Prototypical Policy Impacts on Multifunctional Activities in rural municipalities

A collaborative project under the EU Seventh Framework Programme



SCREENING IMPACTS OF EU POLICIES ON RURAL AREAS

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PRIMA aims to develop a method for scaling down the analysis of policy impacts on multifunctional land uses and on the economic activities. The scoped policies will include the cohesion policy (ERDF, ESF, CF), the enlargement process (IPA) & the rural development policy (EAFRD) of the European Commission, with a special focus on agriculture, forestry, tourism, and ecosystem services. The approach will: rely on micro-simulation and multi-agents models, designed and validated at municipality level, using input from stakeholders; address the structural evolution of the populations (appearance, disappearance and change of agents) depending on the local conditions for applying the structural policies on a set of municipality case studies. Involving eleven partners, the project is coordinated by *Cemagref*.

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Executive Summary

The report on "Screening impacts of EU policies on rural areas" (PRIMA Deliverable 6.1.) discusses the title topic in the context of the different contextual and methodological aspects taken into account in PRIMA with special emphasis on the screening of policies impacts. The report starts with the definition of the terms of screening and impact assessment for EU applications. Several screening approaches are differentiated and the screening requirements are named for the screening of impacts, programmes and projects in the context of Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and new approaches of Sustainability Impact Assessment (SIA).

The screening is mainly discussed from the perspective of (a) the policies assessment by the example of SEA, (b) the general screening requirements, (c) the ongoing developments of Sustainability Impact Assessment Tools (SIAT), (d) in the context of multifunctionality of rural areas, (e) in the modelling context of the Agent Based Modelling, (f) the stakeholder and local knowledge perspective, and (g) in the indicator application context of the rural development indicators applied in PRIMA. The report is organised in the way that in the first part experiences of Impact Assessment of policies are given followed in the second part by main aspects in the research focus of PRIMA.

Screening should be enhanced in PRIMA for the usage in Ex-ante Impact Assessment to analyse potential effects of new policies before their adoption. SIA will be enhanced by using experiences developed for SEA and EIA. The policies assessment of the Strategic Environmental Assessment concludes the experiences made for the environmental dimension of sustainability and the main steps of a screening process are explained. The discussion about SIAT gives an overview about existing and future SIAT approaches, i.e. Tools dedicated to ex-ante Sustainability Impact Assessment, and recapitulates the expected links between the scope of PRIMA and this emerging field of applied research. A synthesis of main methodological research questions and steps of screening application is summarized.

PRIMA will enhance the screening process by methods and model developments (Agent based modelling and micro-simulation), stakeholder involvement techniques and the linkage of this approaches to impact indicators in the context of multifunctionality of rural areas. The stages of an EIA process is explained for the adoption to ABM model developments and clarified by the importance and relevancy of information for screening and scoping when implementing of ABM. Stakeholders and local knowledge should be linked carefully to the policy assessment when providing essential information for the model application and for the test of essential indicators and for the formulation of projects, plans and programmes wanted/needed by the stakeholders. Methodological issues for the production of local knowledge are named for the identification of stakeholders and the techniques application. Finally a list of indicators for the usage in PRIMA and developed on the basis of the indicators of the Rural Development Report is given. These indicators will link the Impact Assessment to the monitoring of rural development.

1 INTRODUCTION



Burghard Meyer

Aim of this report about the screening of the impacts of EU policies on rural areas is to reflect the screening and impact assessment in the context of the general goal of PRIMA. The screening of impacts of EU policies on rural areas should be discussed first in the context of new developments in the field of SIA research and also in the context of the formal instruments of impact assessment EIA and SEA in the EU. The screening of policies in the policy assessment is discussed in the context of the knowledge about the implementation of EU policies assessments and also against the background of the methodological discussions about SIAT development in current EU-Projects. The report should demonstrate and work out the contribution PRIMA can deliver for the screening of local aspects and for the rural dimension in the context of multi-functionality of rural regions. Methodological problems in the exploration of stakeholder and local knowledge will be formulated. The indicator discussion worked out in the Milestone 6.1 about rural development and land use indicators should be linked to bridge the gaps between different model approaches chosen in PRIMA and the rural development perspective.

Main goals of PRIMA for the enhancement of screening methodologies are: 1) to discuss the screening of rural development problems in the policy assessment context; 2) to discuss the widening of EIA and SEA scope to SIA aspects, by the screening of social, economic and environmental indicators for the rural development; 3) to ascertain the early questioning and participation of stakeholders concerning the main aspects/problems and projects in case study regions and 4) to formulate methodological needs of the multi-agent modelling when asking the stakeholders..

2 SCREENING AND IMPACT ASSESSMENT

2.1 Screening and Impact Assessment – Definitions

Screening is defined by CEC (2001b) as “the process by which a decision is taken on whether or not EIA is required for a particular project.” The “Competent Authority (CA) makes a decision on whether EIA is required. This may happen when the CA receives notification of the intention to make a development consent application, or the developer may make an application for a Screening Opinion. The Screening decision must be recorded and made public” (CEC 2001b). Screening is the first step after project, plan, programme or policy formulation in the impact assessment frame. Screening results a decision about when further formal steps and analyses are required or not required.

Several definitions in the context of *impact assessment* are available. Main definitions taken from official homepages of the EC for impact assessment, environmental assessment, environmental impact assessment, strategic environmental assessment and sustainability impact assessment, should be given in the following to clarify the assessment in the EC context.

Impact Assessment (IA) is described generally on the homepage of the Secretariat-General of the European Commission (CEC 2009e): "Impact assessment (IA) is a process aimed at structuring and supporting the *development of policies*. It identifies and assesses the problem at stake and the objectives pursued. It identifies the main options for achieving the objective and analyses their likely impacts in the economic, environmental and social fields. It outlines advantages and disadvantages of each option and examines possible synergies and trade-offs. Impact assessment is an aid to political decision, not a substitute for it. It informs decision-makers of the likely impacts of proposals, but it leaves it up to them to take the decisions."

Environmental Assessment is defined by CEC (2009d): "environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made". …."The process involves an analysis of the likely effects on the environment, recording those effects in a report, undertaking a public consultation exercise on the report, taking into account the comments and the report when making the final decision and informing the public about that decision afterwards. In principle, environmental assessment can be undertaken for individual projects such as a dam, motorway, airport or factory ('Environmental Impact Assessment') or for plans, programmes and policies ('Strategic Environmental Assessment')"

Environmental Impact Assessment is defined by CEC (2009c): "The EIA procedure ensures that environmental consequences of projects are identified and assessed before authorisation is given. The public can give its opinion and all results are taken into account in the authorisation procedure of the project. The public is informed of the decision afterwards. The EIA Directive (CEC 1985) outlines which project categories shall be made subject to an EIA, which procedure shall be followed and the content of the assessment."

The aim of the *Strategic Environmental Assessment* is defined by CEC (2001: § 1): "The objective of this [Strategic Environmental Assessment] Directive is to provide for a high level of protection of the environment and *to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development*, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment."

Sustainability Impact Assessment (SIA) is defined by CEC (2009b): "Sustainability Impact Assessment is a process undertaken before and during a trade negotiation which seeks *to identify economic, social and environmental impacts of a trade agreement*. The purpose of a SIA is to integrate sustainability into trade *policy* by informing negotiators of the *possible social, environmental and economic consequences* of a trade agreement. The idea is to assess how best to define a full package of domestic policies and international initiatives to yield the best possible outcome, not just in terms of liberalisation and economic growth, but also of other components of sustainable development. An SIA should also provide guidelines for the design of possible accompanying policy measures. Such measures may go beyond the field of trade as such, and may have implications for internal policy, capacity

building or international regulation. Accompanying measures are intended to maximise the positive impacts of the trade negotiations in question, and to reduce any negative impacts".

2.2 Screening of impacts of plans, programmes and projects in SEA, EIA and SIA

The EU *Sustainable Development Strategy* (CEC 2001a; CEC 2005) gives the main strategic directions of the development in the EU: "The overall aim of the EU Sustainable Development Strategy is to identify and develop actions to enable the EU to achieve a continuous long-term improvement of quality of life through the creation of sustainable communities able to manage and use resources efficiently, able to tap the ecological and social innovation potential of the economy and in the end able to ensure prosperity, environmental protection and social cohesion. The strategy sets overall objectives and concrete actions for seven key priority challenges for the upcoming period until 2010, many of which are predominantly environmental:

- Climate change and clean energy
- Sustainable transport
- Sustainable consumption & production
- Conservation and management of natural resources
- Public Health
- Social inclusion, demography and migration
- Global poverty and sustainable development challenges"

Impact assessment methods are applied to have a prospective and integrative view about policy, planning or project options. The prospective approach can relay to potential misinterpretation and fault or problematic assumptions as basic settings for the prognosis or scenario. Aim is to have a short criteria or indicator list with significant explanatory value. Main problem at the beginning of a survey or study is to find and to assess the significant decision criteria as basis for the screening.

Bunn (1978) classified screening methods in policy analysis following decision criteria or dominance criteria. Decision criteria are used when ranking methods apply. "The basic reasoning behind this class of screening methods is to assume a very simplified version of the decision criteria with which to evaluate the options under consideration. It is assumed that the approximations involved in the simplified screening criteria will be sufficiently robust not to affect the ranking of the options very much. Thus, in using this method, the decision maker is confident that a top subset of 3 or 4 of the screened options will contain the most preferred." ..."The dominance approach to screening does not seek to rank all the available options but rather to eliminate some of them, one by one, as being dominated by other(s), whatever the exact preference structure of decision-maker may be providing a certain property has been identified, e.g. risk aversion (Bunn 1978)". The problem by the usage of dominance criteria is that the second best option will be neglected. This leads to the usage of decision criteria in impact assessment application.

The annexes to the impact assessment guidelines (CEC 2009a) include a roadmap to the "Initial IA screening and the planning of further work" by formulating a wide range of methodological help and pre-formulation help to clarify the decision criteria to be applied in the application example. This initial IA screening (see annex 1) includes a) the context and problem definition, b) the objectives of EU initiative, c) the options, d) the initial assessment of impacts and e) the planning of further impact assessment work.

For practical reasons the screening procedure for the environmental impact assessment is organised in practice by the CA in different steps by using screening tools or checklists. The screening steps (CEC 2001b) formulate the answering of the following aspects:

a) Is the project an Annex I or II Project of the (Directive 97/11/EC)?
b) Is the project on a Mandatory List requiring EIA?
c) Is the project on an Exclusion List exempting it from EIA?
d) Case-by-case consideration: Is the project likely to have significant effects on the environment?
e) Recording and publicising the screening decision. For the Case-by-Case screening a "checklist of information needed for screening" is available (CEC 2001b) (see annex 5 of this report).

2.2.1 Screening methods

Main works about the methodological development of screening methods can be found in the last decade in the fields of decision support systems, ex-ante assessment methods and integrated impact assessment tools. Abaza and Hamwey (2001) conclude about the strategic integrated assessment of trade policies (SIAT) in the sustainability context: "This framework undertakes a basic screening procedure to identify potential multilateral trade agreements or measures that are in conflict with environmental, developmental, and social objectives, and proposes mitigating and enhancing measures to promote sustainable development. This methodology was applied to the potential impacts of the trade rules expected to emerge in future WTO negotiations, with a specific focus on the EU but also considering impacts on developing countries." Thiel (2009) concludes a discussion about the use of *ex-ante* modelling tools in European Impact Assessment in the context of land use decision making problems: "IA has been introduced in 2002 as a procedure to formalise policy development, to improve the quality of policies and to make European policy development more transparent. Consultation, participation and (quantitative) assessment are its key elements."

