

Ex-ante Policy Assessment of Agricultural, Environmental, and Rural Policies from an Institutional Perspective: The Procedure for Institutional Compatibility Assessment

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Abstract— Ex-ante impact assessment of agricultural, environmental, and rural policies has become an integral part of political decision making processes in the EU. While there is a large variety of agri-environmental modelling tools available to analyse likely social, economic, and environmental impacts of these policies, scientifically well-founded ex-ante policy assessment tools capturing the institutional dimension are still missing. In this paper, we introduce a formalised procedure for modelling – ex-ante – institutional aspects for policy implementation: the ‘Procedure for Institutional Compatibility Assessment’ (PICA). PICA has been designed as an explorative, yet formalised methodology that enables policy makers to identify at an early stage potential institutional incompatibilities. After providing a brief overview of relevant approaches for policy assessment we elaborate on the four distinct steps of PICA and use a core element of the EU Nitrate Directive to illustrate its function.

Keywords— Methodology, Ex-ante Policy Assessment, Institutional Policy Assessment

I. INTRODUCTION

There is an urgent need for scientifically well-founded ex-ante policy assessment from an institutional perspective. Ex-ante impact assessments in general have become an integral and systematic part of political decision making processes [1]. Here, the analysis of likely social, economic, and environmental impacts is more and more often to be complemented by an assessment of the institutional dimension [2]. Currently, however, institutional policy analysis focuses mainly on ex-post policy impact studies to

evaluate past policy performance. While there is a vast amount of institutional ex-post case studies and indicator databanks, institutional economists have not yet developed standardised procedures using this information for making predictions of the institutional feasibility of policies.

In this paper, we introduce the ‘Procedure for Institutional Compatibility Assessment’ (PICA). It has recently been developed in the frame of the SEAMLESS project [3].¹ In this project, an ambitious integrative modelling framework for ex-ante assessment of policy impacts on sustainable development has been created. This ‘SEAMLESS-Integrated Framework’ has been designed not only to assess the policies’ likely impacts on environmental, economic, and social systems, but it also has to provide indications on whether a policy under scrutiny is feasible from an institutional perspective and, thus, can be expected to become effective [4]. In this context, PICA has been developed as an explorative and flexible, yet formalised methodology to assess the compatibility between policy options and various institutional contexts.

Following an overview about prominent approaches for policy assessment in Section 2, we outline in Section 3 the basic assumptions leading to the concept of institutional compatibility and elaborate on all four distinct steps of PICA, while in the subsequent Section 4 different modes of action of the procedure will be illustrated, using particular elements of the EU Nitrate Directive as a policy example. In the

¹ SEAMLESS integrated project, EU 6th Framework Programme, contract no. 010036-2.

concluding Section 5, we discuss the importance of PICA as an explorative tool within the policy making process.

II. OVERVIEW OF APPROACHES FOR POLICY ASSESSMENT

Policy analysis guides the process of selecting appropriate policy options to be put into practice. The analysis is commonly subdivided into two categories: ex-ante and ex-post analysis. Ex-post policy analysis is designed to evaluate past policy performance e.g., in terms of effectiveness, transparency, and distributional fairness to reach policy objectives and includes a wide range of methods. The capability of these approaches, however, is limited since they do not provide for evaluating the effects of policies prior to their implementation.

In contrast, experiences with ex-ante evaluations are still rare [5, 6]. In the early phase of the policy life cycle, the 'Cost of Policy Inaction' method is often used as an ex-ante evaluation tool [7]. Methods that support a later phase of the policy life cycle are subsumed under the notion of 'ex-ante impact assessment'. In cases where it is possible to quantify costs and benefits in monetary terms, a major tool for ex-ante impact assessment is the Cost-Benefit Analysis (CBA). Due to the methodological difficulties, the role of CBA within a political context is often that of political argument [8, 9]. Other supporting valuation methods, such as Contingent Valuation, Travel Cost Method, and Hedonic Pricing try to capture the problem of monetising likely policy impacts. Another way, yet costly and time consuming, to make ex-ante predictions of likely impacts of policies is to implement alternative versions of the policy in an experimental situation and to compare their relative impacts. Still, from an institutional perspective, costs and frictions of policy design and implementation are not addressed by these methods; not the least because they are difficult to estimate and quantify ex-ante.

