"COOKBOOK" SERIES N^{O} 5

Suškevičs, M. and Roche, P.K. (Editors)

Policy Coherence analysis (PolCA): methodological approach

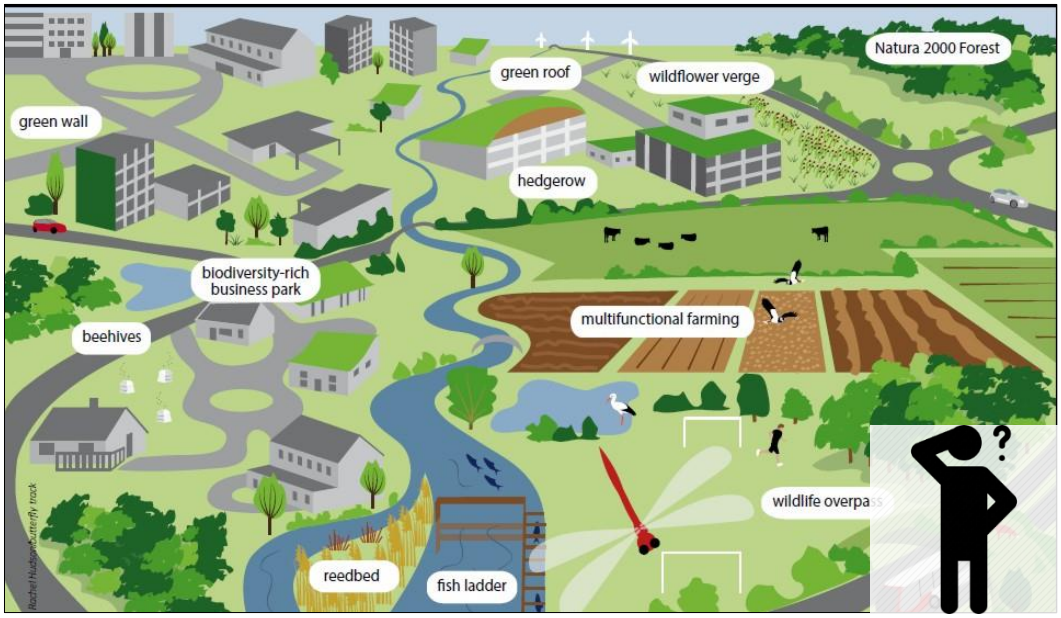

Image: https://www.greenregister.org.uk/.

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Foreword

Often the methodological side in (applied) biodiversity projects remains unelaborated as "tacit" expert knowledge after the projects end, is scattered across different guidelines, or is mostly elaborated in the method's sections in respective scientific publications. This might hinder effective use of such knowledge and experiences.

The IMAGINE "cookbooks" is a series of guidelines intended to provide guidelines and support for scientists and practitioners working on Green Infrastructure issues. Our intention with this series is to make such methodological knowledge ("how to?") more readily available for two main potential user groups:

- other scientists working on Green Infrastructure ecological or socio-political aspects;
- national, regional or local policy-makers and GI managers, who need some advice on practical aspects of GI governance.

This series consists of nine guidelines, with the following topical focuses for:

1. Evaluating ecosystem services capacity
2. Assessing GI vulnerability to ecosystem degradation at the landscape scale
3. Assessing detailed GI habitat quality for biodiversity and ecosystem services
4. GI management for ecosystem services
5. **Analysing coherence between different policies affecting GI (this cookbook)**
6. Analysing GI stakeholders, social frictions and opportunities
7. Adaptive planning tools for the allocation of GI
8. Quantifying GI structure and connectivity in GI elements
9. Defining and evaluating ecosystem condition

Recommended **citation** format for **this cookbook**:

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List of Concepts and Acronyms

CS	Case Study Sites (within the IMAGINE project)
ES	Ecosystem Services
GI	Green Infrastructure
PCM	Policy Coherence Matrix
PolCA	Policy Coherence Analysis

1. Background and objective of the cookbook

1.1. What is policy coherence?

We define policy coherence as an attribute of policy that systematically reduces conflicts and promotes synergies between and within different policy areas to achieve the outcomes associated with jointly agreed policy objectives (Nilsson *et al*. 2012). Policy coherence can be achieved at three levels: vertically (e.g., between EU and Member states), horizontally (between several policy sectors at the same level), or internally (within the same policy sector). **Table 1** provides a range of examples of horizontal and vertical policy coherence.