In the European Impact Assessment practice ex-ante assessment models are the essential tools for the forecast of intended and not wanted developments. As explained in detail by Tscherning et al. (2008): "*Ex-ante Impact Assessment* was officially introduced into European Commission (EC) policy making in 2002. It is understood as a formal procedure to analyse potential effects of new policies before their adoption". EIA and SEA are predominantly political instruments with a long tradition in application. In contrast SIA is mainly worked from wider academic perspective. Formal EIA and SEA application guidelines are formally fixed (CEC 1985; CEC 2001c). Sustainability Impact Assessment (SIA) methods are still in progress and under discussion,

e.g. in the integrated project SENSOR; Helming et al. (2008). General similarities between the SEA steps and the "usual steps within ex-ante evaluations of Cohesion Policy programming documents are demonstrated in Tab. 1 in the "Handbook on SEA for Cohesion Policy 2007-2013" GRDP (2006). The evaluation is orientated both to the policy life cycle.

Table 1 | Similarities between SEA and typical ex-ante evaluations of Cohesion Policy documents (GRDP 2006)

SEA Steps	**Typical Ex-ante Evaluation Steps**
• Determination of the environmental issues, objectives and indicators that should be considered during the SEA process • Evaluation of the current situation and trends and their likely evolution if the programming document is not implemented • Assessment of development objectives and priorities • Assessment of proposed measures and eligible activities • Assessment of cumulative effects of the entire programming document • Evaluation of proposed management system • Evaluation of proposed monitoring system • Compilation of Environmental Report	• Analysis of the previous evaluation results (that determines the critical factors affecting implementation and effectiveness of the policy and the types of problem in terms of policy evaluability and monitoring) • Analysis of the strengths, weaknesses and potential of the state, region or sector concerned • Assessment of the rationale and the overall consistency of the strategy • Evaluation of expected socio-economic impacts and justification of the policy and financial resource allocation • Evaluation of the implementation and monitoring arrangements • Compilation of Report from Ex-ante evaluation

2.2.2 The screening requirements of the Directives 85/337/EEC and 97/11/EC

In the section "A3.1 Approaches to Screening" the Guidance on Screening (EC 2001b) clarifies different approaches to screening adopted in Member States for projects under the Directives 85/337/EEC and 97/11/EC. It is formulated in CEC (2001):

> • "In all Member States EIA must be carried out for project categories listed in Annex I of Directive 97/11/EC. Such projects are identified on mandatory lists of projects always requiring EIA.
>
> • Some Member States have also included some Annex II projects in their mandatory lists by setting statutory thresholds and criteria for these projects above which EIA is always required. This is in accordance with Article 4(2)(b). Directive 97/11/EC requires Member States to consider the Annex III selection criteria in setting these thresholds and criteria.

> • In some cases, Member States have also established "exclusion" or "negative" lists specifying thresholds and criteria below which EIA is never required or below which a simplified EIA procedure applies. There may be exceptions to the negative thresholds, for example for projects in defined sensitive locations. Such exceptions will apply in the case of Habitats Directive assessments.
>
> • If a project is not on a mandatory or exclusion list, it must be considered on a case-by-case basis by the competent authority, to determine whether the project is likely to have significant effects on the environment. In some Member States most projects are included on either mandatory or exclusion lists so case-by-case screening is rarely required. In others, case-by-case screening is the normal approach for most projects. The Directive requires the criteria in Annex III to be considered by the competent authority in reaching case-by-case screening decisions. Many Member States provide non-statutory guidance for this, for example on project characteristics, thresholds, locations etc., which mean the project could have significant effects and therefore require EIA."

A mandatory list is a "list of thresholds and criteria for specified categories of projects defining those projects for which EIA is always required because they are considered to be likely to have significant effects on the environment." An exclusion list is a "list of thresholds and criteria for specified categories of projects defining those projects for which EIA is not required because they are considered to be unlikely to have significant effects on the environment. An exclusive list may be over-ridden by other requirements e.g. that EIA is required for projects in certain locations". (Definitions CEC, 2001b). Koornneef et al. (2007) discusses the screening phase in large projects using the example of carbon sequestration for The Netherlands. The screening phase can be used to bundle the different aspects and planning requirements.

In general the approach for SEA assessments is comparable to the EIA. A list of plans and programmes is formulated to clarify the need of SEA application.

2.3 Strategic Environmental Assessment (SEA) of policies and in policies assessments

Introduction



Diana Kopeva

Strategic Environmental Assessment (SEA) is a process for assessing the significant environmental impacts of plan and program initiatives. SEA has been emerging in this context as a tool meant to support the process of policy development and planning practices with an essential environmental component and, above all, to promote principles of sustainable development. SEA contributes towards sustainability ensuring early consideration of environmental issues and facilitating environmentally sound actions. Moreover, SEA contributes to the integrated policy-making and planning process by considering cumulative effects of the proposed activities. SEA is a process that helps to integrate environmental issues in the procedure of strategic decision-

making. A number of the SEA procedures are currently incorporated in legislations of the EU Member States and other European countries.

There are many definitions of strategic environmental assessment (SEA). Sadler and Verheem (1996) call it:

> "a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations."

Therivel et al. (1992) define it as:

> "the formalised, systematic and comprehensive process of evaluating the environmental effects of a policy, plan or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making."

Perhaps the simplest definition of SEA is that it is the *environmental impact assessment* process applied to policies, plans and programmes, considering that the process of evaluating environmental impacts at a strategic level is not necessarily the same as evaluating them at a project level.

2.3.1 The European Union SEA Directive and UNECE SEA Protocol

Requirements for SEA procedure in EU nations are set out in European Council Directive 2001/42/EC (or "the SEA Directive"; CEC 2001) and the UNECE SEA Protocol. Both the SEA Directive and the SEA Protocol apply to a wide range of strategic actions with different types of impact and specify minimum requirements for SEA. They represent the efforts to agree on a single SEA system.

The EU SEA Directive

The SEA Directive was entered into force 21 July 2004 and its task is to point out possibilities for the Member States to harmonize and to connect EA procedures. The aim of the SEA Directive is:

> "...to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparations and adaptation of plans and programmes with a view to promoting sustainable development, by ensuring that ...an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment" (Art.1).

The Directive requires three major SEA inputs to be taken into account in decision-making:

(1) The *Environmental Report,* which should identify, describes and evaluates "the likely significant effects on the environment of the plan and programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan and programme" (Art.5.1). The production of the Environmental Report is mandatory. Planning authority is responsible for the preparation of this document. The SEA Directive specifies the minimum information that is to be provided in the Environmental Report (Annex I of the Directive; CEC 2001).

(2) The *consultation responses of the public and 'authorities'*. To improve the transparency of decision-making and ensure that SEA findings are properly taken into account, the consultation comments from the authorities, public and other Member States "shall be taken into account during the preparation of the plan or programme and before its adaptation" (Art.8).

(3) The *consultation responses of other Member States* where appropriate. The SEA Directive obliges the planning Member State to consult with other Member States if the Member State foresees likely significant effects on the environment in the other Member States (Art. 7).

Some positive and negative features of the SEA Directive can be defined. *Positive features* could include the following: (1) it covers a wide range of sectors; (2) it also makes a reasonable emphasis on the entire SEA process, rather than just on the preparation of a report; (3) its emphasis on alternatives; (4) it requires monitoring of the plan's actual effects, which will help to improve following SEA (Therivel, 2004). Nevertheless, there are some *negative features* of the SEA Directive: (1) it applies only to *'certain" plans and programmes*, and thus *does not* refer to *policies*; (2) the Directive's rules for deciding which of the strategic actions do require SEA, are very complex.

The UNECE SEA Protocol

The United Nations Economic Commission for Europe has developed the SEA Protocol to the UNECE Convention on EIA in the Transboundary Context (UNECE, 2003). The aim of the SEA Protocol is:

> "... to provide for high level of protection of the environment, including health: (1) by ensuring that environmental, including health, considerations are thoroughly taken into account in the development of P/P; (2) by establishing clear, transparent and effective procedures of SEA; (3) by providing for public participation in SEA; (4) by integrating environmental, including health, concerns into measures and instruments designed to further sustainable development" (Art.1).

In addition to considering the environmental effects of plans and programmes, the Protocol places a special emphasis on the human health issues. The second major achievement of the Protocol is to provide the basis for ad-

vancing democracy by incorporating public participation into the decision-making process. The Protocol is supposed to achieve this goal by providing the minimum set of procedures for SEA process (Appendix 3).

The SEA Protocol refers to plans, programmes and policies and legislative practices, though the application of SEA to latter is not mandatory. The Protocol covers the plans and programmes in the following fields agriculture, fisheries, energy, industry including mining, transport, regional development, waste management, water management, telecommunications, tourism, town and country planning or land use (Art. 4).

As mentioned above, the Protocol provides a background for an extensive public participation in the governmental decision-making process. The participation of the public in SEA builds on the Espoo Convention and the Aarhus Convention. The public will not only have the right to know about plans and programmes, but also the right to make comments, and obtain information related to the final decision and reasons for its adoption. In case of the plans and programmes, which are likely to have significant transboundary effects, the public and public authorities in the affected state will also have the right to be consulted (Art.8).

Objectives and principles of SEA

The main objective of SEA is to incorporate environmental/sustainability issues in strategic decision-making. Secondary aims of SEA are to improve the strategic action by making it clearer, more internally consistent; to involve the public or its representatives in the decision-making process; to educate decision-makers about the environmental impacts of their decisions. As a very minimum, the SEA process involves predicting the environmental impacts of a strategic action and using those predictions in decision-making. The purpose of SEA is to integrate environmental and sustainability factors into the policy-making process. SEA can help decision makers (Dusik & al., 2001):

• *to achieve environmentally sound and sustainable development* (by incorporation of environmental objectives in the formulation of projects, programmes and policies (PPPs); SEA supports the consideration of environmental and social aspects in connection with economic ones, dealing not only with the issues of the well-being of the current population);

• *to strengthen the process of development of PPPs* (by introducing environmental responsibility in planning agencies since they are responsible for assessing the environmental performance of new or amended PPPs);

• *to strengthen and streamline project EIA* (by prior identification of the scope of potential impacts, information needs and reduction of time and effort necessary to conduct individual reviews through so-called “tiering approach”; the “tiering approach” assumes using and specifying the outcomes of SEA on the lower levels of planning, that is decisions made on strategic level predetermine the context of project decisions, create the frames and conditions for them);

• *to save time and money* (by avoiding costly mistakes at the project level; SEA helps to inform decision-makers at an early stage about unsustainable development activities);

• *to improve good governance and build public trust and confidence in decision-making* (by increasing overall transparency of strategic decision-making and provision of an opportunity for public involvement).

Stages of SEA

SEA can be broken down into different activities conducted alongside the development of the plan or programme and consideration of alternative options. Five stages for SEA are outlined:

Stage A: Context, Baseline and Scoping. The plan making authority needs to consider the availability of background information and propose objectives and indicators for the SEA. This material is required at the outset when issues and options are being developed (SEA Directive - Annex 1). The plan making authority decides the likely scope of the environmental report, and what level of detail to be examined. The statutory environmental bodies shall be consulted in this process.