III. THE PROCEDURE FOR INSTITUTIONAL COMPATIBILITY ASSESSMENT (PICA)

Institutional policy assessment is based on the assumption that policies will affect certain areas of reality which are already subject to valid and (more or less) effective institutions. Thus, an adequate and correct understanding of the institutional configuration and of the situational logic of the institutional environment in which a policy is to be implemented is needed as a necessary precondition for assessing between intended and unintended consequences of that policy [8, 10, 11].

On the one hand, appropriate institutions increase the likelihood of actually achieving the policy objectives, i.e., they increase the likelihood of actors' compliance and (intended) change of behaviour. On the other hand, appropriate institutions ensure that these policy objectives are achieved at reasonable costs. Policy instruments that have proven to be very cost-effective in one specific institutional context might perform rather poorly in another, i.e., they might be not effective at all, or they might induce higher costs to become effective. In particular if agricultural, environmental, and rural policies are concerned, suitable governance structures have to address the specificities of nature-related transactions [12] and the prevailing interdependencies of the actors, i.e., the fact that the choice of one actor may influence the choices other actors make. This problem is often overlooked in conventional economics, which assumes that agents are independent [13].

The Procedure for Institutional Compatibility Assessment (PICA) has been conceptualised to reveal where - i.e., in which country or region - a policy option would be compatible with the existing institutional structures, and where an institutional misfit that is likely to hamper policy implementation can be expected. PICA comprises four distinct working steps:

Step 1: The policy options are clustered according to a) type of intervention (regulatory, economic, and advisory), b) area of intervention (hierarchy/bureaucracy, market, and self-organised network), and c) possibly induced property rights changes. This classification allows identifying the generic structure of a policy option. The objective of this specification of policy types is to provide a suitable, yet formalised

structure, to identify crucial institutional aspects (CIA) that are of particular importance for the policy option under scrutiny. It is assumed that the policy type, as represented by distinct boxes in Table 1, is decisive for the range and kind of CIAs that can be expected to be conducive or detrimental to the implementation of this policy option. Practically, this typology allows limiting the number of CIAs that need to be reviewed when evaluating the policy to be implemented. In the absence of this filter, all identified CIAs relevant for agricultural, environmental, and rural development policies would have to be taken into account every time a policy option is to be assessed.

Based on Stone [14] and according to similar distinctions made by environmental economists, the types of intervention, shown in the respective rows in Table 1, describe how and by which means the impact of a policy shall be reached:

- Regulatory or command-and-control instruments (compulsory): e.g., laws, regulations, specific protection targets, and designations of areas for protected habitats or species.
- Economic instruments often using financial (dis)incentives: e.g., taxes, subsidies, grants or loans, and tradable pollution permits.
- Advisory/Voluntary instruments: e.g., codes of good practice, extension services or other informative measures, and environmental audits.

The area of intervention points to the governance structures a policy is supposed to have an impact on. The differentiation used in PICA follows to a large extent the widely used categories of governance structures (hierarchies, markets, and hybrids) suggested by Williamson [15]. However, first, it can be assumed that almost every governance structure in the real world can indeed be seen as some hybrid form between the polar cases market and hierarchy. Second, with specifying the third column self-organised network, the attention is directed to a specific (hybrid) form of governance structures that is of particular interest if pursuing agricultural, environmental, and rural development policy objectives [13].

The column property rights change is the third dimension to describe a policy type. It accounts for changes in private or collective property rights likely to be induced by the policy option. It covers an important institutional specificity of environmental policies. The prevailing private property in land may often lead to presumptive entitlements in the policy arena [16]. Here, the changes induced by the policy options are defined in a narrow sense pointing to changes in the property rights of farmers on natural resources needed for production, such as the prohibition to spread manure on the field during winter months, having direct impacts on the individual production decisions of farmers.

