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LIAISE

Linking
Impact
Assessment
Instruments to
Sustainability
Expertise

# Innovation Report

## European Research for Impact Assessment Tools

SEVENTH FRAMEWORK PROGRAMME

Project n. 243826

www.liaise-noe.eu

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# CONTENTS

# EDITORIAL

Dear Reader,

This is the 6th issue of the LIAISE ('Linking Impact Assessment Instruments to Sustainability Expertise') Innovation Report. The aim of this series is to shed light on the science-policy interface of policy Impact Assessment (IA). The application of analytical tools in policy IA is a means to include scientific knowledge in IA exercises and the policy process. Tools are used to capture the causal relationship between planned policies and its likely social, economic and environmental impacts and hence inform the analytical process of the assessment. The development of analytical tools which are readily applicable for IA is an emergent field of research. The European Commission, in its Framework Programmes (FP) on research funding, has also invested in research promoting those tools.

LIAISE Work Package 2 (led by the Leibniz Centre for Agricultural Landscape Research, Müncheberg, Germany) analysed in a comprehensive survey research projects funded in nine years of EU FP 6 and 7 that were developing tools for IA (Podhora et al., 2013). The analysis was conducted with regard to the policy area and the impact areas which the tools were designed for, the jurisdictional levels the tools were designed for, as well as tool types.

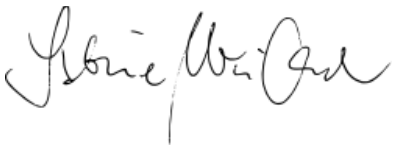
The survey identified that the scope of scientific tools designed in FP6 and 7 does not allow a comprehensive IA with view to sustainable development in all policy areas and impact areas on every jurisdictional level. These results clearly demonstrate a focus on selected European policy areas and their corresponding impact areas.

The study concluded that these gaps should form part of an IA research agenda that is currently developed by the authors and the Work Package (for further information on the Shared Research Agenda, see www.liaise-noe.eu/content/shared-research-agenda-0).

The second part of the Innovation Report contains a number of short reviews of interesting recent publications, among others dealing with (conceptual and empirical) evaluations of the EU Impact Assessment

system, the Sustainability Impact Assessment Tool (SIAT), which is a meta-model to support ex-ante assessment of policy amendments of the Common Agricultural Policy (CAP), various understandings of public participation in environmental impact assessment, and with the implementation of climate protection at the regional/local level and in sectoral planning through Strategic Environmental Assessment.
We wish you an interesting read!

Best regards,



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RESEARCH ARTICLE

# *European Research for Impact Assessment Tools*

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## Introduction

The European Commission Impact Assessment (IA) system is an ex-ante approach to assess the potential intended and unintended impacts of policy interventions on the three pillars of sustainable development. IAs are carried out for all major regulatory initiatives of the European Commission, including legislative actions, regulations, white papers and similar concepts (herein summarised as policy). They aim to improve the quality and transparency of regulation and to promote sustainable development. The Directorate General that develops a policy is responsible for the respective IA. The European Commission issued comprehensive Impact Assessment Guidelines (European Commission, 2009a) for assessing the impacts of policies. These guidelines include six procedural steps that form the IA process:

1) Identifying the policy problem
2) Defining the objectives
3) Developing the main policy options
4) Analysing the impacts of these options
5) Comparing the options
6) Outlining policy/monitoring.

For step 4 'Analysing the impacts', the Impact Assessment Guidelines list 35 so-called impact areas, which are the areas upon which the impact of policies is to be assessed. Eleven of these refer to economic impacts, eleven to social and thirteen to environmental impacts, thereby covering the three pillars of sustainable development. Each policy option should be analysed with regard to its impact on these 35 impact areas (European Commission, 2009a).

When possible, IAs should make use of scientific evidence through the application of analytical tools and other science-based knowledge formats (European Commission, 2009a). These tools can be applied during the various steps of the IA process. The tools should be able to capture, based on scientific information, the causal relationship between different policy options and likely social, economic and environmental impacts. Intended and unintended impacts should equally be analysed, and the spatio-temporal as well as the socio-cultural context should be considered. The information provided by these scientific tools needs to be accurate, relevant and legitimate to adequately inform the analytical process of the IA (De Smedt, 2010; Thiel, 2009; Nilsson et al., 2008). The tools may be quantitative, e.g.