Stage B: Alternatives and Assessment. At this stage, reasonable alternatives to the plan need to be identified (SEA Directive - Article 5.1). The authorities need to assess the likely effects on the environment of the evolving plan, and its alternatives (SEA Directive - Article 5.1). Where there are significant adverse effects as a result of the plan, information needs to be provided on how these will be reduced, prevented or offset (SEA Directive - Annex 1).

Stage C: Preparing the Environmental Report. The Environmental Report is the key output of the SEA process which will present information on the effects of the draft plan or programme.

Stage D: Consultation. The Environmental Report should be available for consultation at the same time as the draft plan (SEA Directive - Article 6.2 and Annex 1). After consultation responses have been received, a statement must be made regarding how the Environmental Report and consultation responses have been taken into account in the plan development (SEA Directive - Article 8).

Stage E: Monitoring of the significant environmental effects of implementing the plan (SEA Directive - Article 10.1). This allows any unforeseen adverse effects of the plan to be recognised and dealt with. Monitoring also enables future predictions to be made more accurately and provides baseline information for future plans.

The SEA Directive requires member-states to determine whether plans or programmes are likely having significant environment effect. The algorithm to the criteria for application of SEA is illustrated in the diagram below (Figure 1).

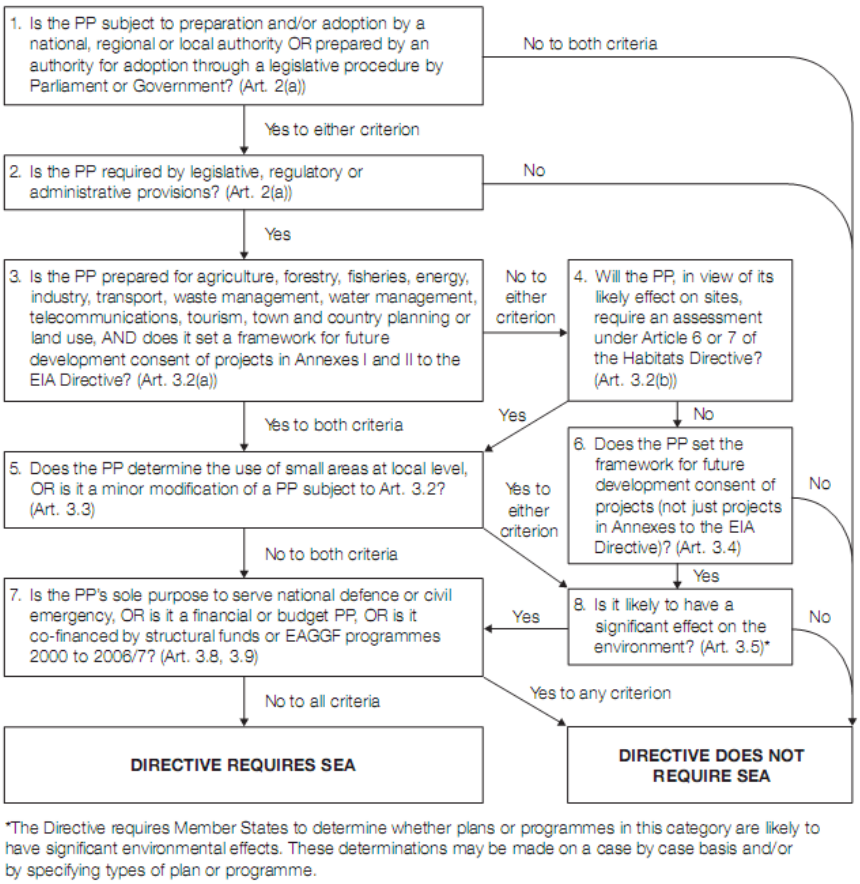


Figure 1 | Algorithm to the criteria for application of the SEA directive (OPDM, 2005: 13)

2.3.2 The screening requirements in SIA assessments

Burghard Meyer

The definition of mandatory and exclusion lists for policy assessment in SIA is not available yet. The discussion about the right indicators or a full list of indicators is not solved in this context. Generally, a wide range of indicators systems are available and can be used in the right context of policy assessment (see Milestone 6.1. report). Helming et al. (2008) give high attention on the right indicators for the sustainability impact assessment of land use changes – but the same authors ignore to discuss the mandatory or exclusion list of projects, plans or policies where a SIA is required or not required. The same authors also provide no information about the essential content or a minimum set of indicators needed for a potential formal SIA in terms of practicability. The keyword "screening" is not included in the index of Helming et al. (2008).

As EIA is required when a project is likely to have significant effects on the environment it should be clear, that a SIA is needed if an policy will have significant effects on the environment or on economic and social dimension.

The screening checklist developed in the CEC (2001b) should be enlarged in a SIA screening by number of "questions to be considered", when the focus of the assessment is widening by the social and the economic dimension. In the context of rural development in PRIMA the checklist can be enlarged too by questions based on the selected core set of indicators. Generally, for the SIA assessment of rural development policy a checklist is required, potentially based on the rural development indicators (DG Agri, 2008).

2.3.3 SIAT: expectations and criticism



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Several SIATs, i.e. tools dedicated to *ex-ante* Sustainability Impact Assessment, have been—or are currently—developed in relation with the European Commission. The following paragraphs recapitulate the rationale for such tools, as well as the expected links between the scope of PRIMA and this emerging field of applied research. (See overview table in the annex for current EU projects in the context of impact assessment.)

A reminder of the history of SIA procedures now implemented in the European governance system could be first deemed necessary, as intellectual roots of SIA are keys to the understanding of the current demand for SIATs—and its possible inherent shortcomings.

The launch of SIA by DG Trade in 1999 stemmed partly from a dissatisfaction with EIA and SEA procedures, (whose focus appeared too narrow and insufficiently balanced towards social issues), but it also matched a growing concern about the external political legitimacy of the Commission (illustrated then by the contested WTO negotiations in Seattle). In 2002, the approach was extended to the other DGs, resulting in a new form of IA that several authors, including (Ruddy & al., 2008), call *Commission-wide IA*. This new IA scheme shares the same origin with SEA and EIA but was also heavily influenced by *Regulatory Impact Assessment* (RIA), an older procedure often criticized for its 'business-first' stance (with a focus on the alleviation of the administrative burden of enterprises) (Ruddy & al., 2008).

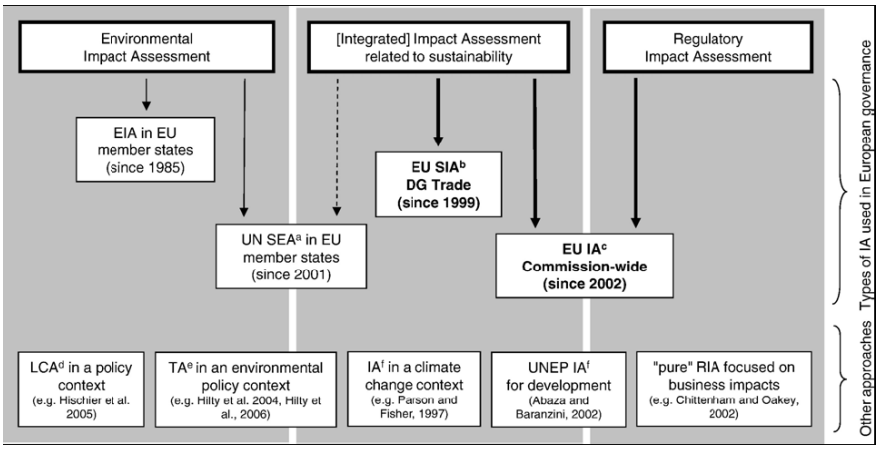


Figure 2 | Relationships between major IA frameworks (Ruddy & al. 2008)

This dual heritage of IA practice in the EC—between a quest for external legitimacy and internal pressures for more efficient governance practices—is at best ambiguous:

(i) the 'guiding principles for Sustainable Development' (EC2005) are buttressed on the SD pillars and a rather orthogonal need of a political nature ('meeting our international responsibilities');

(ii) accordingly, the justification for *ex-ante* IA are not only relying on SD principles but also on the need for 'Better Regulation' (Dewandre, 2009). If we add that the SD paradigm itself—with a 'triple bottom line' assumed to be the theoretical basis for SIA—has been for long critiqued for its complexity, normativity, subjectivity and ambiguity (Kasemir 2003, cited by Rotmans 2006; Turnpenny, 2009), we get a picture of the inherently 'messy' nature of SIA research.

As SIA are advocated to be both an evaluation tool and a consultative process, major pending questions still pertain to how participative and how binding these IA processes should be (Arbter, 2003; EC, 2009). Specific tools (the SIATs) have thus been designed to serve this dual purpose, by delivering analyses that should be both thorough (with a need for balance, insight…) and easily tractable to political decision-making. Adapted at first from the realms of economics and "decision support", adhoc tools have been recently developed, often based on a sophisticated chain of models. But, as illustrated by quotes from desk officers, the EU demand on SIAT has shifted from an overt optimism (Cf. Deybe, 2006 for how a SIAT should be expected to build a virtuous circle between top-down data-driven assessments and value-driven regional feedbacks) to stances more:

(i) Reflexive—Cf. (De Smedt, 2009) for a view on how future IA tools should help not only to answer focussed questions but to frame issues.

(ii) Critical—Cf. (Dewandre. 2009) for a renewed demand for operational and integrated tools.

As pointed out by (Turnpenny, 2009), IA procedures are of an inherently political nature (as they are both the subject of government practices and the vehicle of redistribution outcomes). Any assessment of a SIAT should thus encompass an explicit analysis of its key theoretical underpinnings: implicit interpretation of SD principles, consideration for social / cultural / institutional dynamics.

SIAT in EU-funded research

A few FP6 projects related to SIAT research are of interest for the scope of PRIMA. The outcomes of SUSTAINABILITY-A-TEST consisted mainly in a critical analysis of tools related to major forms of IA. One of the outcomes, later developed in the project MATISSE, consisted in defending ISA (for *Integrated Sustainability Assessment*), as a complementary form of assessment, akin to

prospective, with a long-term and transformative focus. While not delivering a SIAT, MATISSE's most helpful insights entail a critical analysis of the ambiguities and shortcomings of SIA, as well as of the conflicting views on SD prevailing in the EC (Rotmans, 2006; Weaver & Jordan, 2006). PLUREL, an ongoing project focussed on the analysis of urban-rural relationships, implied the development of a SIAT, as part of a complex chain of models organised along a DPSIR framework. Yet this tool was abandoned after the mid-term review, however some methodological outcomes of the project are relevant for IA of land use dynamics in rural areas (integration of tools, typologies and formalizations of 'Rural-Urban Regions').

At least three FP6 projects have nevertheless been able to develop operational SIATS: EFORWOOD, SENSOR and SEAMLESS.

EFORWOOD's main output, called ToSIA, is aimed at assessing the potential effects of a wide range of driving forces (global trends, EU policies, technology changes) on European forestry-wood-chains (FWC). Based on the monitoring of material processes alongside a wide range of indicators, ToSIA allows for a flexible and ascalar definition of FWC, favouring either products/forests, consumer or regional points of views. The 'social pillar' remains yet a relative blind spot of the tool, as it is restricted to attributes of FWC workers only (employment, wages and salaries, occupational safety and health, education and training). While not included in the final tool, there were nevertheless some attempts to handle social/cultural features of the FWC, with specific works (based on DELPHI methods) dedicated to the evaluation of the recreational value of forests (Edwards & al., 2011).

