NEEDS ANALYSIS FOR A MONITORING SYSTEM FOR THE CONTRIBUTION OF THE EU'S 7TH FRAMEWORK PROGRAMME TO THE OBJECTIVES OF THE EU SUSTAINABLE DEVELOPMENT STRATEGY (EU SDS)

André Martinuzzi and **Markus Hametner**
Research Institute for Managing Sustainability
Vienna University of Economics and Business Administration
www.sustainability.eu

This report was commissioned by the European Commission
DG Research - Directorate I/Environment
Unit I.2 Sustainable Development

Vienna, January 2008

TABLE OF CONTENTS

FIGURES

DESIGN OF THE PROJECT

SCOPE AND OBJECTIVES OF THE PROJECT

The **EU Sustainable Development Strategy (EU SDS)** process was launched in June 2001 when the European Council discussed "A Sustainable Europe for a better world: A European Strategy for Sustainable Development", proposed by the European Commission. The so-called Gothenburg Strategy included measures how to tackle challenges posed by cross-cutting policy issues as well as a long-term vision. The review process of the EU SDS began in 2004 with a broad public consultation. In June 2006, the renewed EU SDS was adopted by the European Council. With the renewed EU SDS, the EU sets itself the overall goal to "identify and develop actions to enable the EU to achieve continuous improvement of quality of life both for current and for future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion"[1]. In order to achieve this overall goal, the EU SDS includes four key objectives, ten policy guiding principles, and seven key challenges. Below is the list of the seven key challenges (each one includes operational objectives and targets as well as actions):

1) Climate change and clean energy
2) Sustainable transport
3) Sustainable consumption and production
4) Conservation and management of natural resources
5) Public health
6) Social inclusion, demography and migration
7) Global poverty and sustainable development challenges

The implementation of the objectives and targets formulated in the EU SDS requires efforts from the European level as well as from the EU Member States. Therefore, one of the guiding principles of the EU SDS is to establish coherence between policy-making on the various political levels. In order to measure progress of the implementation of the strategy's objectives, a two-year governance cycle was introduced: On the one hand, Member States are requested to submit progress reports every two years about "the necessary input on progress at the national level in accordance with NSDS"[2]. On the other hand, the European Commission will issue bi-annual progress reports on how the strategy is implemented on the European level and in the Member States[3]. On the basis of the EU SDS progress report by the European Commission, the European Council will review the progress made and provide further orientation on policies, strategies and instruments every two years.

---

1 Council of the European Union (2006) *Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy*, 10917/06, para. 5

2 Ibid, para. 37

3 The first EU SDS progress report was published by the European Commission on 22 October 2007.

The **7th Framework Programme for Research and Technological Development** (FP7) is the EU's main instrument for funding research in Europe and will run from 2007 to 2013. The budget of the programme for its seven year running time is € 50.5 billion. FP7 is made up of four main programmes ("Cooperation", "Ideas", "People" and "Capacities"). By far the largest programme is "Cooperation": About 64 % of the total FP7 budget will be used to support international research cooperation projects in 10 thematic areas. Each year, clearly defined calls in each thematic area will be issued in this programme line. For the entire running time of FP7, we can estimate that about 20,000 research projects will be funded in "Cooperation". Due to the ex-ante defined thematic focus, "Cooperation" is also in the centre of the monitoring system outlined in this report.

In the context of this project, **"monitoring"** is understood as a continuous function that primarily offers (i) tools for programme management and (ii) early indications of progress in the achievement of programme objectives for the main stakeholders. Therefore, a **"monitoring system"** is a prerequisite of an evaluation, assessments or peer review[4], no matter which evaluation model[5] is subsequently used.

A monitoring system can …
- provide an overview of the various activities and impacts of FP7
- serve as basis for assessments and evaluations
- reveal core themes and weaknesses
- support decisions of the person(s) responsible for the programme
- integrate expertise into the thematic areas

A monitoring system cannot …
- take decisions for the person(s) responsible for the programme
- substitute expertise in the thematic areas
- substitute assessments and evaluations

The present project had the aim to develop the concept for a monitoring system to measure how FP7 contributes to the implementation of EU SDS objectives. Therefore, general objectives are

- to support the coherence and transparency of actions
- to support of programme development and coordination
- to provide information to the public on how FP7 contributes to the objectives of the EU SDS

---

4 "Evaluation" is understood as a time-bound exercise that attempts to assess systematically and objectively the relevance, performance and success of programmes. Evaluation (1) assesses the effectiveness of an ongoing programme in achieving its objectives, (2) distinguishes a programme's effects from those of other forces, and (3) aims at programme improvement. "Assessment" is the process of gathering and analysing specific information as part of an evaluation. "Peer Review" is understood as an assessment conducted by persons of similar expertise and experiences as the programme managers.

5 Stufflebeam, Daniel L (1999) *Foundational Models for 21st Century Program Evaluation*, The Evaluation Center, Western Michigan University

WORKPACKAGES AND DELIVERABLES

In order to develop the concept of a monitoring system, the following steps has been considered:

- Analysis of the needs and demands of DG Research for monitoring research for sustainable development within FP7 on the level of projects, topics and the European Research Area (ERA)
- Development of a methodology for such a monitoring system with a focus on topics
- Formulation of recommendations for a follow-up

In the first phase of the project, the project team (a) undertook face-to-face interviews with staff members of the Sustainable Development and Evaluation and Monitoring units of DG Research (June-July 2007), (b) drafted the monitoring system and (c) discussed the topic with the group of external experts on sustainable development organized by DG Research (12 September 2007). On the basis of this work and an analysis of relevant documents, a structural analysis of FP7 and the renewed EU SDS was undertaken and coordinated with the client. Subsequently, a prototype was developed for the purpose to generate a file architecture and workflows and to test the feasibility of the actual application of the monitoring system. Intentionally, the prototype was developed on a simple technical platform (Excel) to not determine the subsequent implementation. The derived concept for the monitoring system was discussed in two workshops with the "Framework Programme for Sustainable Development" network (9 October 2007) and the representatives of the Environment directorate of DG Research (7 December 2007). At the end of the project, two deliverables are available: the Project Report and the prototype.

ANALYSIS OF NEEDS AND DEMANDS

THE STRUCTURE OF FP7 AND ITS REFERENCES TO THE EU SDS

The graph below (page 7) shows the structure of FP7 and the EU SDS and follows the typology of a logic framework to reconstruct the links between FP7 and the EU SDS and the (implicit) programme theory:[6]

- On the left side the FP7 is presented as a bundle of resources and activities that can be summarized in a **programme planning process**. While the Framework Programme[7] and the Specific Programmes[8] are policy documents, the annual work programmes[9] are developed by the administration and are part of the implementation of the policy documents. While three of the four Specific Programmes – "Ideas", "People" and "Capacities" –, the fourth programme "Cooperation" sets a focus on 10 thematic areas, so

---

6 Leeuw, Frans (2003): "Reconstructing Program Theories: Methods Available and Problems to be Solved", in: *American Journal of Evaluation*, Vol. 24, No. 1, pp. 5-20

7 Decision No 1982/2006/EC of the European Parliament and of the Council of 18 December 2006

8 "Cooperation" (Council Decision 2006/971/EC), "Ideas" (Council Decision 2006/972/EC), "People" (Council Decision 2006/973/EC) and "Capacities" (Council Decision 2006/974/EC)

9 Work Programme 2007-2008, European Commission C(2007)2460, 11 June 2007

called "Themes", including: (1) Health; (2) Food, Agriculture, Fisheries, Biotechnologies; (3) Information & communication technologies; (4) Nanosciences & new production technologies; (5) Energy; (6) Environment incl. Climate Change; (7) Transport; (8) Socio-economic Sciences and the Humanities; (9) Space and (10) Security. Each theme is divided into at least 3 more levels (called "Activity", "Area" and "Topic", sometimes expanded to "Sub-Activity", sometimes called "Challenge" and "Objective"), which are basis for annual calls for research projects. On average, the calls include about 100 topics per theme each year (thus, in total approx. 1,000 topics per year). The topic level is the reference point for research project that are submitted for FP7 funding, this means all submitted projects must have an explicit reference to the topic of concern.