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models and quantified indicators, as well as qualitative, such as expert workshops (de Ridder et al., 2007; Helming et al., 2011).

In this paper, we investigated these observations in more detail by carrying out a comprehensive analysis of tools and methods for IA from the specific perspective of European Commission-funded research. The Commission has specifically promoted research in support of IA through its Framework Programmes (FP). We began from the position that a comprehensive IA requires tools that cover a wide range of impact areas.

It is a central task in the LIAISE Network of Excellence to consolidate the IA research community and to identify scientific tools that can be provided for the IA process. To support this aim, the objective of this study was to take stock of tools and methods for IA that have been developed in the context of the European FP research. The FPs 6 (2002-2006) and 7 (2007-2013) were designed to follow a strategic agenda in generating and compiling scientific knowledge that can address grand societal challenges and support policy making in steering towards sustainable development (Annerberg et al., 2010). Other European funding elements, e.g. the “ideas” section focusing on basic research or the “people” section focusing on mobility fellowship programmes, seemed to concentrate less on tool development and other means of policy support than the “cooperation” section that formed the basis for our sample.

The results of the study are seen as an important corner stone in the identification of research gaps for IA tools from a policy perspective.

## Methodology

Between May 2010 and April 2011, we took stock of nine years of research for policy IA funded by the European Commission. We analysed a total of 7781 projects, of which 4348 were funded in FP6 (11 funding sections) and 3397 projects funded during the first four years of FP7 (14 funding sections). The European Community presents all FP projects on its Cordis website (European Commission, 2008; 2009b). Cordis provides project information through an abstract, contact details and administrative information such as funding period and amount of funding. It does not offer an adequate search function to identify projects by keywords or a full text search of the project descriptions.

The projects relevant for the stock taking were selected by reading the abstract available at Cordis. We selected projects that either developed new tools for the IA process, that extended or linked existing IA tools, or that reviewed or further applied existing IA tools. This selection was done by searching all 7781 abstracts for the following key terms:
- Development/extension/linkage/review/testing of (a) qualitative or quantitative tool(s) in relation to policy/governance, and
- Assessment/evaluation/appraisal/analysis, methodology, and/or
- Sustainable development.

We selected projects that designed tools that were linked to the tool categories defined by de Ridder et al. (2007): (i) assessment framework, (ii) participatory tools, (iii) scenario analysis, (iv) multi-criteria analysis, (v) cost-benefit/cost-effectiveness analysis, (vi) modelling tools, (vii) accounting tools, physical analysis and indicators sets. De Ridder and colleagues established these categories following the actual use of tools in the IA process. We selected those categories because they are closely linked to IA and therefore most suitable to the scope of our study. However, an additional category "(viii) other" had to be included for tools that did not seem to fit the seven categories defined, but still clearly provided quantitative or qualitative information for the IA process.

In the analysis of all 7781 projects, we did not select projects that did not work with tools at all, that developed tools that did not address the IA process (for example when their tools were related to technical or practical assessment), or those projects in which the provision of providing policy support was just one out of several objectives of a project with a focus on rather technical or practical application.
Based on the project description of the Cordis website and the project website itself, selected projects were analysed with view to four parameters (multiple attribution of project information was possible):

- The policy area for which tools were designed (e.g. environment, agriculture). We used the 36 policy areas defined by the European Union (European Union, no date).

- The impact areas for which tools were designed. In the analysis, we followed the definition of the 35 impact areas by the Impact Assessment Guidelines of the European Commission (2009a) (see figure 2) supplemented by an additional overarching impact area "sustainable development in general", created by ourselves for the purpose of this research.

- The jurisdictional level for which tools were designed. We established the categories of jurisdictional levels based on the information that was indicated in the project descriptions.

- The type of IA tools, taking the seven categories from de Ridder et al. (2007) and our extension (see above) as a reference.
Validation of the categorisation for all four topics was conducted through email exchange with the coordinators of these projects (October 2011 to February 2012).