Table 1. *Examples for horizontal and vertical policy coherence.*

Horizontal	**Vertical**
Local climate change mitigation policy concerning local air pollution policy	Global climate change policy concerning EU climate policy
National transport for all concerning the cost efficiency of national transport budgets	EU agriculture policy concerning national agricultural policy
National transport access policy concerning national air pollution policy	Global trade policy (WTO) concerning EU climate change mitigation policy
EU agricultural production policy concerning EU climate change mitigation policy	EU agricultural policy concerning national water quality targets

When is an analysis of policy coherence useful? Strategic planning and implementation of environmental and climate objectives require major efforts and concerted action on multiple levels, involving several stakeholders and sectors, with often contrasting targets and expectations. It is therefore in many cases difficult, if not impossible, for a single stakeholder to have a complete overview of the impacts of policy instruments on environmental and climate-related challenges. This lack of overview results in often tedious and rather inefficient meetings between policymakers and other stakeholders to reach concerted decisions and action plans.

At the same time, there is no readily available tool to analyze policy coherence in an easy, efficient, and yet consistent manner. In practice, such analysis is often done based on lengthy qualitative reviews listing relevant policy instruments and their impacts and based on documents rather than empirical data or expert knowledge (e.g., Duraiappah *et al*. 2007 or Nilsson *et al*. 2012). Such methods, however, fail to produce clear overviews and as a result, are often too complex for policymakers to be readily used. Additionally, complex "policyscapes", which are characteristic of landscapes with high land take pressures and many environmental and socio-economic functions, tend to be highly dynamic and prone to rapidly evolving realities. As a result, extensive analyses of policy instruments quickly become redundant for practitioners as time moves on. Instead, there is a need for tools that can capture the current state of policy instrument interaction in a relatively quick yet meaningful, and scientifically sound manner.

To summarize, we suggest a policy coherence analysis using the PolCA method to:

- get a **tangible** (quantified) **overview of** how policies and policy instruments in a given area interact with each other;

- systematically address and identify conflicts between policy instruments, improve synergies, and set the basis for further **integration** of policy objectives at a strategic level;
- **render the complexity and relevance** of policies and policy instrument interactions in a **format fit for discussion** with policymakers and other key stakeholders in a relatively **quick** manner;
- **focus decision-maker efforts** on critical conflicts and potentially (more) readily achievable win-wins;
- assess how well a set of policies and policy instruments **perform regarding a set of local or supra-local societal needs and objectives;**
- identify **knowledge gaps** on policy interactions and impacts on key local or supra-local societal needs and objectives; or
- **co-create a shared knowledge base** that can act as a **reference frame** in a participative decision-making process.

1.2. The PolCA method in a nutshell

The method we propose here consists of building a Policy Coherence Matrix (see **Figure 1**) which will be filled in by experts with the selected policies and policy instruments in the area that is being assessed. This can be done with a series of individual interviews or with a workshop. Results can be analyzed through simple summary tables and figures or by using an R script[1] developed for this purpose. The summary tables and figures are targeted at practitioners, while the latter R script can be suitable for further analysis by scientists.

SCORE	Negative impact	-3	-2	-1	0	1	2	3	Positive	Conflict	-3	-2	-1	0	1	2	3	Synergy
	?	don't know								?	don't know							
Policy Instruments that have an impact on selected GI issue	IMPACT ON:									Actual coherence between instruments: conflicts and synergies								
	Capacity to provide ES 1		Capacity to provide ES 2		Capacity to provide ES 3		Capacity to provide ES 4		Capacity to provide ES 5	Biodiversity (conservation)	Instrument 1		Instrument 2		Instrument 3		Instrument 4		Instrument 5		Instrument 6	
Instrument 1	1	0	1	3	-2	1	1	2	-1	2	1	3			1	-2	3	1	1	0	0	1	3	1
Instrument 2	2	3	-2	3	-3	1	0	3	-1	1	-2	2					0	1	-2	1	-1	1	1	0
Instrument 3	2	-2	-1	0	0	0	1	2	-2	1	1	-2							1	-3	2	-1	-3	1
Instrument 4	-3	-2	-3	2	1	2	-1	2	0	1	3	0									3	1	1	-3
Instrument 5	-1	2	1	3	3	-2	1	3	0	3	0	1											2	-1
Instrument 6	-2	3	0	1	1	-3	2	0	0	1	1	3												

Figure 1. *Example of Policy Coherence Matrix.*

The PolCA method **draws upon the local knowledge and expertise from practitioners and policymakers**. As with any expert-based method, the results depend entirely on the sample of experts that will be involved in the analysis. Thus, it is important to aim for a diverse range of sectoral expertise.

Analyzing policy coherence yield better results when it is **carried out at policy implementation levels** (e.g. landscape, river basin scales) and based on expert knowledge rather than policy documents. Using only policy document reviews will yield far fewer synergies and conflicts as it does not consider the usually high diversity of implementation contexts.

It is highly beneficial to carry out a PolCA in a participatory setting. Interactions between experts and stakeholders will yield additional input.