Table 1: Policy Type Matrix

		Area of Intervention (Governance Structures)			Property Rights Change	
		Hierarchy/ Bureaucracy	Market	Self- organised network	Induced	Not- induced
Type of Intervention	Regulatory		Policies intervening at markets using regulatory (command-and-control) instruments; Example: Restrictions on nitrate use			
	Economic					
	Advisory/ Voluntary					

Step 2: Each policy type is characterised by a specific set of CIAs².

Step 3: Indicators help to evaluate the potential of respective CIAs to constrain or foster the implementation of a policy option. The institutional indicators³ are selected from existing indicator lists, perhaps modified, or new indicators are elaborated. Further, concrete assumptions on links and relationships between a CIA and the respective set of indicators are made.

Step 4: The information provided by the institutional indicators is used for a qualitative assessment of each identified CIA. Subsequently, the CIA and the related assessments are arranged in thematic categories of institutional compatibility leading to qualitative statements about the probable effectiveness of a policy option. This allows for drawing conclusions about an institutional fit or misfit between policy options and institutional contexts.

IV. INSTITUTIONAL COMPATIBILITY OF THE EU NITRATE DIRECTIVE

The EU Nitrate Directive [17] adopted in 1991 can be seen as a prominent and typical example of an EU environmental policy addressing water pollution. We take one of the core elements of this Directive as an example to illustrate PICA: when implementing the Directive Member States have to design action programmes in vulnerable zones designated before that shall consist of mandatory rules. These rules determine, e.g., periods when the application of certain types of fertiliser is prohibited and limitations of the application rates of fertilisers, taking into account the characteristics of the zones concerned, in particular soil conditions, soil type, slope, land use, and agricultural practices. Furthermore, Member States

² An initial list of 40 CIAs linked to common policy types in agriculture, environment, and rural development has been compiled in the frame of the SEAMLESS project (Schleyer et al. 2007, 35ff.). In this paper, only selected crucial institutional aspects will be introduced.

³ Institutional indicators are here defined as variables that are used as input to the institutional assessment within PICA. About 100 institutional indicators have been compiled so far in the frame of the SEAMLESS project (Schleyer et al., 2007, 38ff.).

have to establish suitable monitoring and enforcement systems to ensure actors' compliance with the rules.

A. PICA Step 1: Classification of the Policy Option

Using all available information on the concrete form and content of the policy option provided by the policy maker, this element of the EU Nitrate Directive – according to the matrix of policy types (Table 1) – is categorised as a regulatory type of policy having effects on markets. Effectively, only the national regulations determine the precise limits of restrictions in time and space. Furthermore, it is assumed that no compensations are paid covering the costs induced by these restrictions. These uncompensated restrictions have an impact on the production costs of farmers (e.g., yields may decrease, due to restrictions in fertiliser use) and, thus, on their market position.

B. PICA Step 2: Crucial Institutional Aspects Related to the Policy Option

According to the identification of the policy type in the previous step, in PICA Step 2, only those CIAs related to regulatory policy instruments intervening in markets have to be considered. Within the SEAMLESS project, an extensive literature review has been carried out to identify CIAs that are typically linked with respective policy types [18]. From this 'library of CIAs' those CIAs are extracted that potentially hamper or foster the effective implementation of policies of the type 'regulatory on market'. Now, relevant national and regional stakeholders and scientific experts are consulted, discussing the relevance of every identified CIA for the policy option under scrutiny. Here, some of the CIAs extracted from the library might be regarded as relevant for the policy type in general, but not be considered as being crucial for the *specific* policy option to be assessed and, thus, will be skipped at this stage. In turn, additional CIAs that have not yet been covered so far may be included in the assessment of the policy option under scrutiny. The following CIAs likely to constrain the implementation of the Directive are suggested for illustrative purposes:

- Strong bargaining power of farmers' associations

The implementation of mandatory measures restricting the use of fertilisers in designated vulnerable zones affects directly the production costs of farmers in these zones, often leading to income losses. Yet, the degree of concrete restrictions is determined by the respective Member States or regions. It is assumed that a strong agricultural lobby might be able to soften these mandatory restrictions, or to obtain exception clauses. Thus, *strong farmers' associations* might hamper the effective implementation of the Directive.