SENSOR, presented in detail during the Dortmund meeting by Marta Pérez-Soba, delivered a SIAT: designed as an aid for commission-wide IAs, it focuses explicitly on the dynamics of multifunctional land-use. The development of a complex chain of models covering the dynamics of six sectors (combining CGE models, scenario analysis, multiple regression land-use models, indicators) fed a balanced but 'simplified' analysis of specific scenarios (e.g. CAP reform) at regional level, easily explored in a GUI. Three methodological choices are of a particular interest:

(i) The main level of analysis remains the European region, even if a sub model (based on CLUE) allows for grid-based outputs. The selected regions (called NUTS-X) are an *adhoc* mixture of NUTS2 and NUTS3.

(ii) The selected indicators are linked to a restricted set of stylised Land-Use Functions (LUFS), that help stakeholders and decision-makers to get a more tractable picture of the trends affecting multifunctional land uses in EU regions. LUFs were the result of discussions and compromises between SENSOR members, with only three of them affected to each SD pillar.

(iii) A stakeholder validation of SIAT results was sought with the parallel development of a Framework for Participatory Impact Assessment (FoPIA).

The final results of the project help to identify research questions (inter alia downscaling, spillover effects…) but also critical insights for IA practice. The institutional analysis of the implementation of SIA procedure in the Commission, carried out in the first steps of the project (Thiel, 2009), is interesting in this respect, as it shows the strategic nature of the use of IA tools by EC desk officers: either coming as an ex-post legitimization for top-down decisions, or endorsed mainly to maximize the acceptability of a regulation. In both cases, there are hardly any influences of potential land-use dynamics on the decision-making process.

The main output of SEAMLESS is an 'integrated framework' able to model the dynamics of the European agricultural sector from a SD perspective. The tool itself, based on a complex hierarchy of models ranging from the field to EU-27, hardly qualifies as a full SIAT, as it does not include major features of an expected social pillar. These considerations are yet not absent from SEAMLESS research: (i) Inequality indicators are handled by the framework; (ii) Supplementary tools allow for a 'focus on territorial outcomes', notably with the help of landscape visualizations; (iii) Outside-EU sustainability is explicitly taken into account, with some regional focuses in developing countries for specific scenario outcomes.

Among the numerous projects funded by FP7 that are related to IA thinking, SUST-RUS , (a general SIAT for the evaluation of Russia's sustainability policies), CAPRI-RD (an evolution of the CAPRI modelling framework to the handling of rural development issues), RUDI (dedicated to the impact assessment of RD policies) and TESS (an expert system focussed on environmental issues) should deliver insights on the practice of ex-ante IA tools.

PRIMA and Impact Assessment tools

An example from Auvergne—the French case study region of PRIMA—may help illustrate the discrepancies between development stakes identified at local levels and their handling in broad IA frameworks.

Private conifer plantations, widely subsidized in post-WWII era, cover important areas of France. Highly appreciated for its productivity, versatility and durability, a once-north-american tree such as Douglas Fir (*Pseudotsuga menziesii*) is now the third harvested timber species in the country. Fuelling a dynamic FWC, Douglas plantations are mostly concentrated in the Auvergne region (the French PRIMA case study), where they face increasing criticism. If the opposition is sometimes based on purely ecological grounds (as the understory's of even-aged conifer stands harbour lower biodiversity than other forest types), it relies most often on a more subtle argumentation.

The Regional Natural Park of Livradois-Forez, located in the eastern part of the region and qualified as a LEADER group, recently commissioned a 'landscape charter'. The study highlights two land-use change trends as potential major negative impacts: the urban sprawl; the spread of conifer plantations (mostly Douglas) in downhill areas. The text denounces both a trivializing and a 'closing' effect (*i.e.* a perceived decrease of visual openness) of this encroaching forest cover on landscapes. Interestingly, as plantations are carried

out by rural dwellers (mostly, but not limited to farmers), in quest of a potential complement for their pensions, this criticism supports only partially local 'grassroots' views.

The implicit reasoning behind the study might be the following: landscape diversity can be viewed as a key feature of the attractiveness of a region. As the dominance of even-aged conifer plantations is negatively viewed by some users, it should have negative impacts on economy (tourism…) & social cohesion (quality of life). Two different lines of argument could be built on the last logical step:

(i) The 'creative class' literature (see McGranahan & Wojan, 2007 for a review of the approach, and its test in rural regions; or Asheim, 2009; Boschma & al. 2009, for European regions) would posit that the presence of workers focussed on 'creative' activities (scientific/technical innovation, arts…) is a key predictor of regional economic growth in a context of globalized competition; and that as these workers highly value the quality of places where they work and live, a local development strategy should endorse the preservation of cultural and natural amenities;

(ii) A local-centred view (in line with the park's stance) would see the contemporary rural landscapes as the result of a long co-evolution process, and argue that this natural/cultural heritage should be preserved, both on purely ethical grounds and the implicit assumption that it could provide a meaningful basis for local, bottom-up socio/economic dynamics (with the quality of life of local dwellers seen as an objective *per se*).

In both views, a string is thus pulled between biophysical dynamics and sustainable development outcomes. This example illustrates well some possible gaps between local uptakes and general SIA thinking, as: (i) the debate is less about general land uses than about the multifunctionality of management practices; (ii) indicators (social/cultural/landscape) are uneasy to grasp; (iii) there are contested and uncertain feedbacks & spillover effects. Interestingly, the aforementioned SIATs would handle this 'Douglas' debate in rather different ways: it would be ignored in EFORWOOD and SEAMLESS (at least in the core of the framework), but acknowledged in SENSOR (but on the basis of debated indicators and LUFS).

PRIMA is questioned by several steps of a typical SIA process: screening (relevance of SIA), scoping (limits of the IA), inclusion of stakeholders' preferences, indicators' selection. As existing tools do not yet allow information at lower levels on mechanisms that modify the economic structure of the firms, local knowledge, opportunities, geographical constraints and environmental values, the innovative modelling techniques harnessed by PRIMA (ABM & micro-simulation) should deliver new insights on scaling issues, handling of multifunctional land uses, role and nature of stakeholder participation (insights, transparency, collective learning).

Two major pitfalls, related to the consequences of downscaling and illustrated by the previous example, shall nevertheless be reminded:

(i) *Local uncertainties or subjectivities?* Fine-grained analyses do not only need specific data sources or methods, but may also be relying on local actors' views and preferences. In other words, 'going local' can imply the alteration of allegedly 'cold' appraisals (i.e. data and fact-based) by values (risk of shallow and a priori analyses, but also of an explicitly political nature) and personal interest (risk of 'nimbyism', etc...)

(ii) *Missing the point?* A related consequence is that an emphasis on salient local stakes may not only modify the nature of the processes under scrutiny, but also the balance of the whole analysis: landscape-level features (seen in terms of biophysical attributes or aesthetic valuation) should be an added value of a downscaled analysis, but some of the insights they favour may be rather unrelated to the regional picture.

2.4 Synthesis of main methodological steps of screening (issues, lacks, needs)

Main issues and gaps to be discussed and operated for PRIMA are found:



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- How to bridge the gap between macro-level and micro-level analysis?
- How to improve the public information about the programme/projects to be locally implemented?
- How taking into account that the upcoming generation of IA models will be more demand-driven and how will the policy-makers to be involved at an early stage of the model development?
- How to propose or to improve a clearer governance process easier to apply?
- How to integrate differing conceptions of reality, priorities, and systems of value of different actors?
- How to approach potential development opportunities responsibly and transparently?
- What information (data) for issues is needed that are of global nature? How to disaggregate data in relationship to the role of stakeholder's feedback in data providing?
- How to improve the institutional and procedural aspects of the screening and scoping phases of Sustainable Impact Assessment (SIA) in the context of Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) procedures?

- Is it possible to design and implement a system, operating effectively in complex and pluralistic situations, to support a deliberative decision process?

- How to proceed in order that SIA should be more than sum of sectoral IA`s in terms of integrated processes?

3 SCREENING: THE POTENTIAL CONTRIBUTION OF PRIMA



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The following activities will be taken into action by PRIMA to improve the screening of policies:

- Development of innovative modelling techniques: design and implementation of micro-simulation and agent-based models confronted to aggregated models.

- Development of a tested, robust and operative method for scaling down the analysis of policy impacts from the EU level to the municipality level.

    - Identify the mechanisms revealing the social preferences / demands of the concerned local actors (Agent-based modelling).

    - Identify the mechanisms that modify the economic structure of the firms (new entrants, disappearing of firms, new markets, re-organisation in industry, local knowledge/expertise, local opportunities, local geographical constraints and local environmental values).

    - Demonstrate that participatory process and public input help to ensure that significant issues are not overlooked.

    - Clarify the role and nature of stakeholder participation

- Demonstrating how participatory process could be involved to review the results of the assessment.

    - Increasing learning and capacity building of stakeholders. Increasing experience of stakeholders.

    - Assessment procedures developed in PRIMA are more complete: from negative impacts to positive ones.

3.1 Local approach and rural dimension perspective



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The added value by using the local approaches to rural development are found in the thematic areas

- Local integrated approaches offer possibilities to combine the multi-dimensional facets of rural development: social, economic, political and environmental dimensions.
- Local realistic development alternatives/strategies (bottom up approach) consider in perspective the diversity of contexts:
    - Diversity of problems, conflicts, opportunities.
    - Diversity of cultures, traditions.
    - Diversity of responses.
    - Diversity of governances.
- Local strategies face many similar challenges (jobs, housing, services infrastructure, transport, access to services, ageing population…).

Local initiatives benefit from local knowledge and local capacity building:

- Local initiatives increase stakeholder's appropriation.
- Local initiatives are the most suitable to integrate land uses as one of the most important factors for rural development.
- Local initiatives and their role in producing effective institutions to achieve the desire goals and notably by increasing the flexibility with which local agents cab respond to constantly changing conditions.

But:

- Planning policies at the local level must have regard to European, national and regional policies and guidance.
- National frameworks shape local development choices and opportunities.

3.2 Multifunctionality: key for the implementation of policies

Multifunctional agriculture versus Multifunctional rural areas



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Today, these two concepts appear intertwined in the European strategies for development. With the implementation of Agenda 2000, rural development is the second pillar of the Common Agricultural Policy (CAP). This integration, sanctioned at the political and legal level, is also to be found in the promotion of the concept of "multifunctional agriculture". The new rural paradigm (OECD, 2006) changed the focus of rural development from agriculture to an integrative and investive approach related to the multifunctinality of rural areas (Table 2). Overall the term "Multifunctionality of rural space" instead of "multifunctionality of agriculture" recently discussed by Brouwer (2009) is probably a better point of departure to deal with land use issues and impact assessment in the context of PRIMA.

Table 2 | The new rural paradigm (OECD, 2006)

	Old approach	New approach
Objectives	Equalisation, Farm income, farm competitiveness	Competitiveness of rural areas, valorisation of local assets, exploitation of unused resources
Key target sector	Agriculture	Various sectors of rural economics (e.g. rural tourism, manufacturing, ICT, industry, etc.)
Main tools	Subsidies	Investments
Key actors	National governments, Farmers	All levels of government (supranational, national, regional and local), various local stakeholders (public, private, NGOs)

PRIMA uses the definition of multifunctionality: "*multifunctionality of land use is the ability of a single piece of land to provide multiple benefits both to human and non-human systems*".

The definition mentioned must be clarified for practical application. The approach offered by Brouwer (2009) is of course *better suitable for the scientific approach of PRIMA*.