In order to make full use of the results, it was essential to evaluate the parameters impact areas, jurisdictional levels, and type of tools with regard to each policy area individually. In this Innovation Report we exemplarily focus on results for the environment policy area. For results on agricultural and transport policy areas and a more in depth analysis of the environmental results, see Podhora et al., 2013.

# Results

Out of the 7781 projects analysed a total of 203 (2.6%) projects were selected that developed, extended, linked, reviewed and/or tested scientific tools for the IA process. In the following, a general overview of the results is presented. It is followed by an exemplary analysis of those projects providing tools for the environmental policy area.

## The coverage of policy areas through FP6 and 7 projects designing IA tools

The tools of the 203 selected FP6 and 7 research projects covered a total of 16 policy areas (see figure 1). The policy areas, however, were not equally covered by the projects. The main policy areas were environment (51 projects/ 25 %), agriculture (48 projects/ 24%), and transport (23 projects/ 11%). While projects in the transport policy area had a rather general focus on transport aspects, the project foci on agriculture and environment could be further divided into various sub-sections.

- Environment: water, biodiversity, combinations of different environmental issues, mainstreaming environment into general policymaking and environmental policy combined with other areas (e.g., health).

- Agriculture: forestry, cross compliance, rural development, land use/ management, combinations of different agricultural issues, agriculture in general and agricultural policy combined with other areas (e.g., trade).

A total of 20 policy areas was not addressed at all by research projects (see table 1). Sixteen projects (8%) addressed policy areas that did not correspond to the areas set out by the European Commission not correspond to the areas set out by the European Commission (figure 2). Additional sixteen projects (8%) did not specify the policy area they aimed at.

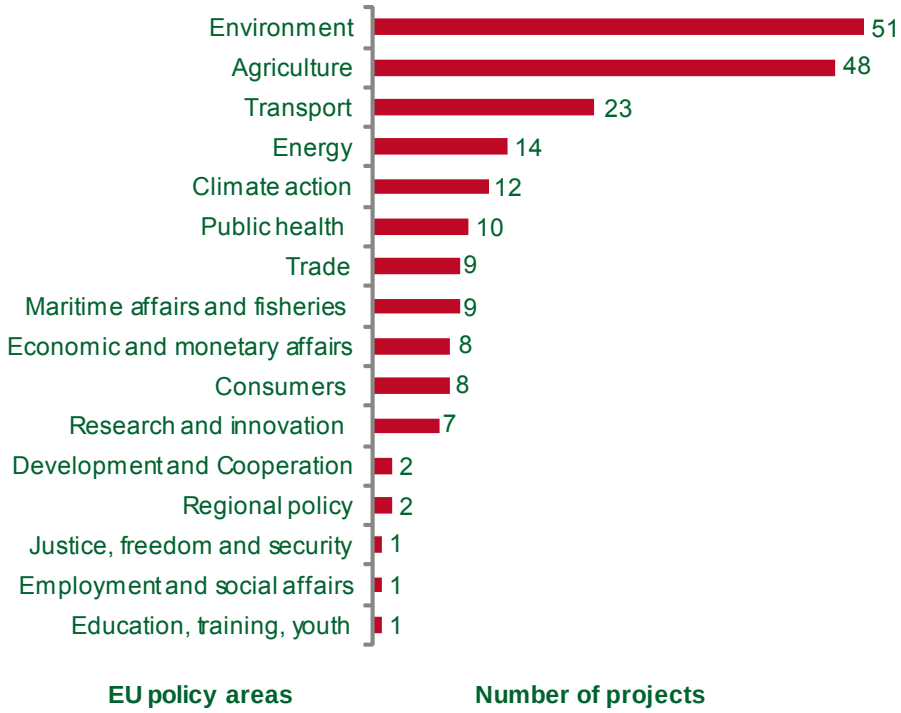


*Figure 1: The coverage of EU policy areas through projects funded in FP6 and 7 designing IA tools (multiple attributions possible)*