- The submitted projects are subject to an **evaluation** by independent external experts and based on a scoring model that is provided by DG Research. The evaluation process and the following contract negotiations last in total about one year. This means that selected projects will start about one year after the annual call announcements. In order to administrate the submissions, the evaluation process and the selected projects, DG Research uses system of databases from which selected information is used in the publicly available database CORDIS.
- In the terminology of logic frameworks, the **selected and funded projects can be regarded as immediate output of FP7**. On average, we can estimate that each year about 3,000 projects will be selected for funding. A difference is made in terms of size and purpose of the funded projects (e.g. small and medium-sized collaborative projects with a budget up to € 1.5 Mio, large-scale integrating projects with a budget up to € 4 Mio, coordination and support actions, ERA-NET). The running time of funded projects ranges from a few months (coordination and support actions) to 5 years (large-scale integration projects). Funded projects are coordinated by a project coordinator that leads a project consortium. In DG Research, projects are administrated by scientific officers regarding deliverables and financial statements. A final evaluation of the results and impacts of each individual projects is currently not implemented.
- During or after completion of the projects, during the dissemination of results and the diffusion of technologies, the **short-, medium- and long-term impacts of individual projects and the entire FP7 take place**. While it is relatively easy to evaluate the scientific outcomes of funded projects and related activities of DG Research already exist (e.g. "EU RTD Project-based Information Dissemination Service – PIDS"), the medium and long term impacts on the environment, technology, markets, society and policy are currently not documented systematically - neither for individual research projects, nor for single topics.[10] The reason for this may be that the impacts are manifold, that they manifest themselves in a complex societial network (in which FP7 is only one of many influencing factors) and they reveal themselves only after some years. Therefore in many cases the causalities of outputs, outcomes and impacts remain unknown. However, this "time lag of impacts" is also dependent on the nature of the funded projects: If inventions and basic research is the focus of the funded project, the time lag of impacts is certainly higher than in applied research or technological development. The time lag may be even

10 Compared to FP6, the expected impacts of projects is outlined in FP7: The first FP7 calls included – apart from the description of the topics – also a paragraph on "expected impacts" and, thus, established a reference point for submissions. In some cases these formulations are a rephrasing of the respective topic description and do not deploy their full steering potential.

shorter in demonstration actions and market studies.

- The EU SDS can be regarded as a set of policy objectives and implementation mechanisms. As strategic document, it should be relevant for the entire FP7 programme, the funded projects and achieved impacts. Currently, this strategic orientation is neither structurally supported nor is it ensured through respective monitoring. This project report discusses options how this relation can be developed and which workflows are necessary.

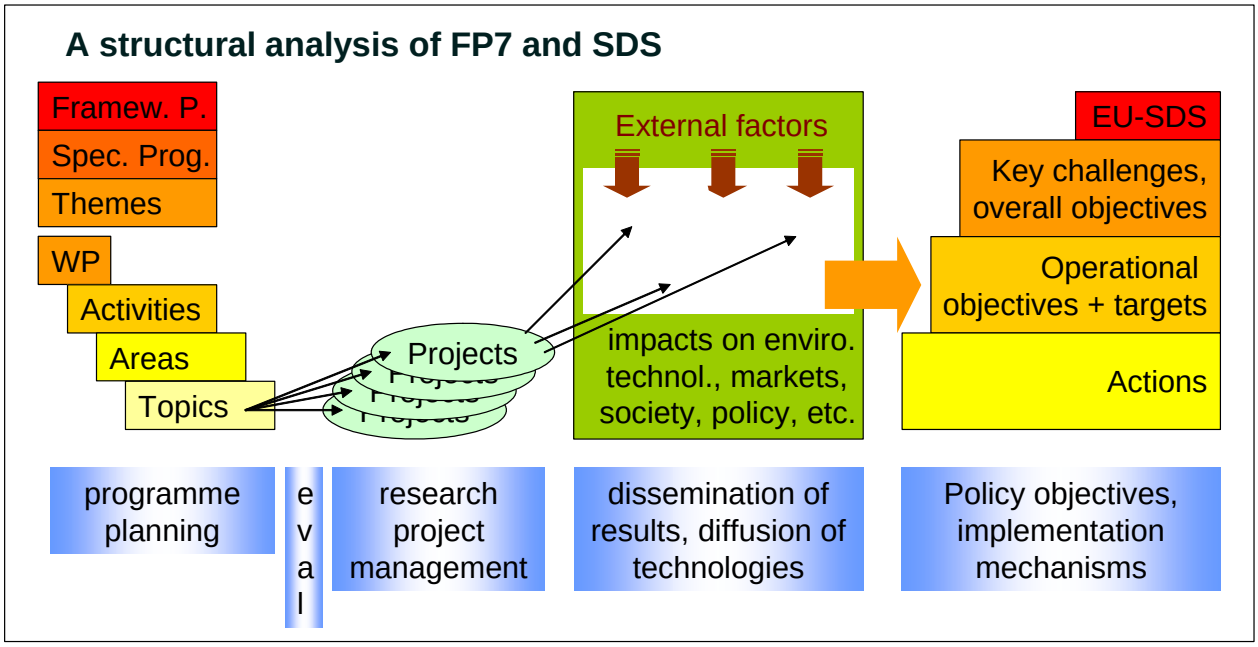

Figure 1: A structural analysis of FP7 and the EU SDS

It must be mentioned that the entire model in the above graph is static and thus simplified. Regarding time issues, the entire running time of FP7 (2007-2013), the time period between the call announcements and the beginning of the projects (approx. one year), the average running time of individual projects (between 2 and 5 years) as well as the time between the completion of the projects and their impacts must be taken into account.

Discussion and Recommendations:

The integration of sustainable development objectives in the programme planning of FP7 is an important challenge: The highest effectiveness could be achieved if the entire FP7 programme with its themes and topics would be oriented towards sustainable development and the work programmes made subject to an ex-ante impact assessment. Another possibility would be to integrate the sustainable development objectives into the structural criteria of the submitted proposals and to assess their achievement during the evaluation process. Both options are, however, not within the scope of this project and are, therefore, not included in the development of the monitoring system.

A methodological challenge exists because of the complexity of impacts and the duration between the availability of scientific results and their impacts on the environment, technologies, markets, society and policy. Due to the high number of funded projects, a monitoring system can only offer an orientation but not a full documentation of impacts. The monitoring system can, however, provide the basis for an in-depth impact assessment of selected themes or topics.

THE MODULES OF A MONITORING SYSTEM

Based on what has been outlined in the previous chapter, four modules of a monitoring system can be distinguished:

(a) A **Coherence Mapping** compares the annual work programmes (mainly the text of the topics) with the thematic orientations outlined in the policy documents of FP7 (Framework Programme and Specific Programme). This comparison aims to ensure the coherence of FP7 with policy documents, supports the preparation of the annual calls and identifies gaps.

(b1) An **Analysis of the Potential SDS Goal Attainment** consists of cross-referencing the topics (from the annual work programmes) and the objectives of the EU SDS. This analysis shows how relevant FP7 is in relation to sustainable development objectives, identifies clusters of actions and key topics for detailed monitoring and progress reporting.