3.3 From scenario to projects – modelling and techniques



Burghard Meyer

Boulanger and Brechet (2005) sum up the analysis of the potential usability of different models for policy-making in sustainable development: "Unambiguously, the most promising modelling approach seems to be the multi-agent simulation model. It has many potential strengths to commend it. First of all, such models bypasses [sic] most mathematical jargon and simulate scientific hypotheses or even commonsense knowledge directly, without prior mathematical translation. Second, they allow for an intuitive representation of the environment and of the embedding of agents in a spatial and natural setting. Finally, they really display a "bottom-up"-structure, thus allowing an adequate representation of micro/macro relationships. Admittedly, multi-agent modelling represents a new paradigm and many theoretical and methodological problems remain to be resolved before it can be used on a regular basis for practical sustainable development policy-making."

Ness et al. (2007) analysed the different tools for sustainability impact assessment. On the basis of analysis "first SIAs carried out by Wilkinson et al. (2004) Nees et al (2007) concluded among other things that none of the assessments had followed the Commission guidelines completely. This study also revealed that the range of assessed impacts was limited, and that most attention was still placed on economic aspects and not on environmental or social. Further guideline development and revisions are expected in the near future."

3.3.1 Background



Omar Baqueiro

The following paragraphs address two separate processes related to impact assessment. First, the screening of projects to determine whether a project should be subject to Impact Assessment; and second, the process of Impact Assessment itself, which identifies the environmental, economical and social impact that the project would bring to the affected zones.

The use of ABM and simulation does not come directly into play at the screening. Given that the screening phase focuses on the definition and the classification of the type of the project, it may be too early to implement any kind of model/simulation.

On the other hand, the project information required during the screening phase serves as a starting point for the development of Agent Based Models that can be used to increase understanding of the impacts of the projects during the Impact Assessment process. As an example, the checklists of information needed for screening (from the EU Guidance on EIA Screening, CEC 2001b) can provide detailed information on the expected influence that the project will have in important areas. Such influences can be translated to scenarios to test using agent-based models, in order to substantiate the magnitude and depth of the influences. Moreover, the detailed description of the project required by the screening process can serve as the foundation of the development of the ABM.

3.3.2 The General role of ABM within the Environmental Impact Process

As it was pointed out before, the potential of agent-based models can be realized during the Impact Assessment studies. Nevertheless, the development of an ABM is connected with several of the stages of the Environmental Impact Assessment process. Table 3 shows the main stages in the EIA process and a possible relation with ABM. At this point, the development of an ABM assumes that an Impact Assessment exercise will be required for a proposed project.

Table 3 | Roles of agent-based models in the stages of the EIA process

Stages of EIA Process	*Relationship with ABM Development*
Project Preparation	Useful data for the specification of the ABM obtained in this EIA stage is: Data collected about the current state of the region where the project will be developed; Information on the main aspects of the project to develop describing what will be the resulting state of the region (e.g. after building new infrastructure).
Notification to Competent Authority	-
Screening	Detailed information about the foreseen impacts obtained in this EIA stage such as: The information for screening and scoping, including the characteristics and location of the project, and the description of the potential impact.1 Screening checklist, detailing the changes that the project will bring to the region.2
Scoping	This step provides the elements to focus the experimental scenarios to use in the ABM. In addition, as a result of this stage, the model specification can be improved.
Environmental Studies	The main application of an ABM will be performed at this stage, where it can be used helping to evaluate the possible outcomes for the project region. Such outcomes are the results of simulation experiments with a variation of a set of relevant parameters.
Submission of Environmental Information to Competent Authority	The results obtained from the ABM experimentation should be used to provide a more detailed description of the possible outcomes from the development of the project (and different proposed variations of the project).
Review of Adequacy of the Environmental Information	A further use of ABM at this stage may be by the Competent Authority, which (if the software allows) may use the experimentation software as a decision support system. However, there is still a gap in the development of ABM frameworks which allow the direct use by non-experts.
Consultation with Statutory Environmental Authorities, Other Interested Parties and the Public	In the case that third parties suggest further possible scenarios or considerations for the project, the ABM (developed in previous steps) can provide the means to analyze the influences of any proposed modifications to the project.
Consideration of the Environmental Information by the Competent Authority before making Development Consent Decision	-
Announcement of Decision	-
Post-Decision Monitoring if Project is Granted Consent	When post-monitoring is required, the ABM can be used to provide new insights on the project when the circumstances of the project change.

Source: Adapted from (Environmental Resources Management, 2001).
1 Available at the EC document Guidance on EIA Screening, CEC 2001b, page 20.
2 Available at the EC document Guidance on EIA Screening, CEC 2001b, pages 22-24.

As it can be seen in Table 3 it is in the Environmental Studies stage when the agent-based model will be mostly used. The model can provide the means to attain better understanding of the micro-processes that will be affected in the

region due to the implementation of a project. An agent-based model can capture the decision making from the individuals affected by the project, and how changes in their environment produced by the proposed project may affect their decisions.

Consequently, the result of the simulation experiments performed with an ABM will provide trends and patterns of the changes produced in the region which can take place after the development of the project. Such trends and patterns can be used for the assessment of alternative approaches to implement the proposed project or policies.

3.3.3 Implications of the screening process for Agent-Based Models

Although the implementation of an ABM may begin at later phases of the EIA process, The Screening and scoping phases play an important step as part of the prior analysis of the complex system to simulate with the ABM. In this sense, the information obtained in the screening phase must be carefully considered by modelers to ensure that the correct dynamics and properties of the real system are captured.

As it was mentioned before, the main objective of implementing ABM and simulation experiments during the EIA of a project (or policy) is to experiment with possible-scenarios that could result after the implementation of the project (or policy). Thus, in order to obtain relevant and valuable results for the EIA process the model must represent, with the best possible fidelity, the real system (i.e. the immediate environment) where the project will be implemented.

The Guidance on EIA Screening document lists a set of information that can be required during the Screening process. Table 4 lists the four categories of required information and describes the role each point can play in the development of the ABM.

Table 4 | Importance of Information for screening and scoping in the implementation of ABM

Category of Information	*Connection to ABM development*
Contact Details of the Developer	Although not playing a central role in the development of the Agent Based Model, it is important to have an open connection with stakeholders that have a broad understanding of the project or policy to implement. In later steps of the ABM simulation, the project developer can help with the validation of the model.
Characteristics of the Project	The general characteristics of the project can serve to delineate the environment and scale that will be used in the ABM. Information on the relationship with other projects can be useful to understand the nature of the system to be simulated (e.g. by looking for results obtained by previous projects). Similarly, information about alternatives being considering and information about mitigating measures being considered can serve as a basis for the set of scenarios to be tested in the simulation experiments. As a common rule, the general characteristics of the projects or policies will provide better understanding of the phenomenon to be simulated.
Location of the Project	Knowing better the location that will be affected by the policy or project is useful to define the type of ABM that needs to be developed to perform experiments useful for the EIA process. That is, the nature of the land, in conjunction with the type of project, may require an ABM that includes an explicit representation of the land surface (with some of its properties) affected by the project or policy.
Characteristics of the potential Impact	Information on the characteristics of the potential impact can serve to determine the dynamic aspects of the ABM. It is with this information that the modelers can gain understanding of the processes that need to be represented in the model, with the aim to be tested with the experimental scenarios. Information such as the magnitude and complexity of the impact, probability of the impact, extent of the impact and nature of the impact can provide foundations to specify the aspects of the system that the ABM will cover. This information will also help identify the areas were more detailed information is needed for the development of the ABM.

Source: Adapted from (Environmental Resources Management, 2001). Text in italics correspond to specific points mentioned in the document checklist.

3.3.4 Relevant Screening information for ABM development

For the purpose of the ABM development, all the information that helps describe the project/policy to be implemented and its effects in the location where it will be implemented can be useful. However, the Screening process can serve to develop a first dictionary of terms to define the domain that will cover the model.

The development of this domain dictionary should focus on the inclusion of nouns and verbs that will help define the objects existing in the system as well as actions taking place (Rosenberg and Scott, 2001). This will allow identifying the processes that need to be detailed in the model and that may need the assistance of experts in order to be correctly implemented. In this context, the definition of the agents and their roles in the system are to be specified. The need for any sub-models should also be detected at this stage.

Once the domain of the model is defined, relationships between its entities must be determined. For this, the information on the characteristics of the project and potential impacts will be needed. Even if at this stage of the project the detail of the characteristics of the relations between agents and the environment is not clear, the information obtained during the screening process can shed light to the main interactions that take part in the system (e.g., the expected effects that the implementation of the policy has on individuals, the environment or other entities).

The last modeling aspect to be discussed is the conception of the inputs and outputs of the ABM. The inputs are generally defined by the different scenarios to be tested in the model. In general, these scenarios are defined by data which represents (a) the specific area where the project will be developed and (b) a range of parameters specifying the scenarios to be tested. Each scenario may comprise a change in the value of one or more parameters (e.g., the total area covered by a new road project or the amount of tax deduction provided by a new policy). In this sense, it is important to understand the nature of the impacts that the project/policy will prompt in order to identify valuable scenarios that provide useful information for future EIA steps.

With respect to the definition of the model outputs, consideration must be given to the parameters that will be measured (either by officials or other third parties inspecting the project/policy) when assessing the impact of the project. A correct set of outputs should allow the comparison of the simulation results with the current real state of the location of the project. The outputs should provide data that allows the assessment of the different simulated scenarios in the same way that the current project plan is assessed. Such an approach can help to determine if, adjusting the project plan in some way (proposed by one of the experimented scenarios) can reduce or increase its impacts.

3.4 Stakeholders and local knowledge

A key element in PRIMA is the use of participative techniques to elicit the knowledge of stakeholders. Such work will be conducted by WP2 by means of interviews and workshops in relation to case study areas.

As explained in D2.1, participative techniques have become established in the field of natural resource management. By obtaining fine-grained information from local stakeholders, an improved understanding of the socio-environmental processes of a particular context can be obtained (see the following section). Such information can be used heuristically – to better understand complexity – or to assist mediation and management, such as the design of policy solutions (Grimble and Wellard, 1997). By extension, the information gained by these techniques, such as the identification of relevant processes, targets variables, and indicators can contribute to impact assessment.

D2.3 describes methods which may be used to engage with stakeholders in a workshop setting. Fundamentally, techniques involving the creation and dissection of storylines will be used to illuminate the underlying processes, key elements, and inter-relationships of social, economic and environmental systems in case study areas.

3.4.1 Stakeholder knowledge in policy development



Marian Raley

Top-down policy-making can fail to anticipate the precise policy impacts which are experienced at the local level. The incorporation of local stakeholder knowledge, through engaging stakeholders early in the policy process, has the potential to improve both policy design (including monitoring and mitigation) and the screening of local aspects of policies.

Acquisition of local knowledge enhances the information available for policy development and supplements obtained from 'top-down' sources such as official statistics and model outputs. The insights and knowledge provided by local people can identify and disentangle many issues, including the following:

(i) inter-relationships between economic, social, physical and ecological aspects;

(ii) identification of sensitive areas (e.g. history of flooding, landslides, droughty conditions);

(iii) through an intimate knowledge of the processes involved, the likely direct, indirect and synergistic impacts of a policy, including unintended consequences;

(iv) identifying special landscape, aesthetic, cultural characteristics contributing to local distinctiveness;

(v) the location of markets. For example distortion can occur if the conditions of some buyers/sellers are improved, but others not.

(vi) local farming and forestry practice, including irrigation and pollution issues

(vii) incompatibility between economic activities (e.g. industry and tourism)

(viii) dependencies in the external environment, for example sensitivity to oil price.