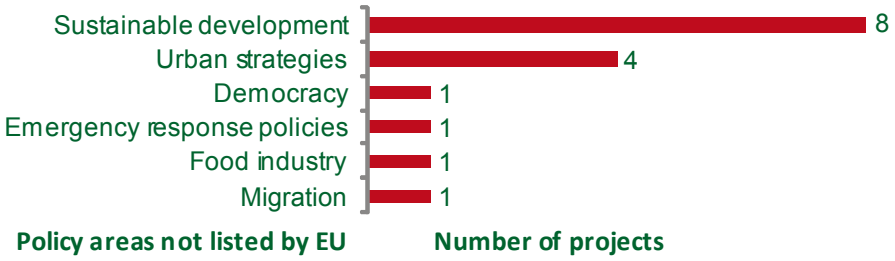


*Figure 2: The coverage of policy areas not listed by the EU through projects funded in FP6 and 7 designing IA tools (multiple attributions possible)*

| | | | |
|---|---|---|---|
| Audiovisual and media | Enlargement | Food safety | Institutional affairs |
| Budget | Enterprise | Foreign and security policy | Internal market |
| Competition | EU citizenship | Humanitarian aid | Multilingualism |
| Culture | External relations | Human rights | Sport |
| Customs | Fight against fraud | Information technology | Taxation |

*Table 1: EU policy areas not covered by projects funded in FP6 and 7 designing IA tools (multiple attributions possible)*

# The design of IA tools for the environmental policy area through FP6 and FP 7 projects

In the following, the results of the stock taking are presented for projects focussing on the environmental policy area.

## The coverage of impact areas

The 51 projects funded in FP6 and 7 research in the environmental policy area designed tools to address a total 33 impact areas plus sustainable development in general (figure 3). The results showed that the majority of tools was developed to assess environmental impact areas (88 impact areas as total sum by all projects). Economic impact areas were less covered (43 impact areas as a total sum). Social impact areas were least covered (27 impact areas as a total sum).