- Information asymmetry state vs. firm and high level of opportunism

Information asymmetries between public administrations (state) and agricultural producers can be conceived as the result of monitoring problems, due to the inability (technical/knowledge/personnel) or even unwillingness of the administration in charge to monitor and, if applicable, sanction actors' behaviour, but also due to the characteristics of the resources and the related activities to be monitored. Mandatory measures to reduce water pollution by nitrates are difficult or very costly to observe and to measure. Non-compliance cannot be associated clearly with single farmers since nitrates diffuse slowly into often large groundwater basins.

Furthermore, it is assumed that *high levels of opportunism* on part of the farmers concerned are likely to exacerbate the problem, leading to high costs for controlling necessary to deter actors from cheating.

C. PICA Step 3: Linking Crucial Institutional Aspects to Institutional Indicators

The result of PICA Step 2 is a restricted list of CIAs that is considered to be of particular importance for assessing the effectiveness and cost-effectiveness of implementing the selected core element of the EU Nitrate Directive. Each CIA that is selected from the library of CIAs is linked with at least one institutional indicator from the available portfolio that can help to evaluate the respective CIA. For further processing, only those indicators are selected that are considered to have some explanatory power with respect to the policy option under scrutiny. At this stage, the availability, quality, and geographical scope of quantitative data, as well as the precise forms and scopes of suggested qualitative assessments, need to be discussed. For illustration, Table 2 contains examples of institutional indicators that might be used for assessing the extent of 'Bargaining power of farmers' associations'.

Table 2: Institutional Indicators for Assessing 'Bargaining power of farmers' associations'

Institutional Indicator	Description/Data	Data Sources/ Databases	Expert assumptions on links between indicator and CIA
Memberships in farmers' associations	Number of farmers that are member in a farmers' association / Number of farms*100	National Statistical Databases; Assessment by expert group	High percentages indicate a strong bargaining power of farmers' associations
Fragmentation of farmers' associations	Number of farmers' associations	National Statistical Databases	High numbers indicate a relatively weak bargaining power of farmers' associations
Proximity between farmers' associations and EU authorities	(Number of) farmers' associations (of a country) with official representatives in Brussels	Data assembled by expert group	High numbers indicate a high influence on the political decision making process at EU level and strong bargaining power
Structure of farming system	Ratio = Number of farms / Number of people employed in the farming sector	SEAMLESS Databases	Low ratios indicate a farming system dominated by large farms and, thus, a high influence on the political decision making process at national level
Producer Support Estimate	Monetary budget of producer support in a country	OECD	High estimates indicate a strong bargaining power of farmers' associations

D. PICA Step 4: Aggregating Information on the Selected CIAs

In this final step of PICA, the information provided by the institutional indicators is used for a qualitative assessment of the restricted list of CIAs. This includes, first, combining the various indicator information available for every single CIA of the restricted list to arrive at a qualitative statement about the relative extent of this CIA in all countries and/or regions and, second, defining thematic categories of institutional compatibility to group the CIAs. Each thematic category draws on information from at least one CIA. For the selected core element of the EU Nitrate Directive the information is grouped according to the following two thematic categories:

- 1) Communication capacity
 - Bargaining power of farmers' associations
- 2) Governance structures compatibility
 - Information asymmetry state vs. firm (including high levels of opportunism)

Finally, these categorised region- or country-wise qualitative statements on the compatibility of the policy option are presented to the policy maker who has commissioned the policy assessment. Here, an interactive form of communication is preferred since this provides the opportunity to discuss the results and, perhaps, the introduction of complementary policy instruments in countries or regions where – according to the PICA results – implementation is likely to be substantially hampered. Figure 1 summarises the four steps of PICA.