In **Table 2** we summarize some of the main strengths and potential weaknesses of the method.

[1] https://en.wikipedia.org/wiki/R_(programming_language)

Table 2. *Strengths and weaknesses of the PolCA.*

Strengths	Weaknesses
Concise overview instead of a lengthy report	Small dataset as there are only a few policy experts with terrain knowledge. The R script allows to partially correct for this.
Relies on structuring best available local knowledge on policy impacts and coherence in a quick manner	Does not explain the underlying reasons for synergies and conflicts, only provides where the problems and opportunities are. The method assumes that local experts are in most cases best able to discuss these reasons.
Closely connected to "on the ground situation", highly context-relevant	Results are comparable but cannot readily be upscaled as they are tied to given contexts. Some commonalities can be extracted, however.
Comparable results over time (quantitative and replicable method)	Based on perceived impacts by policymakers and practitioners. Perceptions do not always reflect real impact albeit perceptions are important to consider during decision-making discussions.
Co-created by end-users, hence acts as a common reference	
Supports policy discussions rather than directing it	
Highly flexible and customizable method to match end-user needs	

Table 3 provides an estimation of the average workload to carry out a PolCA for participants and researcher(s). Familiarity with policy analysis methods will affect the time required for each step. However, no previous expertise is needed to carry out the method. It is suggested to conduct a minimum of six interviews, to make the analysis reliable.

Table 3. *Estimation of average workload.*

Workload researcher	Workload per participant
Literature review: Selection of elements for the PolCA Matrix = 6 days	n/a
Helicopter interviews: Validation of elements with stakeholders = 1 day	Feedback on matrix elements 2h (2–3 persons)
Workshop, online survey or interviews: Minimum 6 respondents = 2 to 6 days (2 with workshop or survey, 6 for individual interviews)	Interview or online survey 1,5h each (6 persons)

Workload researcher	Workload per participant
	Workshop 4h with 6 participants
Inputting/re-arranging data = 1 day	n/a
Analysis results = between 1 to 10 days depending on needs	
TOTAL: between 11 to 24 workdays	**TOTAL: between 1,5 to 4h for each participant**

2. Working steps

Figure 2 summarizes the different steps of a PolCA. Each step is explained further on.

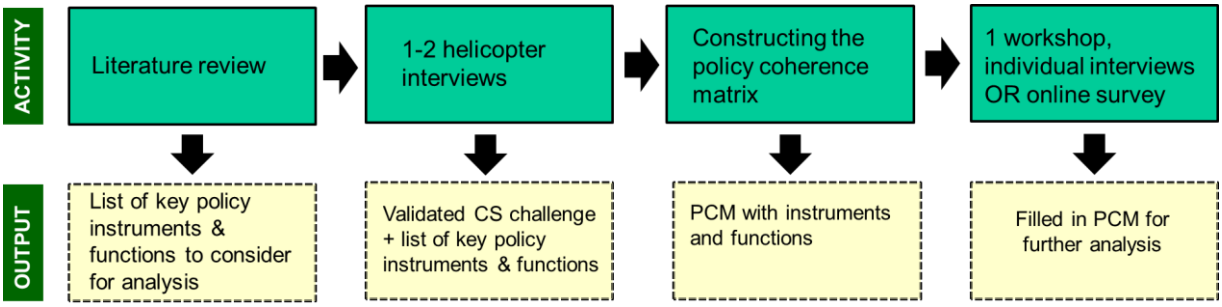

Figure 2. *Working steps PolCA.*

2.1. Literature review

A meaningful and efficient way to engage stakeholders and especially policymakers is to first **create an overview of current policy instruments** at work in the landscape that strongly **affects the challenge** the case study (CS) focuses on (see examples on **Figure 3**). The CS-challenge describes the core-problem to be researched in the CS. The PolCA is directed towards that challenge, which means that policy coherence is measured towards a specific problem that sets the context. Moreover, the literature research avoids coming empty-handed to the helicopter interviews in the following step, ensuring a more efficient interview. Once a comprehensive list is achieved based on available literature (e.g. legal documents, policy reports, multi-year plans of policy domains, etc.), a list of **relevant socio-economic and environmental functions** that are key to the CS can be drafted as well. These functions can be highly variable ranging from generic ones such as climate change resilience or well-being to rather specific ones such as species connectivity or farmer income. They are directly connected to the CS-challenge and relate to for example CS societal needs and objectives, or negative impacts such as Ecosystem Disservices that are to be avoided.