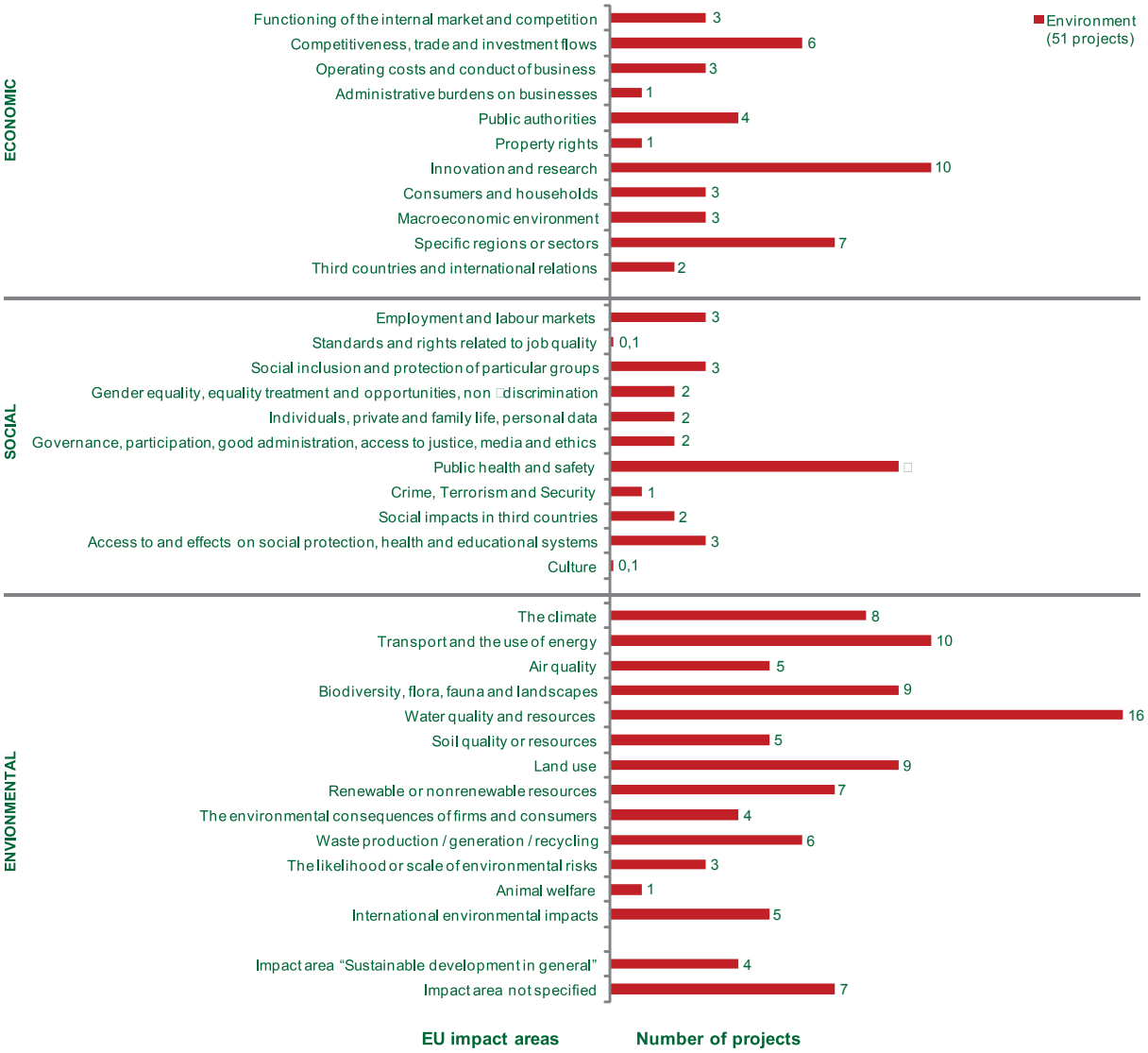


*Figure 3: The coverage of impact areas as set out by the Impact Assessment Guidelines through projects funded in FP6 and 7 designing IA tools for the environmental policy area (multiple nominations possible)*

## The coverage of jurisdictional levels

More than three fourth (44 projects/ 86%) of the projects in the environmental policy area developed tools that addressed policies at the European Union level (figure 4). Fifteen projects (29%) additionally or exclusively addressed international, multi-state, national and local policies. Five projects (10%) did not specify the level they designed their tools for.


*Figure 4: The coverage of jurisdictional levels through projects funded in FP6 and 7 designing IA tools (multiple attributions possible)*

## Types of IA tools

When categorising the IA tools designed by the projects in the environmental policy area according to the categories defined by de Ridder et al. (2007), one could see a clear focus on quantitative tools (figure 5). Modelling tools, accounting/physical/indicator sets, scenario analysis, cost-benefit/cost-effectiveness and multi-criteria analysis were developed by the projects fifty-six times (at an average of all projects). Participatory tools were not covered explicitly. Three projects (6%) were working on the design of assessment frameworks. Almost all projects (47 projects/92%) designed tools that could not be categorised, either due to a missing matching category or due to limited information on the tools. These include, among others, data bases, decision tools, monitoring schemes and interactive knowledge sharing platforms.

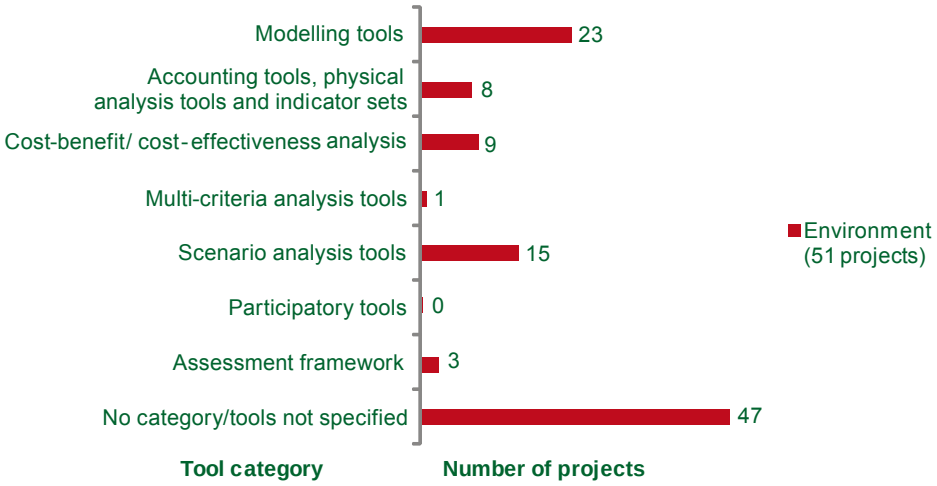


*Figure 5: Tool categories covered through projects funded in FP6 and 7 designing IA tools (multiple attributions possible)*