A better understanding of the factors contributing to the heterogeneity of place is likely to enhance understanding and anticipation of the differential impacts occurring in different places in response to a single policy.

3.4.2 PRIMA and the use of stakeholder knowledge in policy screening for Impact Assessment

The practical benefits to policy screening within the PRIMA project resulting from local stakeholder interactions are likely to be of two types.

(i) *'Feeding' the ABM element of PRIMA*. To this end, stakeholder interactions in individual localities will aim to identify all relevant agents, the activities they are engaged in, and also determine their likely responses to a given policy scenario. Subsequent questioning then aims to identify the causal chain by which the agent decision, through various (and possibly locally distinct) processes impacts on other elements in the financial, social, ecological and physical systems. These steps will help define the parameters of the location-specific ABM. As already discussed, the ABM will assist the screening process by allowing the impacts of different policy options to be compared, by altering the values of model parameters.

(ii) *Developing a list of indicators*. By better understanding the processes likely to be affected by the intended policy, it is possible to identify the elements within the various systems upon which a measurable impact is likely. Stakeholder information can be used to ensure that important impacts at the local scale (and their corresponding indicators) are not overlooked. Of course, some impacts will be desirable as they contribute to the achievement of the policy's objectives, whereas others will be undesirable.

3.4.3 Stakeholder knowledge at other stages in the policy process

Although this deliverable is focused on the aspects outlined in the previous section, the knowledge, experience and insights of local stakeholders are valuable in the wider policy design process.

Improving policy design

In practice, if deliberative processes of policy development are employed, then stakeholder inputs may be incorporated so that the best possible policy proposal is produced from the outset. This can involve genuine collaboration so that stakeholders identify solutions to the defined problems. Stakeholders can also be helpful in identifying the means by which negative impacts may be mitigated.

Indicators-related activities

The outputs described in § 3.3.2 may be used for in scoping, the process by which the content required for an Impact Assessment is identified. Thus relevant local impacts would not be overlooked. Likewise, the identification of indicators for future monitoring purposes may be enhanced by local inputs.

Decision-making

An important part of the IA process is the comparison of alternative policies or programmes by which a desired policy/programme goal may be reached. Stakeholders can help to design feasible alternatives. In choosing between policy options, local stakeholder preferences may be sought by means of surveys or polls. Stakeholders could also assist in deriving weights for the various indicators incorporated into a multi-criteria analysis. This would elicit their preferences for different outcomes, for example whether economic benefits are rated more highly than ecological benefits.

3.4.4 Production of local knowledge – methodological issues

Identifying stakeholders

Those who control land are key to the project since it is their decisions in the face of a particular policy scenario which cause direct impacts. However they are unlikely to be equally well informed about the wider impacts of their decisions, such as the effect on biodiversity, pollution levels, or tourism expenditure. To acquire the required scope of information, it will be important to include people with a range of interests. Care should be taken to ensure these interests are represented.

Another crucial point is inclusivity. A longstanding problem of stakeholder methods is ensuring that it is not only the big and powerful and others with vested interests who participate. This can lead to a distorted view of reality in which the interests of other less powerful groups and possibly wider society are overlooked. For case study work, social network analysis has been used to choose stakeholders (Prell et al, 2009). Using interviews and survey work, the different interests of actors and their connections (to similar or other interests) are identified. It is possible then to assess the connectivity of individuals with other actors. By this means, it is possible to identify the main activities/interests, the key players, and also the small interest groups or marginal actors who might be overlooked. However this is a labour-intensive process

beyond the scope of the current project. In practice it is likely that an interest-influence matrix will be used to select stakeholders (see D2.1). The selected individuals will have a high interest in the topic, and also a high level of influence, such as the ownership of land or a tourism business, or membership of a nature conservation organisation.

Techniques

Two qualities of information might be sought from the stakeholder interactions. The first is qualitative, in which the processes which follow from landowners' decisions are identified and followed through to a target variable, which is subsequently related to an appropriate indicator. This forms a key input into the ABM development and the basis (nouns and verbs) of the ABM Dictionary. Such detailed information would probably best be obtained from individuals by means of a semi-structured interview. This would elicit information about current activities (and their impacts) and future activities (and the changes to current impacts, as well as the new impacts), as well as the dynamics of the system.

A second type of information would be to attempt to quantify the changes that land-holders would make in response to the policy scenario (for example changes in area under arable management or fertiliser use, reduction in labour force). This could be obtained using a questionnaire-based choice experiment by which landowners' preferences when confronted with a range of alternatives are elicited. Very careful design of such questionnaires is essential.

3.5 Indicators



Burghard Meyer

The core set of indicators for the usage in PRIMA is demonstrated and discussed both in the reports of Milestone 6.1 and Milestone 6.2. In this report only a short summary of the discussions will be given about this topic.

Indicators systems on the EU and national scale for agriculture, forestry and tourism are discussed in the context of the suitability and practicability to use indicators for the screening of policy impacts in PRIMA. The problem of scaling is obvious because of dealing with policy impact assessment problems from local to the regional scale level (from Lau 2 to Nuts 2 scale).

The Milestone 6.1 Report discusses different indicator systems (such as DPSIR and OECD Environmental Indicators; Impact indicators in the policy support context of SEA and EIA, Indicators in the context of Trade SIA; Indicators to focus functional and multifunctional aspects; Land use indicators and SIAT approaches in recent EU Projects). The Milestone 6.1 Report also discusses the indicators usage for the screening of policy impacts on the NUTS 2/NUTS 3 level and gives an overview about indicators implemented for the assessment of EU policies of sustainability. For local the scale indicators for the Screening of stakeholders' responses on LAU 1 and LAU 2 are discussed and problems of screening and scoping of policies on the regional and municipality level are differentiated. Finally the indicators and parame-

ters from the Rural Development Report (DG Agri, 2008) are explained to link impact assessment to rural development.

The PRIMA scientific team has chosen by answering a questionnaire a working list of indicators strongly linked to the Rural Development Report (DG Agri, 2008) for the usage as impact assessment indicators to focus the policy impacts for agriculture, tourism and forestry to the changes modelled by ABM, micro-simulation and regionalised general equilibrium model. The indicators will link the policy assessment, the stakeholder involvement, the modelling and the Sustainability Impact Assessment. The list of indicators for PRIMA is given in Tab.4.

Table 5 | Updated list of PRIMA impact assessment indicators and clarification of the linkage to CMEF indicators (update 1.12.2010, see Milestone 6.3 Report)

PRIMA Indicator	**CMEF Indicator**	**PRIMA Indicators Name**	**(Number in CMEF) and Measurement**
SOZ 1	C2	Importance of rural areas - Population	3.1.2.2 % population in rural areas
SOZ2	C2	Importance of rural areas - Employment	3.1.2.4 % employment in rural areas
SOZ3	C18	Age structure	3.2.2 % people aged (0-14) y.o. / (15-64) y.o. / >= 65 y.o. in total population
SOZ4	C20	Structure of Employment	3.2.7 Rate of unemployment (% active population)
SOZ5	C17	Population density	3.2.1 Population density
SOZ6	O33	Development of services sector: Net migration	3.5.9 Net migration rate
ECON1	C19	Structure of the Economy - Structure of employment	3.2.5 % employment by branch (Primary / Secondary / Tertiary sector)
ECON2	C5	Forestry structure	3.3.14.1 Area of forest available for wood supply (FAWS)
ECON3	C4	Farm structure	3.3.4.1 Number of farms
ECON4	O27	Farmers with other gainful activities	3.5.1 % holders with other gainful activity
ECON5	O29	Economic development of non-agricultural sector	3.5.3 GVA in secondary and tertiary sectors
ENV1	O20	Water quality: Gross Nutrient Balances	3.4.12.1 Surplus of nitrogen in kg/ha
ENV2	O22	Soil: Areas at risk of soil erosion	3.4.16 Areas at risk of soil erosion (classes of T/ha/year)
ENV3	O24	Climate change - Production of renewable energy from agricultu and forestry	3.4.18.1 Production of renewable energy from agriculture (ktoe)
			3.4.18.2 Production of renewable energy from forestry (ktoe)
ENV4	C10	Natura 2000 area /Biodiversity	3.4.4.1 % Territory under Natura 2000
ENV5	C9	Areas of extensive agriculture	3.4.3.1 % UAA for extensive arable crops
			3.4.3.2 % UAA for extensive grazing
ENV6	C7	Land cover	3.4.1 % area in agricultural / forest / natural / artificial

In Milestone 6.2 Report impact assessment indicators are discussed as result of group discussions on the Dortmund Workshop of 2009 in the background of EU Impact Assessment demands, the practice of impact assessment analysis by quantitative and qualitative approaches, in the context of impact assessment tools, the policy impacts assessment in PRIMA on the "multifunctional characters of rural landscape" by focusing on economic, social and environmental impacts and baseline scenarios, land-use function outputs of SENSOR compared to expected PRIMA results, ecosystem and biodiversity functionalities: the basis for SIA, SEA and EIA (IA), the mapping of stakeholder demands and projects to the PRIMA Agent Based Model, to the PRIMA model of municipality and the link of data and impact indicators. The summary names key aspects of how to improve screening and scoping in evaluation IA procedures in PRIMA. It was concluded, that (Milestone 6.2 report):

- "PRIMA will not use a full list of land use functions because of the complexity of each single indicator. An excerpt of indicators of the social, economic and ecologic dimension should be focused for the modelling by using the balanced list of indicators and with special emphasis on the social dimension. The social dimension opens a new field of scientific work for the impact assessment sciences.

- The indicators of the Common Monitoring and Evaluation Framework (CMEF) are a suitable basis to confront the local and regional outputs to the Nuts 2/3 level and the rural development. It should be clarified how to apply the indicators on the local, regional and Nuts 2/3 level.

- The linkage between CMEF and SIA should be formulated based on thresholds for each indicator. Additional work should be done to clarify the thresholds from literature analysis.

- Practically not solved is the problem of the interlinkages between the different indicators. By using impact matrix methodology to "translate" changes of agent behaviours to impact assessment for Multi Agent simulations and aggregated models PRIMA will formulate a suitable way to solve."

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4 APPENDICES

4.1 Annex 1: Content list for initial IA Screening and questions to be answered during the screening. (CEC 2009a)

A. Context and problem definition

- What is the political context of the initiative? How does this initiative relate to past and possible future initiatives, and other EU policies?
- What are the main problems identified?
- Is EU action justified on grounds of subsidiarity?

B. Objectives of EU initiative

- What are the main policy objectives?
- Does the objective imply developing EU policy in new areas or in areas of strategic importance?

C. Options

- What are the policy options? What legislative or 'soft law' instruments could be considered? Would any legislative initiatives go beyond routine up-date of existing legislation?
- Does the action proposed in the options cut across several policy areas or impact on action taken/planned by other Commission departments?
- Explain how the options respect the proportionality principle

D. Initial assessment of impacts

- What are the significant impacts likely to result from each policy option (cf. list of impacts in the impact assessment guidelines), even if these impacts would materialise only after subsequent Commission initiatives?
- Could the options have impacts on the EU-Budget (above 5 Mio €) and/or should the IA also serve as the ex-ante evaluation, required by the Financial Regulation?
- Could the options have significant impacts on simplification/administrative burden or on relations with third countries?
- Who is affected?

-

E. Planning of further impact assessment work

- What information and data is already available? What further information needs to be gathered? How will this be done (e.g. internally or by an external contractor) and by when? What type and level of analysis will be carried out (cf. principle of proportionate analysis)?
- Which stakeholders & experts have been/will be consulted, how and at what stage?