(b2) A **Project Analysis** expands the perspective from the ex-ante programme planning to actions taking place in practice. Monitoring on the project level could identify projects that have the highest impacts (e.g. awarding a Sustainable Development Award) and help to select clusters of projects for a subsequent outcome assessment. While the modules (a) and (b1) can be based solely on publicly available information, a project analysis must process information which is confidential (e.g. interim project reports provided to DG Research) or which is not available at the time of assessment (and, therefore, must be collected from project coordinators).

(c) An **Outcome Assessment** expands the perspective to the effects and impacts of research projects. Therefore, it has to focus on selected target areas and involve project partners as well as external experts. It could be organized in the form of a stakeholder dialogue on specific topics. The presented monitoring system should help to identify the projects and experts, but cannot further support or document this dialogue.

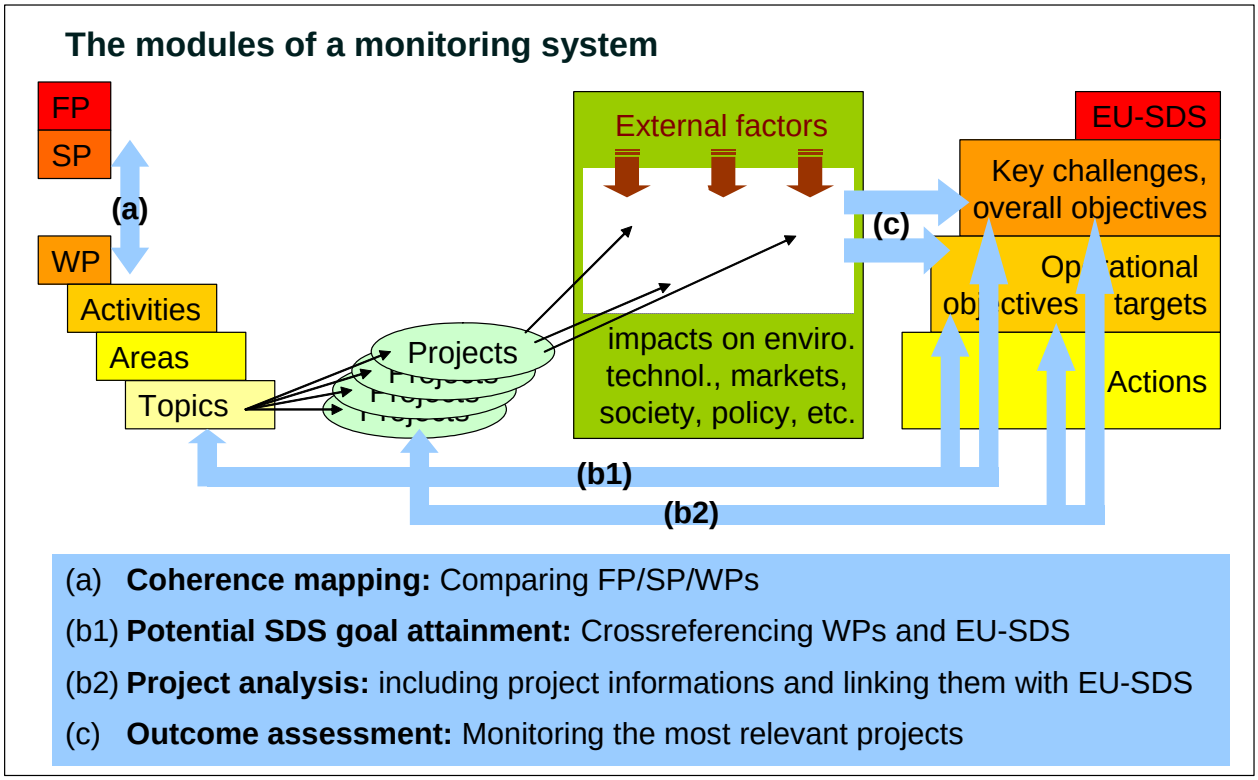

Figure 2: The modules of a monitoring system

Discussion and Recommendations:

After consultation with the client, it was decided to concentrate on modules (a), (b1) and (b2) whereas module (c) is currently not taken into account. The intended monitoring system should in the first phase not require a change of existing procedures and no additional time efforts for scientific officers and project coordinators.

After the completion of the prototype DG Research can decide if the monitoring system will be used only internally, if it is accessible to a selected group of actors or if the general public is the main target group.

DEVELOPMENT OF A MONITORING METHODOLOGY

A PROTOTYPE OF THE MONITORING METHODOLOGY

In order to develop the file architecture and workflow of a monitoring system, to test its feasibility as well as the time and financial requirements for the development and application, a prototype was prepared. The aim of the prototype is to demonstrate how the monitoring system could work and to provide the basis for discussions with DG Research and external experts. Intentionally, the prototype was developed on a simple technical platform (Excel) to not determine the subsequent technical application.

STARTING POINT MODULE (B1) - POTENTIAL SDS GOAL ATTAINMENT

As a starting point, module (b1) (Potential SDS Goal Attainment) was selected because it can build on publicly available information (annual work programmes, EU SDS) and actually links FP7 and EU SDS (module (a) is merely an internal FP7 coherence mapping). For the prototype, the SDS objective area "climate change and clean energy" and the FP7-themes 2 (Food, agriculture, fisheries, biotechnologies), 3 (Information & communication technologies), 4 (Nanosciences & new production technologies), 5 (Energy), 6 (Environment incl. Climate Change) and 7 (Transport) were selected.[11]

The core element of the file architecture is a cross-reference table (see figure 3) that links FP7 topics (as a list of activities) and EU SDS objectives (as a target system). In a full version, this cross-referencing would include about 1,000 topics per year (regarding FP7) and roughly 70 objective areas (regarding EU SDS). Three kinds of links were distinguished:

- no impacts expected on the objective area
- certain impacts expected
- strong impacts expected

In order to make the categorisation comprehensible, the respective texts of the calls are also included in the cross-referencing (see lines with italic characters in figure 3).

Based on these categorisations, simple descriptive analyses were conducted, mainly based on the number of topics (see figure 4 and 5) to show how the basic information captured in the cross reference can be displayed graphically. In addition the cross-reference allows to identify the topics with an impact on a certain target area (see figure 6).

---

11 In a next step, this module was expanded to module (a) (coherence mapping) and options for integrating project information according to module (b2) (project analysis) were assessed (see following chapters).