# Discussion: Tools for Impact Assessment provided by European funded research – Opportunities and limitations for the science-policy interface

Following our selection criteria less than 3% (203) of 7781 projects funded in European FP6 and 7 were classified as dealing with quantitative and qualitative tools for policy IA. At first sight this seems to be a small number given the fact that FP6 and FP7 were, among other purposes, explicitly dedicated to the provision of evidence for policy support (Annerberg et al., 2010; Rietschel et al. 2009). Still, FP6 and FP7 research was, to a considerable extent, driven by the scientific rationale providing researchers a high degree of freedom for designing methods, purposes and products of research. Also, the orientation of research towards supporting the policy process is an issue that is only recently emerging in many research fields. This is particularly true for policy IA, which is itself a relatively new instrument of the last decade in the European Commission (Adelle/Weiland, 2012). Against this background the total number of approximately 200 projects dealing with IA tools in FP6 and FP7 can be regarded as an impressive wealth. In the following, we further discuss the coverage of IA tools research with regard to the four parameters used in the analysis. Research gaps are highlighted for each parameter.

First, the policy areas addressed by FP6 and 7 projects covered only a selection of the policy areas the European Commission is dealing with. When comparing the covered policy areas with the topics relevant in the European Directorate Generals (European Commission, 2012), addressing e.g. communication, enlargement, home affairs, informatics, information society and media, and justice, we do not seem to find an immediate and proper balance in IA tool research. For these policy areas, no tools for policy IA have been designed through FP funding in the nine-year period. In order to provide research-based IA tools for a larger number of policies developed by the European Commission, future research should also address these and other underrepresented policy areas.

Second, the varying numbers of projects that provided tools for the individual policy areas require a detailed view of the covered impact areas. Policies are designed to address a specific objective. Thus, they can be expected to have the highest impact in the corresponding impact areas since policy area and impact areas are closely linked. As demonstrated by the example of the environmental policy area, the majority of tools was designed to assess effects of environmental policies on environmental impact areas. However, following the purpose of an integrated IA, tools should also be able to cover other impact areas to identify less obvious and/or unintended impacts of the policy options. Particularly, the poor coverage of social impact areas shows that a comprehensive analysis of all three sustainability dimensions has not been achieved by many tools developed in FP6 and FP7 projects. Future research is clearly warranted to integrate social and economic aspects into the tools for assessment of environmental policies.

Third, the focus of the tools in FP6 and 7 funding was to support EU policy-making and the IA process. Only a small percentage of tools was also designed for other jurisdictional levels, mainly the national and regional ones. As described in LIAISE Innovation Report No. 2 “Impact Assessment Practice in Europe” (Adelle, 2011), IA is no longer an analytic instrument at the European level only, but the member states as well implement individual national IA procedures. To enable policy-makers from other levels to benefit from scientific tools for their domestic IA process, it should thus be a central goal for research to increase activities for these levels and to indicate the transferability of tools to other jurisdictional levels. Research is required to conceptually link different jurisdictional levels and respective processes in the design of IA tools, thereby allowing for the analysis of interactions of multi-state policies.

Fourth, the distribution of the IA tools to the tool-type categories by de Ridder et al. (2007) illustrated the clear focus on quantitative tools. This finding is not necessarily synonymous with the availability of tools in those categories. In some of the categories, for example multi-criteria analysis, the tools established do not need much further development to be ready for application. Other categories, mainly modelling tools, need continuous development and are therefore more likely to be the subject of research projects, but not necessarily more likely to be used in the IA process. Future research should to reveal whether e.g. an increased provision of qualitative tools would better cover the needs from the perspective of policy IA implementation.

The assignment of IA tools to the seven categories of de Ridder et al. proved to be a difficult and somehow fuzzy task. Almost half of the projects designed tools that did not fit into these categories at all. Other tools seemed to fit into more than one category since the latter was not necessarily discrete and independent but interrelated, in that one could be understood as subcategory of another. For example, scenarios (ranked second in our results) are often an element of modelling tools (ranked first in our results). To facilitate the selection of suitable tools during the IA process and to obtain a better overview of what is available we call for an update of these categories. Thereby, future research should reshape these categories according to the scientific tools available for the IA process.