4.2 Annex 2: Extract from the *impact assessment guidelines* (CEC 2009a)

Format of the IA report

To ensure consistency across the Commission, the following format should be used for the IA Report. The bullet points follow the key points of the impact assessment analysis. As-assumptions, possible uncertainties and lack of (reliable) data must be flagged in the sections presenting the key steps of the IA analysis. Reference should also be made in the various sections to the underlying material on which the conclusions have been drawn (e.g. external studies, reports, statistical data, expert advice, stakeholder input, etc.). Whenever possible, direct internet links should be provided.

The report should be written in non-technical language and should not exceed 30 pages. Exceptions need to be agreed with the impact assessment unit of the SG.

- Standard front page and disclaimer (e.g. "This report commits only the Commission's services involved in its preparation and does not prejudge the final form of any decision to be taken by the Commission").
- Table of content

Section 1: Procedural issues and consultation of interested parties

- Identification: Lead DG; Agenda planning/WP reference:
- Organisation and timing: Provide the general chronology of the IA and specify which DGs participated in the Impact Assessment Steering Group (IASG).
- Consultation and expertise:
    - Indicate if external expertise was used, and, if so, how.
    - Indicate which groups of stakeholders have been consulted, at what stage in the IA process and how (public or targeted consultations, and if targeted, why?).
    - Indicate the main results, the different positions expressed and how this input has been taken into account or why it has not been taken into account.
    - Indicate if the Commission's minimum standards have all been met, and, if not, why not.

Section 2: Problem definition

- What is the issue or problem that may require action? • What are the underlying drivers of the problem?
- Who is affected, in what ways, and to what extent?
- How would the problem evolve, all things being equal? N.B. Scenario(s) should take into account actions already taken or planned by the EU, Member States and other actors.

- Does the EU have the right to act and is EU added-value evident – Treaty base, 'necessity test' (subsidiarity) and fundamental rights limits?

Section 3: Objectives

- What are the general policy objectives? What are the more specific/operational objectives?
- Underline the consistency of these objectives with other EU policies and, if applicable, horizontal objectives, such as the Lisbon and Sustainable Development strategies or respect for fundamental rights.

Section 4: Policy options

- What are the possible options for meeting the objectives and tackling the problem? N.B. the 'no EU action' option should always be considered and it is highly recommended to include a non-regulatory option, unless a decision of the College has already ruled this out or an obligation for legal action exists.
- Which options have been discarded at an early stage and why? N.B. Refer to the pre-screening criteria (poor effectiveness, efficiency or consistency with other objectives and policies). Be particularly specific and precise for discarded options enjoying significant support among stakeholders.

Section 5: Analysis of impacts

- What are the likely economic, social and environmental impacts of each of the short-listed options?
- List positive and negative impacts, direct and indirect, including those outside the EU.
- Include assessment of administrative burden.
- Specify uncertainties and how impact may be affected by changes in parameters.
- Include impacts in the EU and outside the EU.
- Specify which impacts are likely to change over time and how.
- As relevant, specify which social groups, economic sectors or particular regions are affected.
- What are the potential obstacles to compliance?

Section 6: Comparing the options

- Indicate how positive/negative impacts have been weighed for each short-listed option.
- Present results of the weighing.
- Present the aggregated and disaggregated results.
- Indicate if the analysis confirms whether EU action would have an added value.
- Highlight the trade-offs and synergies associated with each option.

- If possible, rank the options in terms of the various evaluation criteria.
- If possible and appropriate, set out a preferred option.

Section 7: Monitoring and evaluation

- What are the core indicators of progress towards meeting the objectives?
- What is the broad outline for possible monitoring and evaluation arrangements?

Annexes

- Present technical background material.
- Present key public consultation documents and summaries of replies (unless available via public internet link).
- Provide key studies/work carried out by external consultants (unless available via public internet link).

4.3 Annex 3: EU Projects in the context of impact assessment and policies assessments

(Mainly based on the own analysis of the official projects homepages; by Burghard Meyer).

Information Name and Reference	*Main Application (PA, IA,EIA etc.)*	*Referred Policy (AP, EP, RD, SA etc.)* [*1]	*Applied Methods / Goal*	*Indicators / Scale*
Agmemod	Not Listed.	AP, EP	(Beginning date : January 2001 - completion date : June 2004) The ACCELERATES project (Assessing climate change effects on land use and ecosystems: from regional analysis to the european scale) studied the impact of climate change on land use and biological resources in managed ecosystems. It aimed at the integration of existing impact models of agriculture, forestry, species distribution and habitat fragmentation within a common framework, in order to enable impacts to be synthesised across sectors, disciplines and global change problems.	Environmental / Regional to EU Scale
AgriBMPWater	Not Listed.	AP	(Beginning date : - completion date :) The AGMEMOD Partnership model is an econometric, dynamic, multi-product partial equilibrium model that allows to make projections and simulations in order to evaluate measures, programmes and policies in agriculture at the European Union (EU) level as well as at the Member States level. The original AGMEMOD Project involved institutes in the EU15 group of Member States. In advance of the accession of the so-called "new" Member States in May 2004 the AG-MEMOD partnership was expanded in 2002 to include research institutes from 8 of the 10 new EU Member States and institutes from 2 of the current Accession States. AGMEMOD is funded under the European Commission 6th Framework (until 2008) and by contributions from the partners institutes throughout the EU.	Economic / EU Scale: EU15 -> EU25 (With the exception of 2 countries)
Ateam	Not Listed.	AP, EP	(Beginning date : 2000 - completion date : 2003) Rising concern about agricultural non point water pollution has led to propose many regulatory measures. Best management practices (BMPs), one of the most popular tools, have rarely been assessed in a fully satisfying way yet. The FP5 project AgriBMP Water aimed at providing planners with a grid which would allow a comparison between BMPs in terms of environmental efficiency, economic cost and potential acceptability by farmers.	Environmental and Economic / EU Scale

Clavier	Not Listed.	EP	(Beginning date : 2001 - completion date : 2003) ATEAM (Advanced Terrestrial Ecosystem Analysis and Modelling was a FP5 project.. Its was mainly concerned with the risks that global change poses to the interests of stakeholders relying on the the well-functioning of ecosystems. By assessing the vulnerability to global change of sectors relying on ecosystem services, ATEAM aims at supporting stakeholders in their decision-making and promoting sustainable use of ecosystems.	Environmental / EU Scale
Eforwood	Not Listed.	EP	(Beginning date : 2006 - completion date : 2009) The nations in central and eastern Europe (CEE) face triple challenges of the ongoing economic and political transition, continuing vulnerability to environmental hazards, and longer term impacts of global climate change. The overall aim of the EU FP6 project CLAVIER (CLimate ChAnge and Variability: Impact on Central and Eastern EuRope) is to make a contribution to successfully cope with these challenges. The CLAVIER project is supported by the European Commission's FP6 as a STREP.	Environmental and Economic / EU Scale : Central-Eastern European Countries
Espon	Not Listed.	AP, SA	(Beginning date : November 2005 - completion date : October 2009) The objective of EFORWOOD is to develop a quantitative decision support tool for Sustainability Impact Assessment of the European Forestry-Wood Chain (FWC) and subsets thereof (e.g. regional), covering forestry, industrial manufacturing, consumption and recycling. EFORWOOD is a four-years integrated project, funded under the EU "Global change and ecosystems" research activity of the FP6	Environmental and Economic / EU Scale : 21 Countries
Faro	PA, IA		(Beginning date : - completion date :) ESPON (for European Spatial Planning Observation Network) is set up to support policy development and to build a European scientific community in the field of territorial development. The main aim is to increase the general body of knowledge about territorial structures, trends and policy impacts in an enlarged European Union. The programme is part-financed by the European Regional Development Fund under Objective 3 for European Territorial Cooperation.	No Indicators / EU Scale
Foodcomm	PA, IA	RD	(Beginning date : January 2007 - completion date : December 2008) FARO-EU (Foresight Analysis of Rural areas Of Europe) is a EU FP6 Specific Targeted Research Project, with a two year duration. The main questions to be answered in the project are: (1) What are major trends and driving forces affecting rural regions? (2) At which scales do they operate? (3) Which of these processes are amenable to change through RD policies and where? i.e. where EU support for rural development will create the most value added at EU level? (4) How rural policies might be adapted in the future to take account of these processes?	No Indicators / EU Scale
Forescene		AP	(Beginning date : March 2005 - completion date : April 2008) FOODCOMM (Key factors influencing economic relationships and communication in European food chains) is a FP6 project. Its overall goal is: (1) to analyse the role (prevalence, necessity and significance) of economic relationships and communication in selected European food chains; (2) to identify the economic, social and cultural factors which influence coordination within these chains.	Economic and Social / EU Scale

Idari		SA, EP	(Beginning date : December 2005 - completion date :November 2008) Stands for "Development of a Forecasting Framework and Scenarios to Support the EU Sustainable Development Strategy". The challenge addressed by this FP6 project is to develop a framework for creating sustainability scenarios, which integrate topics such as water, soil, resource use etc. In the general context of the EU Sustainable Development Strategy and to comply with the specific needs of IA, the European Commission and DG Environment in particular need robust and scientifically sound forecasting framework to develop harmonised middle and long term (2015-2030) baseline and alternative policy scenarios.	Environmental / EU Scale
Agmemod	PA,		IDARI (for Integrated Development of Agriculture & Rural Institutions) is a pan-European and multidisciplinary research and development project, funded by the European Commission Quality of Life Programme (5th Framework). Its objectives are to: (i) Support policy-making for sustainable rural development in CEE countries through the development of alternative frameworks of analysis appropriate to the transitional context, embracing institutional change, learning, innovation and competitiveness. (ii) To strengthen the research capacity among CEEC personnel in the investigation of rural development. (iii) To build a collaborative research capacity between EU and CEE partners in the investigation of sustainable rural development and institutional change (collecting primary data in selected CEECs).	Interdisciplinary / EU Scale : Central - Eastern European Countries
Idema	Not Listed.	AP, EP	(Beginning date : January 2001 - completion date : June 2004) The Impact of Decoupling and Modulation in the Enlarged Union: a sectoral and farm level assessment. IDEMA is a research project supported by the European Commission's Sixth Framework Programme. Ran from 2004 to 2006.	Economic and Social / EU Scale
IMAGES	Not Listed.	AP, EP	(Beginning date : 1st March 1997 - completion date : 31st December 2000) Improving Agri-Environmental Policies : a Simulation Approach to the Role of the Cognitive Properties of Farmers and Institutions. A project carried out with financial support from the Commission of the European Communities, Agriculture and Fisheries (FAIR) specific RTD programme.	Environmental / Regional
Insure	IA	SA, RD	(Beginning date : 2004 - completion date : 2007) The INSURE (Flexible Framework for Indicators for Sustainability in Regions using Systems Dynamics Modelling) was an EU FP6 project. This project aimed to develop a framework for combining sustainability indicators with a Systems Dynamics modelling approach, for both quantitative and qualitative factors, in order to develop a common EU methodology for sustainability indicators at the regional scale.	Environmental / EU Scale
Meascope	IA	-	(Beginning date : May 2004 - completion date : October 2007) Micro-economic instruments for impact assessment of multifunctional agriculture to implement the Model of European Agriculture, A Policy Oriented Research Project (STREP) of the Sixth Framework Programme.	Economic / EU Scale
Medaction		EP	(Beginning date : January 2001 - completion date : January 2004) MEDACTION is a multi-disciplinary research project aiming to: (i) assess the main issues underlying the causes and effects of land degradation; (ii) develop integrated policy options and mitigation strategies to combat desertification in the Northern Mediterranean region. Funded by the EU FP5.	Environmental / Regional: the Northern Mediterranean