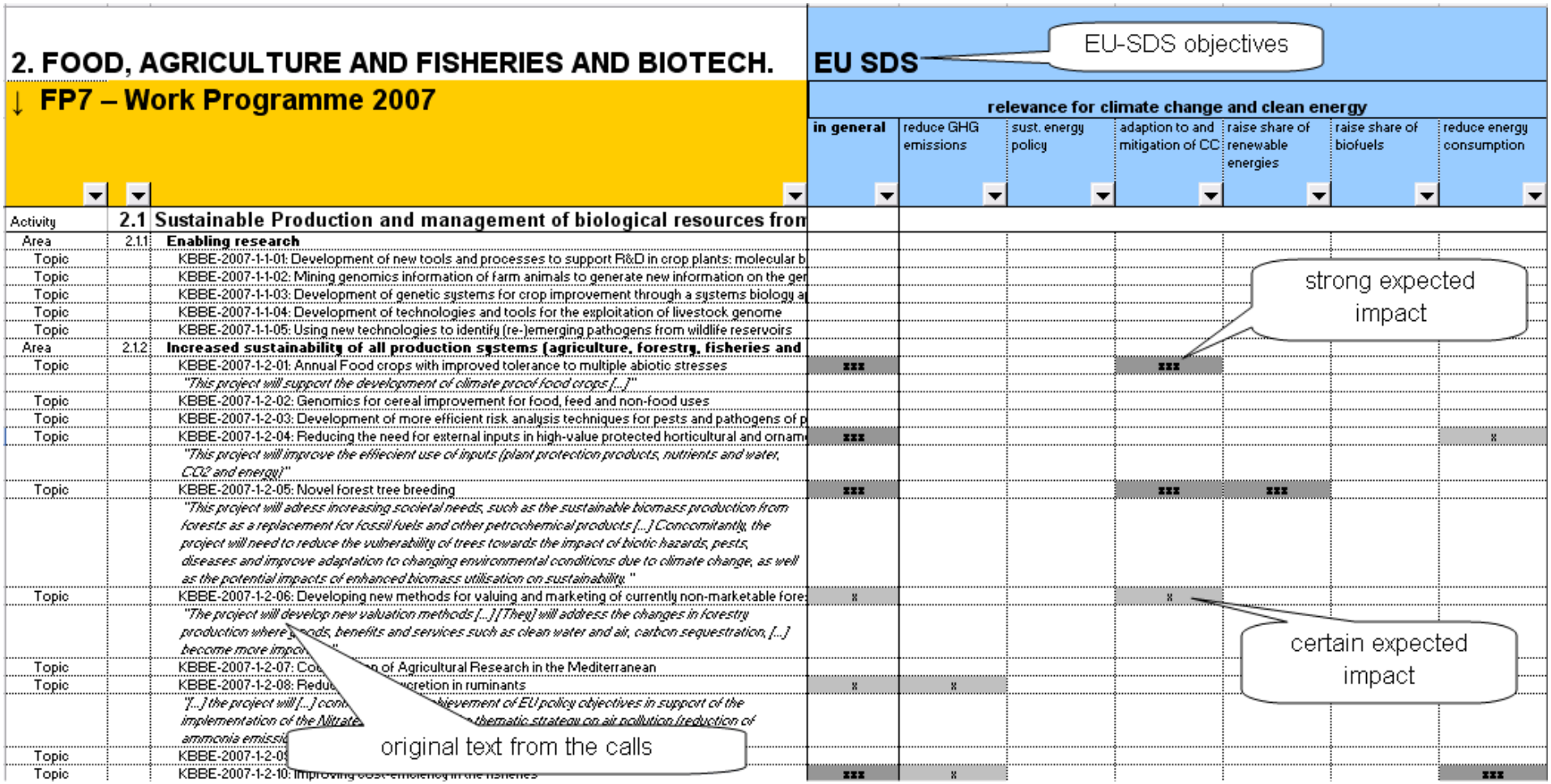

Figure 3: A prototype of crossreferencing FP7 and the EU-SDS

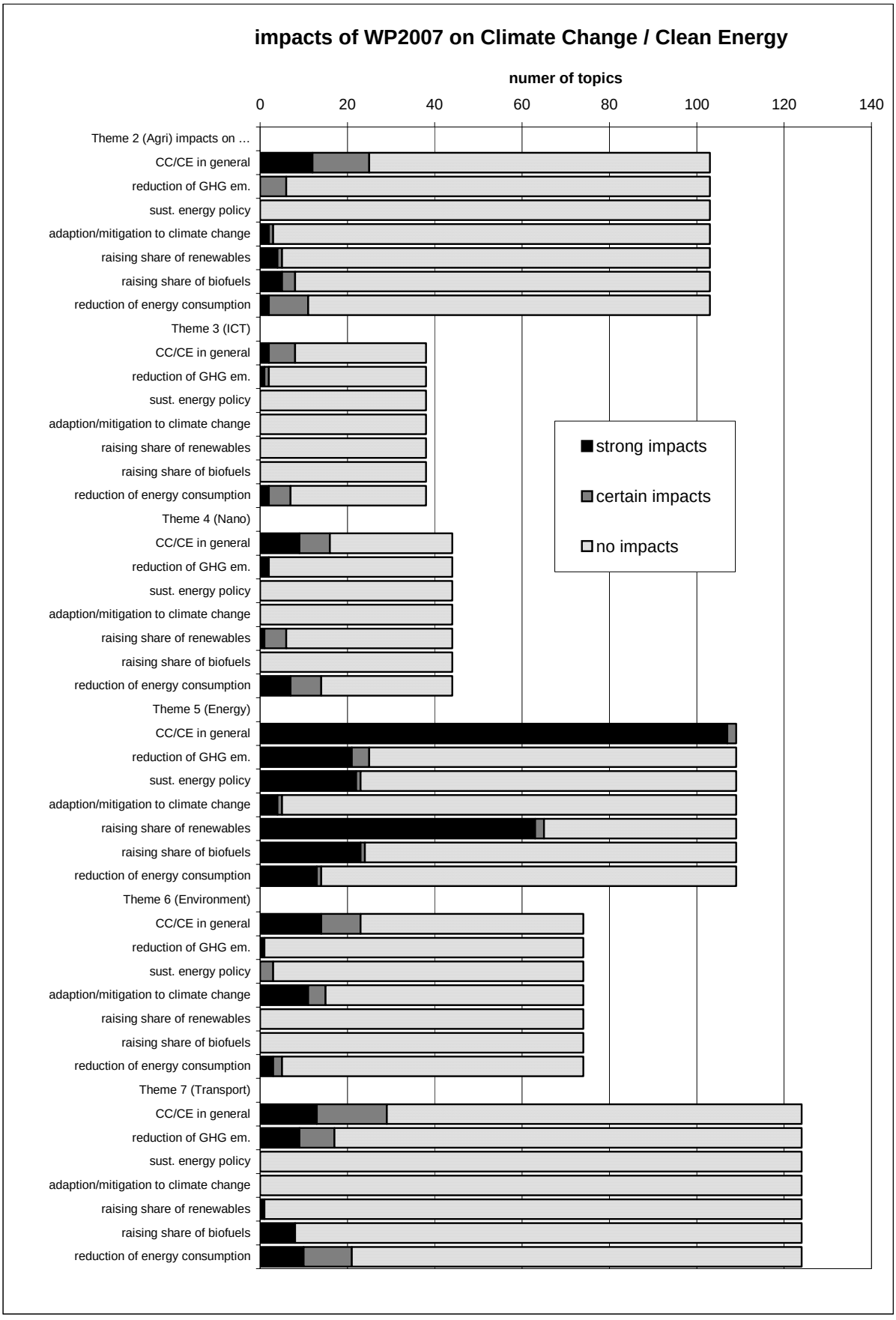

Figure 4: Analysis of the prototype by SDS objectives

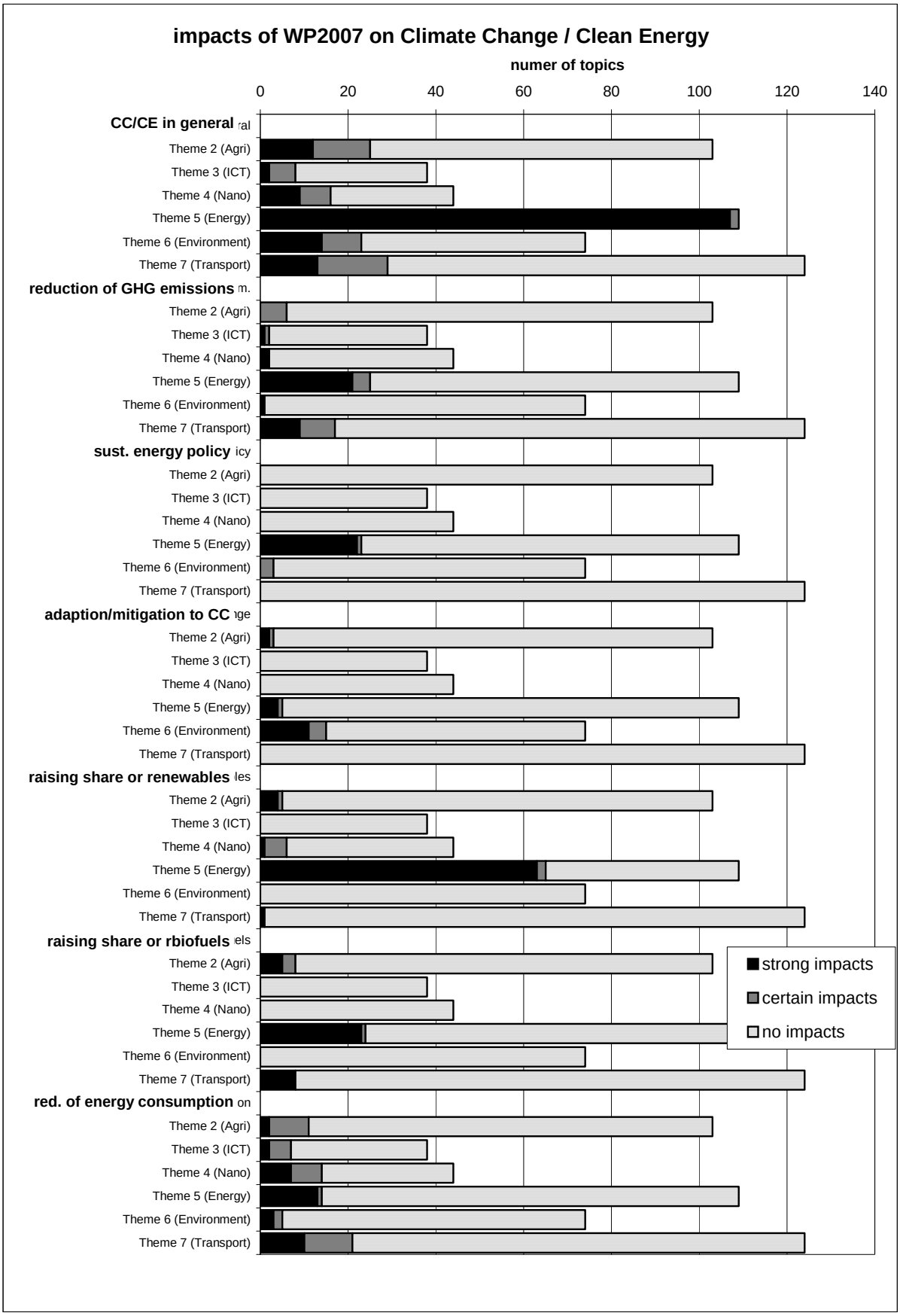

Figure 5: Analysis of the prototype by FP7 themes

Contribution of FP7 topics to the EU-SDS objective "Reduction of energy consumption"		
2. FOOD, AGRICULTURE AND FISHERIES AND BIOTECHNOLOGIES		
Activity	**2.1**	**Sustainable Production and management of biological resources from land, forest and aquatic environments**
Area	2.1.2	**Increased sustainability of all production systems (agriculture, forestry, fisheries and aquaculture); Plant health and crop protection**
Topic		KBBE-2007-1-2-10: Improving cost-efficiency in the fisheries
Activity	**2.3**	**Life Sciences, biotechnology and biochemistry for sustainable nonfood products and processes**
Area	2.3.1	**Improved biomass and plant based renewables**
Topic		KBBE-2007-3-1-04: FOREST PRODUCTS - New forest based products and processes
3. ICT - INFORMATION AND COMMUNICATION TECHNOLOGIES		
Challenge	**6**	**ICT for Mobility, Environmental Sustainability and Energy Efficiency**
Objective		ICT-2007.6.2: ICT for Cooperative Systems
Objective		ICT-2007.6.3: ICT for Environmental Management and Energy Efficiency
4. NANOSCIENCES, NANOTECHNOLOGIES, MATERIALS AND NEW PRODUCTION TECHNOLOGIES - NMP		
Activity	**4.2**	**Materials**
Area	4.2.2	**Knowledge-based smart materials with tailored properties**
Topic		NMP-2007-2.2-3 Advanced material architectures for energy conversion
Area	4.2.4	**Advances in chemical technologies and materials processing**
Topic		NMP-2007-2.4-1 Flexible efficient processing for polymers
Topic		NMP-2007-2.4-2 Nanostructured catalysts with tailor-made functional surfaces
Activity	**4.3**	**New production**
Area	4.3.2	**Adaptive production systems**
Topic		NMP-2007-3.2-1 Rapidly configurable machines and production systems
Area	4.3.4	**Rapid transfer and integration of new technologies into the design and operation of manufacturing processes**
Topic		NMP-2007-3.4-2 Innovative pathways in synthesis - improving efficiency by smart synthesis, design and reduction of the number of reaction steps
Activity	**4.4**	**Integration of technologies for industrial applications**
Topic		NMP-2007-4.0-5 Resource efficient and clean buildings
Topic		NMP-2007-4.0-6 Innovative added-value construction product-services
5. ENERGY		
Activity	**8**	**ENERGY EFFICIENCY AND SAVINGS**
Area	8.1	**EFFICIENT ENERGY USE IN THE MANUFACTURING INDUSTRY**