EXAMPLE OF A LIST OF POLICY INSTRUMENTS:

- Environmental Impact Assessment
- Strategic Environmental Assessment
- Agri-Environmental scheme: hedgerows
- Agri-Environmental scheme: erosion
- Historical and cultural landscapes protection (management packages)
- Municipal subsidy for historical orchards
- Compensation scheme for wildlife damage to crops
- …

Figure 3. *Examples of policy instruments*

2.2. Helicopter interviews

Select one or two policymakers with a helicopter view[2] of the CS-challenge at stake in the CS. They are policymakers, which work at a strategic level (e.g., planning department) or coordinate integrated projects at the landscape level, for example. Depending on the complexity of the GI challenge, it is recommended to do one or two interviews.

The helicopter interviews are crucial to select and validate the CS-challenge and the list of policy instruments and functions that were preselected during the literature review. The interviews also serve the purpose to add missing policy instruments and functions to the list, which were not identified in the initial literature review. The interview can be quite short (+/-30 min) since the main output is **a validated list of the most important policy instruments and functions in regards to their impact on the CS-challenge.** It is however important to conduct this step thoroughly since the list of instruments will be an input for the policy coherence matrix (see next step). This input **cannot be altered anymore later on** if stakeholders notice important missing policy instruments when they fill in the matrix.

Tip: When unfamiliar with the policy context of the CS, it is a good idea to already ask for the contact details of expert policymakers during these interviews. This information will be useful for STEP 3 – constructing the policy coherence matrix. It is recommended to make sure to have at least one dedicated expert for each selected policy instrument.

2.3. Constructing the policy coherence matrix (PCM)

The next step is about the creation of an adapted PCM for the CS, which will include the CS-challenge. The PCM is organized in several table sheets (see **Figure 4**).

Figure 4. *Example organization of PCM spreadsheet*

[2] *This could be persons from the practice-research interface established during a stakeholder analysis (see SA cookbook)*

The first sheet (see **Figure 5**) is used to fill in general information about the policy instruments selected in the CS. It should provide a general description of each policy instrument (its importance concerning the CS, its objectives, and the institution(s) coordinating it).

Note: Adding extra instruments here should only be done before or after the first PCM interview. Otherwise, the next respondents will not have the same matrix and the researcher would have to come back to the first respondent. This is not relevant if a workshop is carried out to fill in the PCM, however.

CASE STUDY	**COUNTRY**		
GI GENERAL CHALLENGE DESCR	*description should be short, one or two questions at max.*		
GI CHALLENGE (PCM Input, max 5, min 2)		**Description (optional)**	**Additional notes**
GI challenge 1			
GI challenge 2			
GI challenge 3			
GI challenge 4			
GI challenge 5			
Instrument	**Coordinating institution(s)**	**Description**	**Additional notes**
Instrument 1	Name 1	Objective(s) instrument: Level (EU, National, Regional, Local): Why is this instrument important in the CS in regards to the GI challenge?:	
Instrument 2	Name 2	Objective(s) instrument: Level (EU, National, Regional, Local): Why is this instrument important in the CS in regards to the GI challenge?:	
Instrument 3	Name 3	Objective(s) instrument: Level (EU, National, Regional, Local): Why is this instrument important in the CS in regards to the GI challenge?:	
Instrument 4	Name 4	Objective(s) instrument: Level (EU, National, Regional, Local): Why is this instrument important in the CS in regards to the GI challenge?:	
Instrument 5	Name 5	Objective(s) instrument: Level (EU, National, Regional, Local): Why is this instrument important in the CS in regards to the GI challenge?:	
Instrument 6	Name 6	Objective(s) instrument: Level (EU, National, Regional, Local):	

Figure 5. *The first sheet of PCM: description and list of instruments.*

The next sheets are those that will have to be filled in individually by each respondent. As mentioned previously it is recommended to **select one expert policymaker for each policy instrument as a minimum**. There must be at least one policymaker directly responsible for the implementation and/or supervision of one of the instruments in the list. This assures a reasonable capture of the information, which is required to have the best possible indication of policy coherence.

Each "respondent" sheet consists of two parts. The first part focuses on **the impact of the policy instruments on the selected functions**. The second part looks at **the synergies and conflicts** between the policy instruments **in the context of the CS-challenge**.

The first part of the "respondent" table sheet looks like **Figure 6**. The values have been prefilled as an example but should be blank at the start of every interview.