Mosus		SA	(Beginning date : February 2003 - completion date : February 2006) The MOSUS project (for Modelling Opportunities And Limits For Restructuring Europe Towards Sustainability) aims to integrate three major themes of European policies within a macroeconomic, multi-sectoral framework representing the interrelation of economic, social and environmental domains. These policy themes are: (i) Sustainable development; (ii) Competitiveness and social cohesion in the knowledge-based society; (iii) Globalisation and international trade. MOSUS, funded by the EU FP5.	Economic / EU Scale
Multagri		AP	(Beginning date : January 2004 - completion date : July 2005) Capitalisation of results on the multi-functionality of agriculture and rural areas. Multagri is a Specific Support Action undertaken within the 6th Framework Research Programme of the European Commission.	No Information Found
Patres		Interdisciplinary	(Beginning date : February 2007 - completion date : .. /..) PATRES is a project supported by the New and Emerging Science and Technology programme of the sixth Framework Programme of the European Commission. The multidisciplinary PATRES team aims at developing new methods defining the actions favouring the recovery from perturbations, applicable from ecology to cognitive sciences and sociology, in a project that will bridge the divide between the physical and social sciences.	Environmental and Social / EU Scale
Plurel	SEA	SA	(Beginning date : January 2007 - completion date : December 2010) The PLUREL project: Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages is a European integrated research project within the European Commission's sixth framework programme. The PLUREL project will develop the new strategies and planning and forecasting tools that are essential for developing sustainable rural-urban land use relationships. These strategies and tools, generic in nature, will support the analysis of urbanisation trends in the EU so that ways can be identified of both supporting this process and mitigating its negative impacts.	Environmental / EU Scale
Scarled		AP	(Beginning date : 2007 - completion date : 2010) SCARLED (for Structural Change in Agriculture and Rural Livelihoods) is a 6th Framework project (STREP) funded by the European Commission. It aims at analysing the restructuring process of the agricultural sector and the rural socio-economic transformation in the NMS8 plus Bulgaria and Romania. Furthermore, it looks closely at the patterns behind rural "success stories" in selected EU15 case countries during previous enlargements to identify and codify best practices. The project is coordinated by the Leibniz Institute of Agricultural Development in Central and Eastern Europe, Halle (Saale), Germany.	Environmental / EU Scale : EU15
Seamless		AP, EP	(Beginning date : 2005 - completion date : March 2009) The SEAMLESS integrated project develops a computerized framework (SEAMLESS-IF) to assess and compare, ex-ante, alternative agricultural and environmental policy options. The project is funded by the EU Framework Programme 6 (Global Change and Ecosystems) .	Environmental / EU Scale

Sensor	IA	SA	(Beginning date : December 2004 - completion date : December 2008) Sustainability Impact Assessment: Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Regions. An EU FP6 Integrated Project, under the Priority Area 1.1.6.3 "Global Change and Ecosystems". Runs from Dec 2004 to Dec 2008	Environ-mental / EU Scale
Teresa		EP, Interdisciplinary	(Beginning date : - completion date :) TERESA (types of interaction between environment, rural economy, society and agriculture in European regions) is a rural development research project co-funded under the 6th Framework Programme for Research and Technological Development.3 The project main goals are (i) to identify typical interrelationships between farming activities, rural economy, rural society and the environment; (ii) to develop an agent-based model demonstrating the typical interrelations between agriculture, the rest of rural economy and the environment in different types of rural areas in Europe and the impact of policies on its development; and (iii) to identify and to assess different integration policies regarding their effectiveness in generating positive externalities for farming activities and rural development.	Environmental, Economic and Social / EU Scale
Tess		EP	(Beginning date : - completion date :) TESS (for Transactional Environmental Support System) is a EU FP7-funded research project. TESS's strategic objective is to design a decision support system related to environment and land use that will enable policy makers to integrate knowledge from the regional and local level into the decision making process, while also encouraging local people to maintain and restore biodiversity ecosystem services.	Environmental / EU Scale
Transust.scan		SA	(Beginning date : 2006 - completion date : October 2007) Scanning Policy Scenarios for the Transition to Sustainable Economic Structures. The focus of this FP6 research project is to scan a wide range of policy scenarios as to their relevance for the European Sustainable Development Strategy in view of Extended Impact Assessment. Embedded in the TranSust network of researchers (FP5 funding), with its expertise in modelling the transition to sustainable economic structures, the project links and expands an extensive set of available models. Using a scenario approach in cooperation with stakeholders, these models will address the strategic policy options.	Environmental and Eco-nomic / EU

PA: Policy Assessment IA: Impact Assessment EIA: Environmental Impact Assessment SEA: Strategic Environmental Assessment

AP: Agricultural Policy EP: Environmental Policy RD: Regional Development SA: Sustainability Assessment

NOTES :

1- References are linked to project names.
2- Policies are not generally listed. If I wrote the policy name, it's most of the time what I understood from descriptions.
3- Goals are shortly described in Methods section

4.4 Annex 4: Checklist of criteria for evaluating the significance of environmental effects (from CEC 2001b)

Questions to be considered:

1. Will there be a large change in environmental conditions?

2. Will new features be out-of-scale with the existing environment?

3. Will the effect be unusual in the area or particularly complex?

4. Will the effect extend over a large area?

5. Will there be any potential for transfrontier impact?

6. Will many people be affected?

7. Will many receptors of other types (fauna and flora, businesses, facilities) be affected?

8. Will valuable or scarce features or resources be affected?

9. Is there a risk that environmental standards will be breached?

10. Is there a risk that protected sites, areas, features will be affected?

11. Is there a high probability of the effect occurring?

12. Will the effect continue for a long time?

13. Will the effect be permanent rather than temporary?

14. Will the impact be continuous rather than intermittent?

15. If it is intermittent will it be frequent rather than rare?

16. Will the impact be irreversible?

17. Will it be difficult to avoid, or reduce or repair or compensate for the effect?

4.5 Annex 5: 'ANNEX III SCREENING SELECTION CRITERIA

'ANNEX III SCREENING SELECTION CRITERIA (CEC 2001b; p. 31).' Article 4(3) of Directive 97/11/EC requires that Competent Authorities must take into account the selection criteria set out in Annex III of the Directive when making screening decisions on a case-by-case basis and when setting thresholds and criteria for projects requiring EIA.

1. Characteristics of Projects
The characteristics of projects must be considered having regard, in particular, to:

- the size of the project,
- the cumulation with other projects,
- the use of natural resources,
- the production of waste,
- pollution and nuisances,
- the risk of accidents, having regard in particular to substances or technologies used.

2. Location of Projects
The environmental sensitivity of geographical areas likely to be affected by projects must be considered, having regard, in particular, to:

- the existing land use,
- the relative abundance, quality and regenerative capacity of natural resources in the area,
- the absorption capacity of the natural environment, paying particular attention to the following areas:
- wetlands;
- coastal zones;
- mountain and forest areas;
- nature reserves and parks;
- areas classified or protected under Member States' legislation;
- special protection areas designated by Member States pursuant to Directive 79/409/EEC and 92/43/EEC;
- areas in which the environmental quality standards laid down in Community legislation have already been exceeded;
- densely populated areas;
- landscapes of historical, cultural or archaeological significance.

3. Characteristics of the Potential Impact
The potential significant effects of projects must be considered in relation to criteria set out under 1 and 2 above, and having regard in particular to:

- the extent of the impact (geographical area and size of the affected population),
- the transfrontier nature of the impact,
- the magnitude and complexity of the impact,
- the probability of the impact,
- the duration, frequency and reversibility of the impact.

Abbreviations:

ABM	Agent based modelling
AgriBMP	A Systems Approach to Environmentally Acceptable Farming
AGMEMOD	Agricultural Member State Modelling for the EU and Eastern European Countries
AP	Agricultural Policy
ATEAM	Advanced Terrestrial Ecosystem Analysis and Modelling
BMP	Best Management Practice
CA	Competent Authority
CAP	Common Agricultural Policy
CAPRI-RD	Common Agricultural Policy Regionalised Impact - the Rural Development Dimension
CEE	Communauté économique européenne
CEC	Commission of the European Communities
CF	confer, compare
CGE	Computable general equilibrium
CLAVIER	CLimate ChAnge and Variability: Impact on Central and Eastern EuRope
CMEF	Common Monitoring and Evaluation Framework
DG Research	European Commission Directorate-General for Research & Innovation
DPSIR	Driving forces, Pressures, States, Impacts and Responses
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
ECON	Economical Indicators
EEC	European Economic Community
EFORWOOD	Sustainability Impact Assessment of the European Forestry-Wood Chain (FWC)
EIA	Environmental Impact Assessment
ENV	Environmental Indicators
EP	Environmental Policy
EPSON	European Spatial Planning Observation Network
ERDF	European Regional Development Fund
ESF	European Social Fund
FOODCOMM	Key factors influencing economic relationships and communication in European food chains
FoPIA	Framework for Participatory Impact Assessment
FP6/7...	Framework Programme
FWC	Forestry-Wood Chain
GRDP	Gross Regional Domestic Product
GUI	Graphical User Interface
IA	Impact Assessment
IASG	Impact Assessment Steering Group
IDARI	Integrated Development of Agriculture and Rural Institutions in Central and Eastern Europe
IDEMA	Assessing the impact of agricultural policy change in the enlarged European Union
INSURE	Flexible Framework for Indicators for Sustainability in Regions using Systems Dynamics Modelling
ISA	Integrated Sustainability Assessment
LAU	Local Administrative Unit
LUF	Land-Use Functions
MOSUS	Modelling Opportunities and Limits for Restructuring Europe towards Sustainability
N.B.	nota bene (note well)
NGO	non-gouvernemental organisation
NUTS	Nomenclature of Territorial Units for Statistics

OECD	Organization for Economic Co-operation and Development
OPDM	Office of the Deputy Prime Minister
PA	Policy Assessment
PATRES	Pattern Resilience
PD	Project Document
PLUREL	Peri-urban Land Use Relationships
PPP	projects, programmes and policies
PRIMA	Prototypical Policy Impacts on Multifunctional Activities in rural municipalities
RD	Regional Development
RIA	Regulatory Impact Assessment
RTD	Research, Technology and Development
RUDI	Assessing the impact of Rural Development policies (incl. LEADER)
SA	Sustainability Assessment
SCARLED	Structural Change in Agriculture and Rural Livelihood
SEA	Strategic Environmental Assessment
SEAMLESS	System for Environmental and Agricultural modelling – Linking European Society and Science
SENSOR	Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Regions
SG	Steering Group
SIA	Sustainability Impact Assessment
SIAT	Sustainability Impact Assessment Tool
sic	incorrect spelling within a quoted passage
SOZ	Social Indicators
STREP	Specific Targeted Research Project
SUST-RUS	Spatial-economic-ecological model for the assessment of sustainability policies of Russia
TERESA	Types of interaction between environment, rural economy, society and agriculture in European regions
TESS	Transactional Environmental Support System
ToSIA	Tool for Sustainability Impact Assessment
TUDo	Technische Universität Dortmund
UNECE	United Nations Economic Commission for Europe
WTO	World Trade Organization
WWII	Second World War