Topic		ENERGY.2007.8.1.1: Manufacturing industry: wastes and waste heat recovery and transfer
Topic		ENERGY.2007.8.1.2: Manufacturing industry: SMEs energy innovation
Topic		ENERGY.2007.8.1.3: Manufacturing and process industries: Innovative energy efficient industrial processes
Area	8.2	**HIGH EFFICIENCY POLY-GENERATION**
Topic		ENERGY.2007.8.2.1: High efficiency poly-generation - applications with renewable energies
Area	8.5	**INNOVATIVE STRATEGIES FOR CLEAN URBAN TRANSPORT: CIVITAS-PLUS**
Topic		ENERGY.2007.8.5.1: Testing innovative strategies for clean urban transport
Area	8.6	**SOCIO-ECONOMIC RESEARCH AND INNOVATION**
Topic		ENERGY.2007.8.6.1: Support action for evaluation and monitoring CIVITASPlus
Area	8.7	**THEMATIC PROMOTION AND DISSEMINATION**
Topic		ENERGY.2007.8.7.1: Promotion and dissemination
Topic		ENERGY.2007.8.7.2: Support action for coordination and dissemination CIVITAS-Plus
Activity	**9**	**KNOWLEDGE FOR ENERGY POLICY MAKING**
Area	9.1	**KNOWLEDGE TOOLS FOR ENERGY-RELATED POLICY MAKING**
Topic		ENERGY.2007.9.1.2: Energy behavioural changes
Topic		ENERGY.2007.9.1.4: Energy technology transfer
Activity	**10**	**HORIZONTAL PROGRAMME ACTIONS**
Topic		ENERGY.2007.10.0.1: Optimise EU action through a better coordination of the international cooperation initiatives of the EU and Member States (ERA-NET)
Topic		ENERGY.2007.10.0.2: Trans-national co-operation among NCPs
Topic		ENERGY.2007.10.0.3: Fostering coordination between national and European energy RTD strategies and programmes (ERA-NET)
6. ENVIRONMENT (INCLUDING CLIMATE CHANGE)		
Activity	**6.2**	**SUSTAINABLE MANAGEMENT OF RESOURCES**
Area	6.2.1.5	***Urban development***
Topic		ENV.2007.2.1.5.1. Urban metabolism and resource optimisation in the urban fabric
Activity	**6.3**	**ENVIRONMENTAL TECHNOLOGIES**
Sub-Activity	6.3.1	**Environmental technologies for observation, simulation, prevention, mitigation, adaptation, remediation and restoration of the natural and man-made environment**
Area	6.3.1.3	***Waste***
Topic		ENV.2007.3.1.3.1. Development of integrated waste management technologies for maximising material and energy recovery/recycling of the organic (humid) fraction of mur
Area	6.3.1.5	***Built environment***
Topic		ENV.2007.3.1.5.1. Low resource consumption buildings and infrastructure
7. TRANSPORT (INCLUDING AERONAUTICS)		
	7.1	**AERONAUTICS and AIR TRANSPORT**
Acitivty	7.1.1	**THE GREENING OF AIR TRANSPORT**
Topic		AAT.2007.1.1.4. Systems and Equipment
Topic		AAT.2007.1.4.1. Integrated approach to novel engine architectures
Acitivty	7.1.6	**PIONEERING THE AIR TRANSPORT OF THE FUTURE**