SCORE	Negative impact		-3	-2	-1	0	1	2	3	Positive		
	?	don't know										
Policy Instruments that have an impact on selected CS challenge	**IMPACT ON FUNCTIONS:**											
	Function 1		Function 2		Function 3		Function 4		Function 5		*Function 6*	
Instrument 1	1	0	1	3	-2	1	1	2	-1	2	1	3
Instrument 2	2	3	-2	3	-3	1	0	3	-1	1	-2	2
Instrument 3	2	-2	-1	0	0	0	1	2	-2	1	1	-2
Instrument 4	-3	-2	-3	2	1	2	-1	2	0	1	3	0
Instrument 5	-1	2	1	3	3	-2	1	3	0	3	0	1
Instrument 6	-2	3	0	1	1	-3	2	0	0	1	1	3
Instrument 7	3	-3	-2	1	-2	3	0	1	0	3	2	0
Instrument 8	0	3	2	3	0	2	2	1	3	-1	1	0
Instrument 9	3	1	1	2	1	1	1	3	3	-2	3	-2

Figure 6. *Example of pre-filled PCM evaluation sheet.*

The blanks should be filled using a 7 item Likert scale ranging from -3 (strong negative impact) to +3 (strong positive impact). **The value 0 means neutral, NOT unknown**. It is important that the respondents clearly understand this. When they do not know the impact, they can put a question mark. Since each policy instrument can have a positive and negative impact according to different contexts, the matrix provides respondents with the option to **fill in the most positive and most negative impacts**. Therefore, it contains two cells for each impact. **It is strongly encouraged to clearly communicate this to the respondents, as some will tend to fill in an "average" impact.** It is however important that the variability of the impacts is captured instead of the average. Yet, if respondents think the impact is clearly positive then they can fill in the same value in each cell.

The second part in the "respondent" table sheet looks like **Figure 7**:

SCORE	Conflict	-3	-2	-1	0	1	2	3	Synergy	
	?	don't know								
Policy Instruments that have an impact on selected GI issue	Actual coherence between instruments: conflicts and synergies									
	Instrument 1	Instrument 2	Instrument 3	Instrument 4	Instrument 5	Instrument 6				
Instrument 1		1	-2	3	1	1	0	0	1	3	1
Instrument 2				0	1	-2	1	-1	1	1	0
Instrument 3						1	-3	2	-1	-3	1
Instrument 4								3	1	1	-3
Instrument 5										2	-1
Instrument 6											

Figure 7. *Example of a prefilled PCM evaluation sheet for measuring horizontal coherence.*

The scale is similar as in the first part of the PCM, except that the values are now referring to **strong conflicts** (-3) and **strong synergies** (+3) **between policy instruments**. The CS-challenge is again the context that should be referred to fill in the values.

Note: Each cell should be filled in by each participant. This is important as some respondents are more hesitant than others to express their estimations. If after the last interviews there is a relatively high number of question marks (more than 50%) in the PCMs, it is of course best to find additional experts for the respective instruments. However, it can also point out a lack of knowledge about a given impact or interactions.

2.4. Filling in the PCM

There are two options to fill in the PCM. Either it is possible to organize a single half-day (2,5h) workshop or one can conduct individual interviews. An online survey is also possible but should be the least preferred method as it leaves more chances for different interpretations by the respondents, on how to fill in the PCM.

The advantages of doing a workshop are:

- It is time-efficient since all the work can be done in a single session.
- There is the possibility to adapt the list of policy instruments of the matrix in case an important one was missed. This is possible because all the respondents are present at the same time.
- Initial results can be presented directly to participants to obtain their feedback and to support further discussions.

Note: Filling the PCM might look easy but in practice, it takes time for respondents to fill it in. An average of about 1,5h should be considered, to first guide the respondent in the use of the PCM and then let him/her fill it in. It is a good idea to work on paper and print the PCM on large sheets (A3) as screens are often too small to be user friendly.

2.5. Analyzing the PCM-data

Simple excel formulas or complex R based analyses can be done with the results, according to the objectives of the PolCA. A few examples are provided here from two different projects.

Project 1: IMAGINE

The PolCA method has recently been applied in six case studies across Europe within the Biodiversa project IMAGINE. The PolCA was used to determine how effective and coherent each member state's GI policy was and to identify lessons learned at local and EU scales. Hereunder a few results in figures from the France case studies Basin de Thau and Scarpe Escaut.