In sum, the analysis showed that there is a variety of tools available for the IA process, suited for different policy areas, impact areas and jurisdictional levels. The high number of projects that provided IA tools that could not be classified according to the categories defined by de Ridder and colleagues illustrated that a comprehensive tool classification system is needed that is consistent with the IA process on one side and with different analytical approaches on the other.

## Summary and conclusion

The European Framework Programmes (FP) 6 and 7 were designed as a central opportunity to fund research that addresses grand societal challenges and that supports policy making towards sustainable development. An analysis of nine years of research funding in FP6 and 7 showed that approximately 3% of their projects clearly designed tools for IA. These tools mainly concentrated on environmental, agricultural and transport policies. By example of environmental policies, the tools – mainly quantitative tools as models and related tools – were designed to assess the effects on environmental impact areas for European policies. Thus, the tools left certain analytical gaps with view to the integration of scientifically based results into the IA process, specifically with view to providing tools for all policy areas on all jurisdictional levels with view to comprehensive assessment towards sustainable development. A shared research agenda can contribute to addressing these gaps.

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# IN BRIEF

**Pope, J., Bond, A., Morrison-Saunders, A., Retief, F. (2013): Advancing the theory and practice of impact assessment: Setting the research agenda. *Environmental Impact Assessment Review* 41, pp. 1-9.**

This paper gives an overview on the state of the art of impact assessment theory and practice. To do so, it focuses on a review of the practices of six well-established forms of Impact Assessment (IA), namely Environmental IA, Strategic Environmental Assessment, Policy IA, Social IA and Health IA as well as Sustainability Assessment. It discusses the theoretical debates in each field and identifies strengths and weaknesses of Impact Assessment.

Although IA is already well-established and procedural guidance is available, it faces several challenges. Among them are the poor quality of practice in some countries, the expanding range of discrete forms of doing impact assessment as well as the lack of integration of broader sustainability issues into IA. Moreover, the authors are concerned that impact assessment may get even more streamlined by political institutions. Although it is unlikely that impact assessment will be disestablished, this may cause an increasing ineffectiveness of the process.

Also, the authors discern that impact assessment is increasingly reduced to a licensing exercise that has hardly any influence on decision-making. This is also reflected in the observation that a shift in the value and attitude towards impact assessment took place. Today, there is a trend to allocate the responsibility for impact assessment to government agencies concerned with development issues rather than environmental protection. Drawing on these findings, the authors call for exploring and strengthening the common identity of the different forms of impact assessment. Hence, they propose a research agenda that comprises the challenges in all fields of impact assessment. They conclude that further research is needed especially in the following areas:

- Development of theory surrounding impact assessment, especially theory that is associated with the effectiveness of impact assessment
- Identification of ways to simplify the “jigsaw puzzle” of impact assessment to avoid confusion over the diversity of impact assessments and maintain cost-effectiveness of the process.

**Sieber, S., Amjath-Babu, T.S., Jansson, T., Müller, K., Tscherning, K., Graef, F., Pohle, D., Helming, K., Rudloff, B., Saravia-Matus, B.S., Gomez y Paloma, S. (2013), Sustainability impact assessment using integrated meta-modelling: Simulating the reduction of direct support under the EU common agricultural policy (CAP)**

Sieber et al. present results from a modelling process based on the Sustainability Impact Assessment Tool (SIAT). SIAT represents a meta-model to support ex-ante assessment of policy amendments of the Common Agricultural Policy (CAP). The SIAT framework consists of a system of interlinked models, including a macroeconomic, a land-use, and five sector models. Thereby land-use changes can be simulated, spatially explicit for the NUTS regions. Moreover, impacts and their regionalized trade-offs can be represented by about 80 sustainability indicators accommodated by the model.

A simulation has been conducted for different levels of discontinuation of the agricultural direct subsidies under the CAP from 2015-2025 for five case study regions. The results analysis comprised three steps: First, examining overall changes in relevant land use classes, second comparing in detail the effects on the five regions, and third analysing the effects and their trade-offs in a set of economic, societal, environmental, energy-, climate-, and diversity-related indicators.