Figure 6: Topics with an expected impact on "Reduction of Energy Consumption"

In a second step, cross-referencing was extended by additional screening criteria, e.g. by funding scheme, and the innovation stage envisioned in each topic (see figure 7). Both additional criteria were selected to generate additional information on the quality of the expected impacts of FP7: The innovation stage gives an impression of the time lag between the research projects and the expected impacts on policy, society and markets, the funding scheme allows a better weighting than just counting the number of topics. If the monitoring system is extended to module (b2) (Project Analysis), the information of funding schemes can be processed automatically.

Both analyses based on these additional screening criteria (see figure 8 and 9) are just first sketches and can be detailed at any time.

2. FOOD, AGRICULTURE AND FISHERIES AND BIOTECH. ↓ FP7 – Work Programme 2007			Funding scheme					Innovation stage					
			Small/ med. CP	Large CP	CSA	NoE	ERA-NET	basic research	applied research	patent (processes & tools) development	demo. project	market diffusion measures	crosscutting support of policy decisions
Activity	2.1	**Sustainable Production and management of biological resources from**											
Area	2.1.1	**Enabling research**											
Topic		KBBE-2007-1-1-01: Development of new tools and processes to support R&D in crop plants: molecular b											
Topic		KBBE-2007-1-1-02: Mining genomics information of farm animals to generate new information on the ger											
Topic		KBBE-2007-1-1-03: Development of genetic systems for crop improvement through a systems biology a											
Topic		KBBE-2007-1-1-04: Development of technologies and tools for the exploitation of livestock genome											
Topic		KBBE-2007-1-1-05: Using new technologies to identify (re-)emerging pathogens from wildlife reservoirs											
Area	2.1.2	**Increased sustainability of all production systems (agriculture, forestry, fisheries and**											
Topic		KBBE-2007-1-2-01: Annual Food crops with improved tolerance to multiple abiotic stresses	xxx					xxx					
		"This project will support the development of climate proof food crops [...]"											
Topic		KBBE-2007-1-2-02: Genomics for cereal improvement for food, feed and non-food uses											
Topic		KBBE-2007-1-2-03: Development of more efficient risk analysis techniques for pests and pathogens of p											
Topic		KBBE-2007-1-2-04: Reducing the need for external inputs in high-value protected horticultural and ornam	xxx						xxx				
		"This project will improve the effiecient use of inputs (plant protection products, nutrients and water, CO2 and energy)"											
Topic		KBBE-2007-1-2-05: Novel forest tree breeding		xxx					xxx				
		"This project will adress increasing societal needs, such as the sustainable biomass production from forests as a replacement for fossil fuels and other petrochemical products [...] Concomitantly, the project will need to reduce the vulnerability of trees towards the impact of biotic hazards, pests, diseases and improve adaptation to changing environmental conditions due to climate change, as well as the potential impacts of enhanced biomass utilisation on sustainability."											
Topic		KBBE-2007-1-2-06: Developing new methods for valuing and marketing of currently non-marketable fore	xxx							xxx			
		"The project will develop new valuation methods [...] [They] will address the changes in forestry production where goods, benefits and services such as clean water and air, carbon sequestration, [...] become more important"											
Topic		KBBE-2007-1-2-07: Coordination of Agricultural Research in the Mediterranean											
Topic		KBBE-2007-1-2-08: Reduction of N excretion in ruminants		xxx				xxx					
		"[...] the project will [...] contribute to the achievement of EU policy objectives in support of the implementation of the Nitrates Directive and the thematic strategy on air pollution (reduction of ammonia emissions)."											
Topic		KBBE-2007-1-2-09: From capture based to self-sustained aquaculture											
Topic		KBBE-2007-1-2-10: Improving cost-efficiency in the fisheries	xxx						xxx				