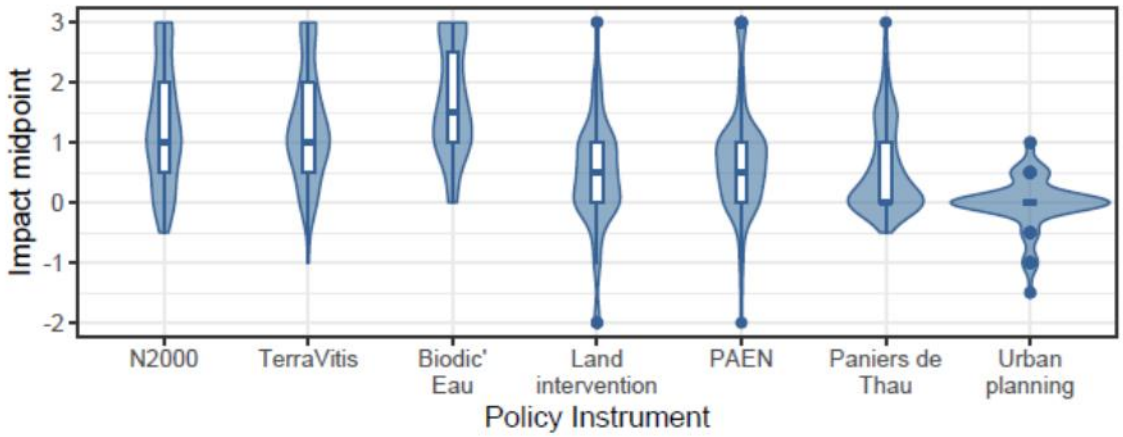

Figure 8. *Indication of the performance of key policy instruments in regard to a set of 12 locally desired functions (e.g. economic viability farms, recreation) and 10 green infrastructure elements (e.g. trees, hedges), in basin de Thau, France. (Source: IMAGINE).*

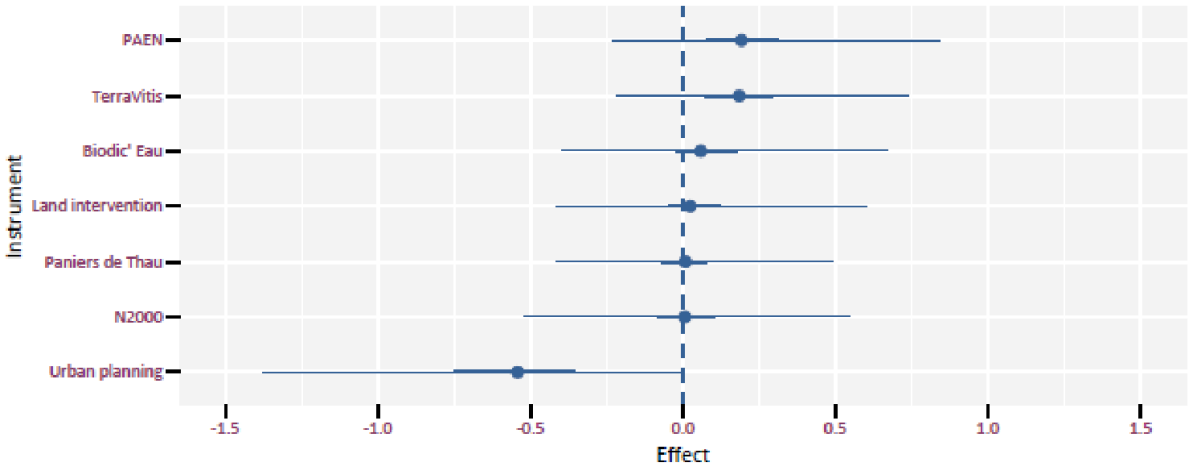

Figure 9. *Effect of each policy instrument on the policy coherence in Basin de Thau (France). (Source: IMAGINE).*

