

Gender in research content

Terrestrial and earth observation systems generally face the problem of providing a knowledge base in which all social dimensions are excluded, which is "faceless and placeless" [6], and abstracted from people, their living conditions and experiences "on the ground". Data collected via satellites are seen as neutral, and not based on the subjectivity of the researchers and the (power) structures they are part of.[7] This is of particular concern in a project examining the potential of biomass, which depends on the people living in the areas in which it grows.

Integrating a gender perspective would mean addressing the problem of interpreting data and transforming them into knowledge, in all its stages. How is the biomass potential deduced from the observed data? Are gender differences in knowledge and land use considered? How are women and men involved in the development of conclusions and datasets?

Particular attention should be paid to the "rebound" of data collected by earth observation systems and traditional information systems and knowledge bases. They need to be linked to "bottom-up" data about land use (agriculture, forestry, gathering etc.) and ownership structures. Both – land use and the ownership – are extremely gender-biased. Women might collect food and medical plants in areas which, looked at from above, might appear to be unused. Their lack of access to land ownership in many regions of the world will impact on their say in the issues at hand.

The gender aspects should be taken into account in setting up the stakeholder platform too – there should be stakeholders involved representing women and gender concerns.

[5] http://www.sage.wisc.edu/eswn

[6] W. Sachs, cited in: Schultz, I., Hummel, D., Hayn, D. and Empacher, C. (2001), *Gender in Research - Gender Impact Assessment of the specific programmes of the Fifth Framework Programme - Energy, Environment and Sustainable Development - Environment and Sustainable Development sub-programmes*, Brussels, European Commission

[7] Litfin, K.T. (1997), *The Gendered Eye in the Sky: A Feminist Perspective on Earth Observation Satellites*. In: Frontiers. A Journal of Women Studies, Volume XVII. No 2: 26-47

4

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USEFUL READING

Caprile, M., Sánchez, B., Vallès, N., Gómez, A., Potrony, J., Sixto, E., Herrera, D., Oleaga, M., Amate, M. and Isasa, I. (2008), *Synthesis Report: Aeronautics and Space - Nanotechnologies and nanosciences - Sustainable Energy Systems* - Euratom - Sustainable Surface Transport, European Commission, Brussels, http://ec.europa.eu/research/science-society/document_library/pdf_06/synthesis-report-aeronautics-and-space-nanotech-and-nanoscience-sustainable-energy-transport-euratom_en.pdf (20/04/2009).

Carlsson-Kanyama, A. and Räty, R. (2008), *Kvinnor, män och energi: makt, production och använding,* FOI, Stockholm, http://www2.foi.se/rapp/foir2513.pdf (20/04/2009).

Cecelski, E. (2004), *Re-thinking gender and energy: Old and new directions.* ENERGIA/EASE Discussion Paper, http://www.energia.org/pubs/papers/cecelski2004_rethinking-ge.pdf, (20/04/2009).

CEE Bankwatch Network/Gender Action (ed) (2006), *Boom time blues. Big oils gender impacts in Azerbaijan, Georgia and Sakhalin.* Prague/Washington, http://www.genderaction.org/images/boomtimeblues.pdf (21/04/2009).

Clancy, J. , Cornland, D. and Gregory, J. (2001), *Gender in Research - Gender Impact assessment of the specific programmes of the Fifth framework Programme- Energy, Environment and Sustainable Development* - Energy sub-programme, European Commission, Brussels.

Clancy, J., Opparoacha, S. and Röhr, U. (2004), *Gender Equity and Renewable Energies. Thematic Background Paper,* Bonn, http://www.renewables2004.de/pdf/tbp/TBP12-gender.pdf (20/04/2009).

Johnsson-Latham, G. and Sundström, H. (2007), *A study on gender equality as a prerequisite for sustainable development,* Stockholm Environment Advisory Council, http://www.genderandenvironment.org/admin/admin_biblioteca/documentos/rapport_engelska.pdf (26/03/2009).

Röhr, U. and Ruggieri, D. (2008), *Erneuerbare Energien - ein Arbeitsmarkt für Frauen!,* Berlin: LIFE, http://www.life-online.de/download/publication/erneuerbare_broschuere_web.pdf (26/03/2009).

Röhr, U. (2001), *Gender and Energy in the North. Background Paper for the Expert Workshop "Gender Perspectives for Earth Summit 2002: Energy, Transport, Information for Decision-Making",* Berlin, http://www.earthsummit2002.org/workshop/Gender%20&%20Energy%20N%20UR.pdf (20/04/2009).

Röhr, U. / genanet (ed) (2006), *Women active against nuclear energy – from rage to visions.* Frankfurt, http://www.genanet.de/fileadmin/downloads/themen/Themen_en/Chernobyl_en.pdf (28/04/2009)

Rossi, A., Lambrou, Y. (2008), *Gender and Equity Issues in Liquid Biofuels Production. Minimizing the Risks to Maximize the Opportunities,.* Food and Agriculture Organization of the United Nations (FAO), Rome, ftp://ftp.fao.org/docrep/fao/010/ai503e/ai503e00.pdf (20/04/2009).

UNDP/ENERGIA/SIDA (2004), *Gender and Energy for Sustainable Development: A Toolkit and Resource Guide*, New York.

United Nations Economic and Social Council (2006), Discussion papers submitted by major groups. *Contribution by women to CSD 14: Energy, Climate Change, Air Pollution, Industrial Development*, New York.

For further information and useful links, please consult the Gender in Research Toolkit and Training website under www.yellowwindow.com/genderinresearch.