The computation showed that in principle reducing the direct income support decreases the share of farmed area, brings an increase in forested land, increases stability of the natural vegetation coverage as well the share of abandoned arable land, and leads to minor changes in the overall built-up area. In regard to the indicators, these effects rather yield climate friendly (reduction in CH4 and N2O), economically beneficial (increase in gross value of agriculture), and socially desired results (decrease in the unemployment rate). However, they are accompanied by environmentally harmful reactions (increased pesticide use).

The authors conclude that the SIAT provides for a comprehensive analysis of different options of proposed CAP reforms, combining multiple sectors and allowing for a disaggregated analysis across regions. At the same time, the tool still represents a costly approach for operational policy advice which has to eventually gain trust to further enable decision-support.

**Glucker, A., Driessen, P., Kolhoff, A., Runhaar, H. (2013), Public participation in environmental impact assessment: why, who and how? *Environmental Impact Assessment Review* 43, pp. 104-111.**

A broad consensus exists among scholars that public participation is a crucial part of EIA, but there is no consensus on the precise meaning of the concept. The authors aim at providing an overview of the academic debate on public participation in EIA for both practitioners and scholars. The article is structured around three guiding questions: “What is public participation in the context of EIA? What objectives of public participation in EIA can be distinguished? Who should participate in EIA and why?” (p. 105).

In the academic literature and in EIA practice, there exist diverging accounts of participation. For example, Arnstein (1969) considers participation as a categorical term for citizen power. This view contains the element of empowerment of formerly marginalised people and differs from other Runhaar and Driessen (2007) who consider interactions with stakeholders only necessary in cases of ’unstructured’ policy problems. These are only two of a range of differing understandings of public participation depicted in the article.

The article organises the objectives of public participation found in the literature around three rationales: The normative rationale contains elements such as democratic capacity and social learning. The substantive rationale contains arguments such as the use of local knowledge, the use of experimental and value-based knowledge. The instrumental rationale contains arguments such as the generation of legitimacy and the resolution of conflict.

While there is no clear understanding of who the public are – the terms ‚public’, ‚stakeholders’ and ‚citizens’ are frequently used interchangeably –, many scholars argue that every interested person should be involved. In contrast to this idea, Dietz and Stern (2008) differentiate between ‚the general public’ and ‚stakeholders’ (p. 108). Petts (2003) argues different members of the public have differing interests, so that ‘the public interest’ does not exist.

The authors conclude that for a progress of research and practice definitions and expectations need to be made explicit.

**Wende, W., Bond, A., Bobylev, N., Stratmann, L. (2012): Climate Change Mitigation and Adaption in Strategic Environmental Assessment. *Environmental Impact Assessment Review* 32, pp. 88-93**

At the Copenhagen World Climate Conference of December 2009, a maximum global warming limit of +2°C was accepted by the international community. To meet this globally agreed limit, many countries are implementing CO2 emission reduction targets. As a consequence, various sectors are increasingly moving into focus, such as transport, industry, housing and agriculture.
For the implementation of climate protection at the regional or local level as well as in sectoral planning, Strategic Environmental Assessment (SEA) is a suitable instrument and a 'policy integration tool' which draws attention to policy formation for mitigating climate change. It is a tool to assess impacts on the environmental parameters listed in legislation. However, there is evidence that national reduction targets considered through SEA, which is applied to spatial planning at local or regional levels, do not meet emission-reductions obligations. In both examined cases, in the German state of Saxony as well as in the English region of the East of England, SEAs failed to take climate change effects at scales larger than the boundary of the spatial plan into account. Moreover, CO2 reduction targets are not considered in both cases.
Therefore, for climate protection to play a more relevant role within this strategic procedure, the EU should clarify legal obligations and define terms within the text of the SEA Directive more clearly. Moreover, there is a need to monitor carbon emissions adequately and responsible individuals in environmental authorities are required. A methodological guideline is also necessary to transmit global climate change targets down to local and regional levels. Finally, guidance on implementing climate change protection in strategic assessment procedures is needed.

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