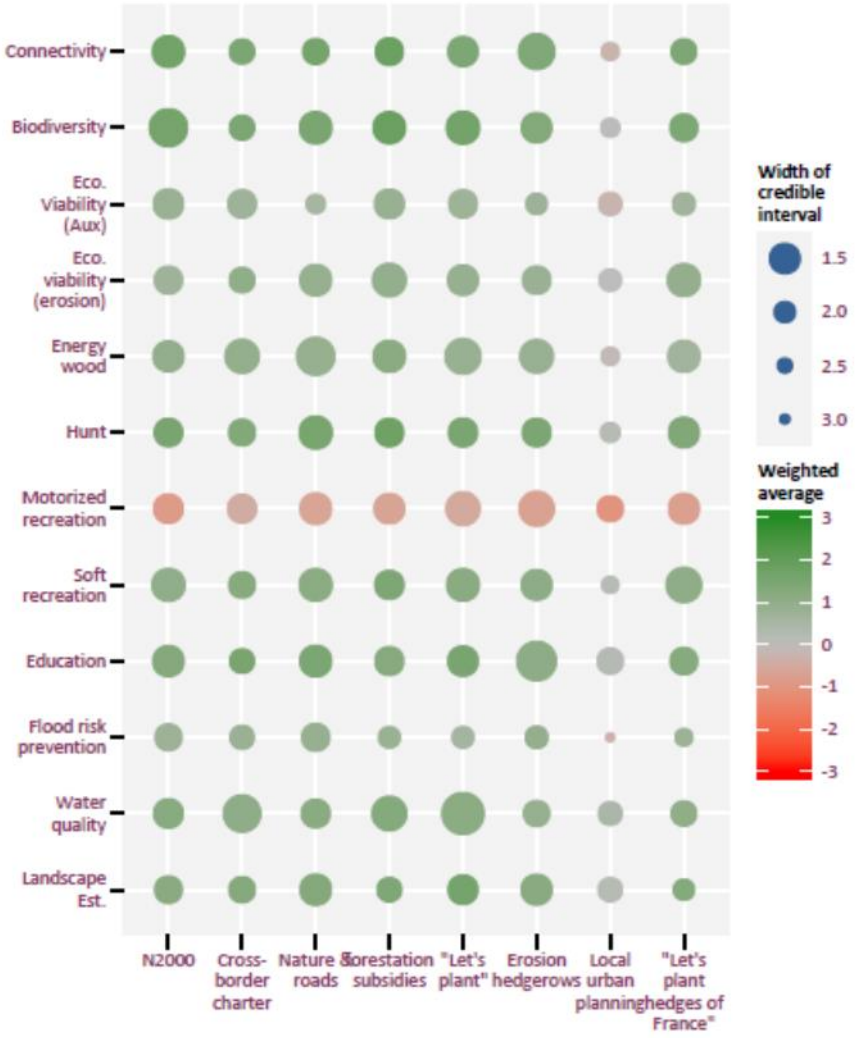

Figure 10. *Impact of key policy instruments on priority functions identified by local stakeholders in Scarpe Escaut, France. Big dots represent impacts where stakeholders agree on the intensity of the impact, and small dots where they disagree, while the color shades refer to positive impacts (green) and negative impacts (red). (Source: IMAGINE).*