V. CONCLUSIONS

The methodological and theoretical conceptualisation of PICA is innovative, because it takes the perspective of policy makers who intend to influence the behaviour of actors when designing and implementing new policies. Unlike, e.g., scientists, policy makers may in the first place not be interested in a detailed analysis of the institutional dynamics. Instead, they rather want to know if a potential policy is likely to change actors' behaviour in such a way that the policy objectives can be reached.

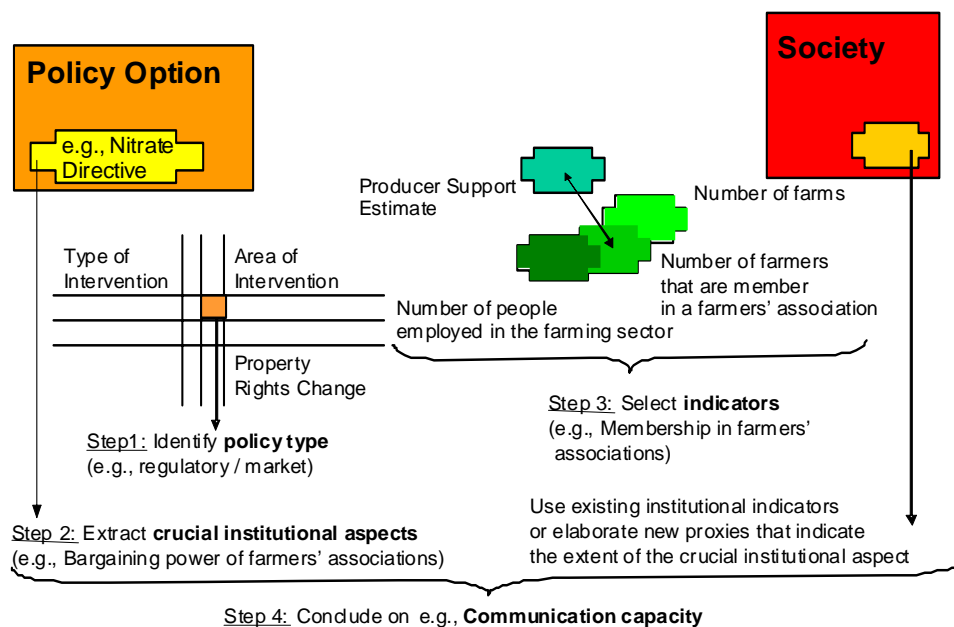


Figure 1: Scheme of the Procedure for Institutional Compatibility Assessment (source: own figure).

Consequently, PICA has been designed as an explorative tool that is able to identify main institutional incompatibilities that might act against policy implementation. Thus, PICA can be considered as an early warning system for institutional incompatibilities. However, PICA results point to (potential) institutional incompatibilities without providing detailed insights in the concrete (region and policy dependent) causalities that lead to these institutional compatibilities; thus, further empirical analysis would be necessary to design appropriate instruments to overcome or mitigate those incompatibilities. All in all, PICA may help to avoid irreversible investments for policy design and implementation, since policy makers get informed at an early stage whether the results they expect may not materialise. Furthermore, within the four steps PICA provides a flexible structure that can be adapted very easily to all possible agricultural, environmental, and rural policy options as well as institutional contexts. It allows for a low-cost and time-saving research and the results are easy to communicate to policy makers.

PICA is still work in progress. Despite being an explorative tool, all PICA steps can build already on a solid basis derived from theoretical insights and empirical institutional analysis. Yet, neither the current library of CIAs as a whole, nor the lists of CIAs linked to a particular policy type can be seen as static, but need to be revised and complemented continually to improve the accuracy of the predictions. Furthermore, main avenues for improvement would include testing the ability of the typology of policy options to actually filter the CIAs properly.

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