Figure 7: Extending the prototype by funding scheme and innovations stage

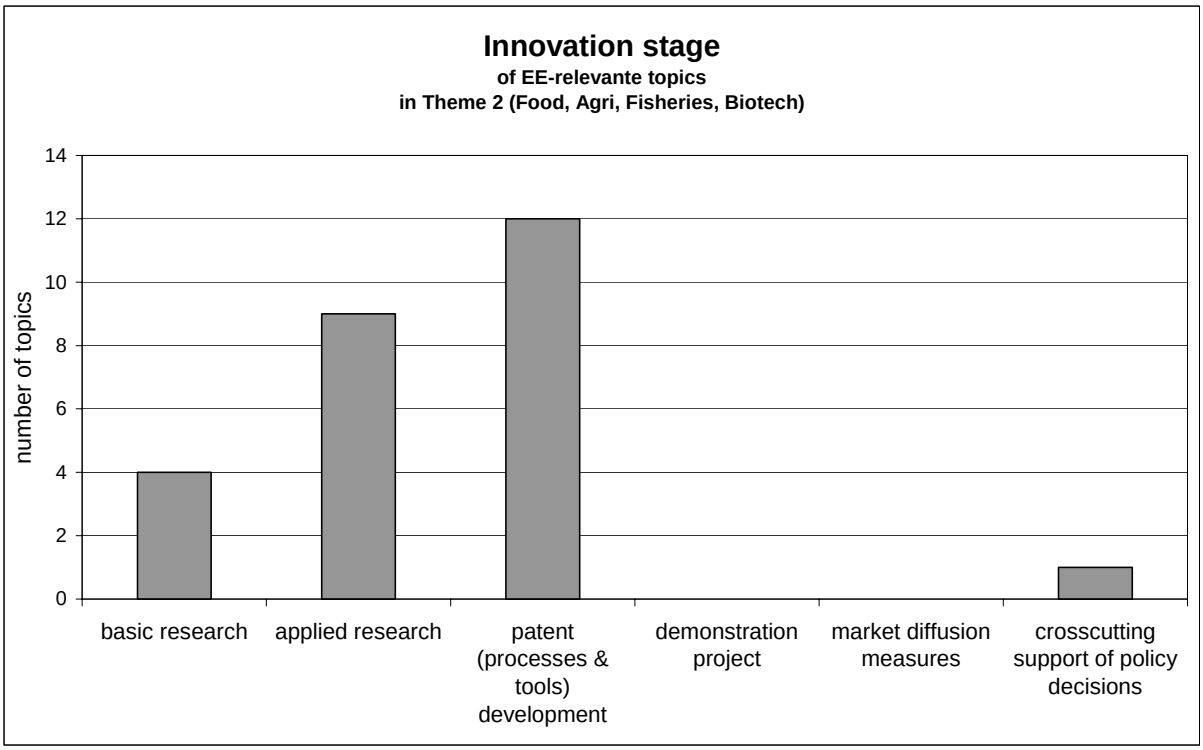

Figure 8: Analysis of the prototype innovation stages

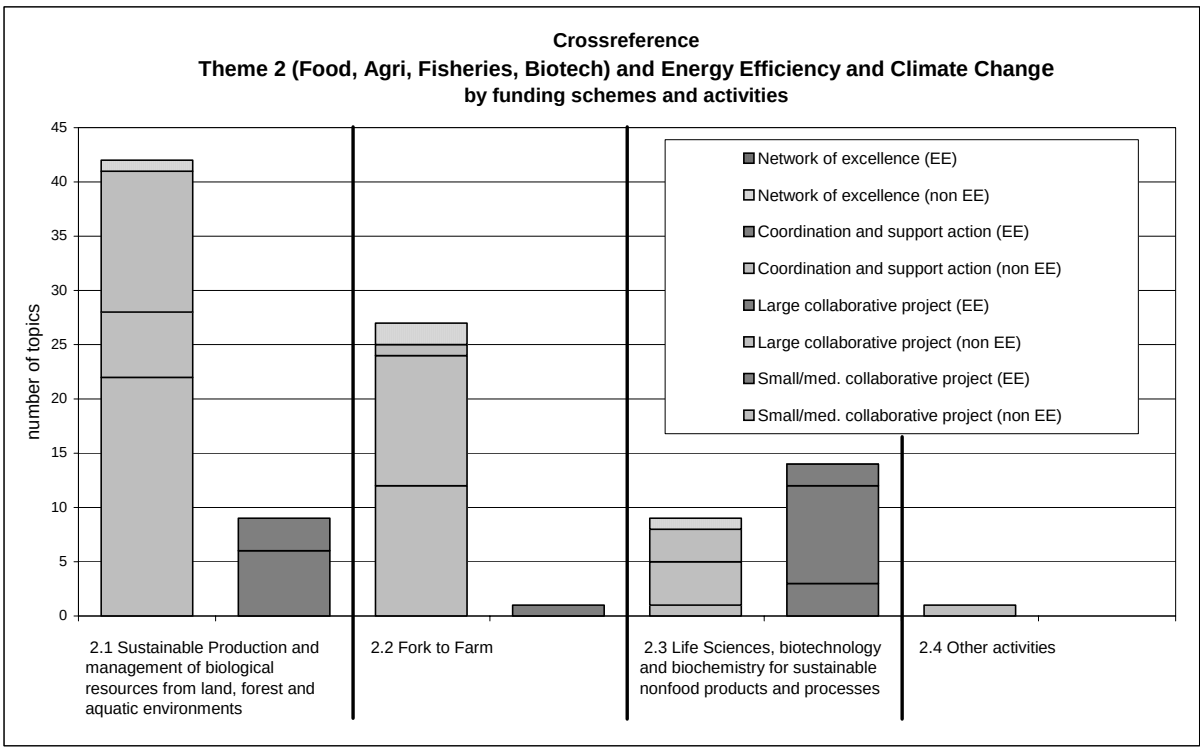

Figure 9: Analysis of the prototype by funding schemes

Our experiences show that

- the operationalisation of "Sustainable Development" by using the operational objectives and targets from the EU SDS is plausible and feasible;
- the descriptive text of the topics is sufficient for a draft categorisation, however, a feedback process on the first draft categorisation from thematic experts should be considered;
- descriptive analyses give a broad overview, while the listing of topics that contribute to certain objectives allow to go more in-depth – a databased monitoring system should consider these display options;
- cross-referencing takes about one day per theme and objective area, which implies that a total workload of 70 working days per work programme can be expected.

Discussion and Recommendations:

Because of the policy links between the EU SDS and the Lisbon Strategy, it could be considered in the set-up of the monitoring system to also include objectives relevant for growth and competitiveness. Furthermore, the monitoring system should be flexible enough to expand the target system to additional objectives from new policy documents (e.g. new Council Conclusions). In this case, the workload for expanding the categorisation must be considered. This option, however, should be taken into account when developing the software.

Negative impacts are currently not addressed in the concept of the monitoring system.[12] One the one hand, this is due to the fact that negative impacts are not included in the formulation of the topics and, therefore, cannot be considered in a document analysis. On the other hand, documenting negative impacts could develop into a naming-and-shaming exercise of individual parts of FP7 and this could limit the acceptance of the monitoring system within the EU. In this context, it would be worth to consider if the monitoring system should include additionally technical facilities to integrate experts' views and to support dialogue processes.

Our experiences show that the extension only marginally increases the time effort for the categorisation. When formulating the technical specification of the monitoring system, further screening criteria should be considered and discussed.

12 As an example, we use a formulation of the Specific Programme, Theme 7 (Transport), Area "Aeronautics and Airtransport", Activity 7.1.2. "Increasing Time Efficiency" which states „to accommodate the projected growth of three times more aircraft movements". To reach this objective, negative impacts on greenhouse gas emissions and climate change can be expected.

INTEGRATING MODULE (A) - COHERENCE MAPPING

In a third step, we analysed if and how the cross-referencing developed for module (b1) could be extended to include information from FP7 policy documents (Framework Programme, Specific Programme) in order to integrate module (a) (Coherence Mapping) into the monitoring system. By doing so the monitoring system could support the coherent development of the annual calls, allow the identification of gaps and thus ensure the coherence between WPs, SP and FP documents.

Analyzing the documents it became apparent that two kinds of formulations of objectives in SP and FP documents can be distinguished:

- Formulations that have the character of global objectives are comparatively infrequent and should – similar to the objectives of the EU SDS – be integrated into the target system. For instance, Theme 2 of the Specific Programme includes the objectives „increasing the competitiveness of the Europe's industry" and "promoting capacity building for energy efficiency and renewable energies". In order to avoid the effort of adjusting the categorisation of all topics later on, these objectives should be identified at the set-up of the monitoring system and integrated in the target system.
- Formulations that refer exclusively to individual Themes, Areas or Activities should preferably be integrated in the hierarchical structure of the Themes. The reason for this is that they only have a limited scope and are only used for testing the completeness when formulating new work programmes or calls.

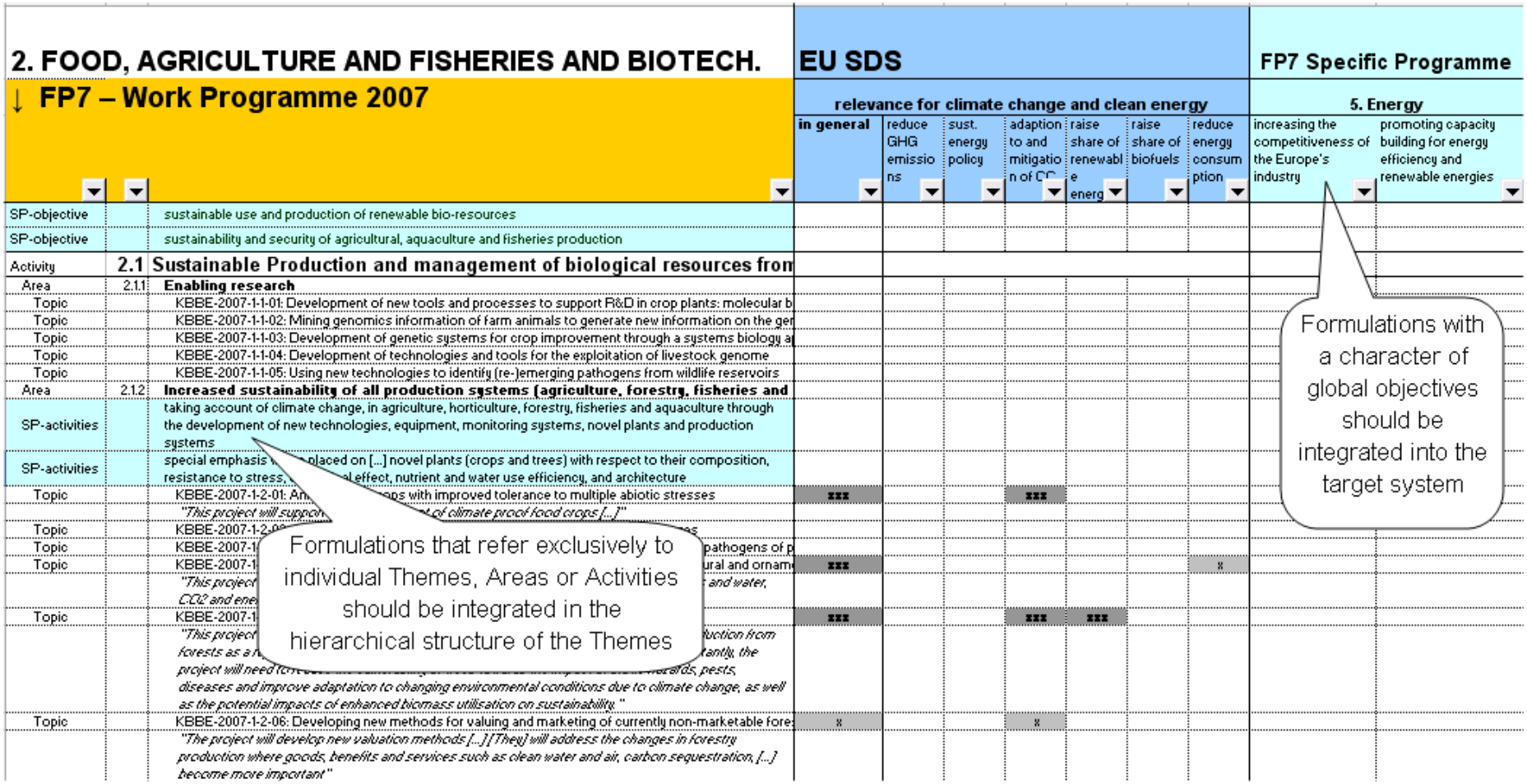

Figure 10: Integrating coherence mapping into to prototype

OPTIONS FOR INTEGRATING MODULE (B2) - PROJECT ANALYSIS

An extension of the prototype to the level of projects was not undertaking in this project. However, we outline below a number of options that would result in a different level of detail of the processed information, different requirements for software development and supervision and a different depth of intervention in existing activities:

Option A: Integrating Existing Project Data

By setting up an interface programme, project data from DG Research's internal project administration system could be copied into the monitoring system. In doing so, information about the number and names of the projects per topic, their budgets, running times, consortium information and the countries involved could be processed. In this case, additional analyses could be developed (e.g. maps showing the link between research funds and certain sustainable development objectives). Assuming that the projects contribute to the targets formulated in the topics (and assuming that this is guaranteed by the evaluation process), no additional cross-referencing is necessary. Therefore, this option is the cheapest one.

Option B: Decentralised cross-referencing of projects and EU SDS objectives

To expand cross-referencing from the topic to project level, this option builds on Option A and expands it to a decentralized data collection on expected impacts of each project. Therefore, all project coordinators would get an individualised access to the monitoring system (limited to their project). Cross-referencing of the topic level would be taken as a default value and proposed as a cross-reference for their project. By using an internet interface, the project coordinators could modify the cross-references (e.g. add additional impacts or delete some of them). In this case, the software should offer the necessary options (e.g. automatic email, secure individualised access, documentation of modifications) and a feedback loop (e.g. plausibility test, feedback in case of too many or too little impacts documented) should be foreseen. The advantage of this option is that it uses the expertise of the project coordinators. However, it has to be taken into account that this option also creates additional work for the coordinators.

Option C: External cross-referencing of projects and EU SDS objectives

As an alternative to Option B, the cross-referencing could also be undertaken by those external experts who are responsible for the cross-referencing of topics. In this case, cross-referencing is based on project abstracts and progress reports. As there are about three times as many projects (about 3,000 per year) as topics (about 1,000 per year), this option is the most expensive one.

Discussion and Recommendations:

In any case, the question of timing is crucial: When and how often project information is transferred (Option A) or collected (Option B and C) and how previous analyses are updated. For instance, during the course of a project, the budget distribution between partners could be changed and this would cause differences in the regional analysis. Therefore, it would be necessary to consider how these differences could be documented, analysed and published. Due to practical constraints, we suggest to conduct cross-referencing on a project level (Option B and C) just two times: in the middle of a project and at its end.[13]

Another challenge is the inclusion of projects in the programme lines "Ideas", "People" and "Capacities". As these programme lines do not ex-ante define topics, the integration of project information in an existing cross-referencing (Option B) or the adoption of cross-referencing as default value (Option B) is not possible. Currently, only a decentralised data collection (Option B) or a new external categorisation (Option C) seems possible.

TESTING IF THE DATABASE OF THE AUSTRIAN SDS CAN BE ADOPTED

In a last step, we compared the data structure of the prototype with the data structure of the database of the Austrian Sustainable Development Strategy (SDS) to assess whether it could be adopted for FP7.

- The Austrian SDS database supports the communication between different ministries and stakeholders in the development of new projects and aims to improve the networking in the project development. The FP7 monitoring prototype focuses on the assessment and display of expected impacts of already published work programmes and topics. It is, therefore, an expert-based system rather than a networking tool like the Austrian SDS database.
- The data core of the FP7 monitoring prototype is a cross reference of a limited number of FP7 topics and EU-SDS objectives. However, the data core of the Austrian SDS is a multiple pointer link between individual projects and a hierarchical target system. Therefore, the data in the latter is structured differently.
- The record structure of the two databases is totally different. Therefore, all data input and display routines would have to be adapted.

Although there are some similarities between the two systems, adopting the Austrian SDS database would not save a significant share of the total costs of a FP7 monitoring system: The data core and the record structure need to be adapted according to the needs of DG Research. The data input and display routines need to be programmed from scratch. Data analysis routines need to be developed in an interactive way to find the best mixture of standardised and individualised analyses. A significant share of the project budget would be used for the expertise necessary for crossreferencing FP7 and EU-SDS. Considering these issues, we came to the conclusion that adopting the Austrian SDS database will not save a significant part of the projects costs for creating and implementing an FP7 monitoring system.

---

[13] We consider cross-referencing at the beginning of a project as less reasonable because project proposals (or their abstracts) are mostly strongly oriented towards the texts of the topics. Therefore, one can assume that only marginal differences would emerge in comparison to the cross-referencing on the topic level.

RECOMMANDATIONS FOR FOLLOW UP

This project report includes

- a structural analysis of FP7 and its contribution to the objectives of the EU SDS,
- the design of a modular monitoring system,
- the test of its feasibility by setting up a prototype, and
- the summary of experiences and recommendation for the next steps.

The following questions were discussed in workshops with representatives of DG Research and external experts but could not entirely be resolved:

- How can the monitoring system be used by policy-makers, the media and the general public?
- Which features of participation and dialogue shall be supported by the monitoring system?
- Can the monitoring system be expanded to activities of the European Research Area (ERA-NET)?
- Which analyses are required and to which extend should they be standardized?
- Which user interface is required to present analyses and how interactive should it be?

In general, we suggest the following work packages to set up the monitoring system:

Software: file architecture, workflow, system specification, user interface, data input and data transfer software, standardised analyses and reports, documentation, hosting, security, support.

Content: finalising the target system and additional screening criteria, screening and cross-referencing annual work programmes, processing information on project level, plausibility tests and feedback from external experts, individual analyses, project reports.