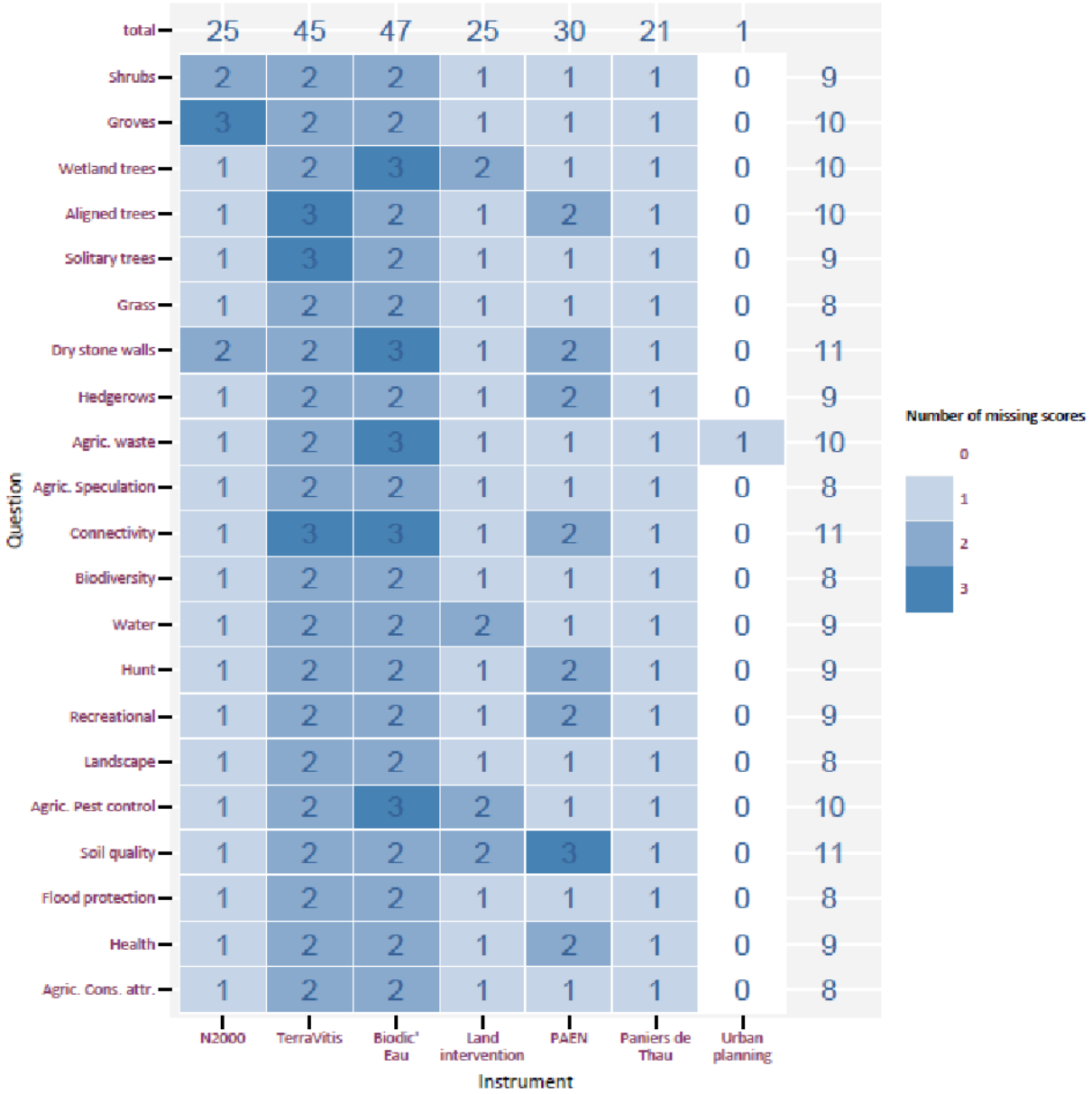

Figure 11. *Identification of knowledge gaps among respondents in Bassin de Thau (France). Darker colors point out that respondents provided question marks instead of impact estimations. (Source: IMAGINE).*

Project 2: Voeren, Belgium.

Hereunder also an example from a short study conducted in a rural area (Voerstreek) in Belgium on request of the Flemish land agency (VLM). This PolCA was done using an online survey with 11 responses (out of 13) from local policymakers and practitioners. Here the aim was to assess how well current policy instruments are helping to preserve key landscape elements. Besides, it should help field agents of the land agency in selecting which policy instruments are best relied upon to protect a given landscape element.

	Graften	Permanent grasland	Hagen & Heggen	Holle wegen	Houtkanten	Hoogstamboomgaarden	Beekstructuren
Agroforestry	☹	☹☹	😐	😐	😐	😐	😐
VLIF	☺☺	☺	☺☺	☺☺	☺☺	☺	☺
KLE (BO)	☺☺	😐	☺☺	☺	☺☺	☺	☺
Erfgoed Premie	☺☺	☺	☺☺	☺☺	☺☺	☺☺	☺
Kapvergunning	😐	☹	☹	😐	😐	😐	😐
Bebossing subsidie	😐	☹☹	☹	😐	😐	☹☹	😐
Biodiversiteitsproject	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺
Ondersteuning overeenkomsten	☺	☺	☺	☺	☺	☺	☺
Gemeente KLE	☺	😐	☺☺	☺	☺☺	☺	😐
Soortenrijkgrasland (BO)	😐	☺☺	😐	😐	😐	☺	☺
Erosie (BO)	☺	☺	😐	☺	😐	😐	☺
Perceelsranden (BO)	☺	☺	☺	☺	☺	😐	☺
Vergroeningspremie	☺	☺	☺	😐	☺	😐	😐
Landschapszorg	☺☺	☺	☺☺	☺	☺☺	☺☺	☺
Natuurbeheersplan	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺

Figure 11. *Simple visualization of the impact of a set of policy instruments (left) on key landscape elements (e.g. high stem trees, permanent grasslands) in the Voeren Area, Belgium. The table can be read vertically (= how well are the landscape elements addressed by current policy instruments) and horizontally (= how do single policies score in regard to desired landscape elements). (Source: INBO).*

3. Intended uses, outputs, and outcomes

This cookbook presents the PolCA method as a tool to analyze the impact and coherence of policy instruments regarding different local contexts. With this method, researchers and/or practitioners can measure the impact of policy instruments on key environmental and socio-economic functions, and their coherence. The advantage of PolCA lies in its **practical applicability** and **focus on a local problem or objective** (the CS-challenge). At the same time, it produces **quantitative data**, which **can be compared over a longer period of time and can be combined with qualitative data from interviews**, to further explain specific values. Carried out at the implementation level, the PolCA method draws upon the **local knowledge and perceptions** from practitioners and policymakers. This method supports problem-oriented research on the local level with a solid procedure to quickly and reliably assess policy coherence.

References and other useful articles

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IMAGINE project summary

The IMAGINE project ran between 2017–2020, between five countries and 6 partner institutions:

- INRAE (FR);
- Institute for Social-Ecological Research (ISOE, DE);
- Kiel University (UniKiel, DE);
- Norwegian Institute for Nature Research (NINA, NO);
- Estonian University of Life Sciences (EMU, EE), and
- Research Institute for Nature & Forest (INBO, BE).

The project aimed at quantifying the multiple functions, ecosystem services, and benefits provided by Green Infrastructures (GI) in different contexts from rural to urban. It used a multidisciplinary approach across six case study territories spanning a European north-south gradient from the Boreal zone to the Mediterranean.

IMAGINE aimed to demonstrate an integrative assessment of GI multi-functionality and bio-capacity to deliver ES and to propose options to manage and design GI from patch to landscape. The project contributed to developing an innovative approach to support ecosystem resilience, sustainable essential ecosystem services flow, and contributing to human wellbeing to meet EU policy targets.

Project Coordinator: Philip Roche (INRAE) philip.roche@inrae.fr

Website: https://imagine.inrae.fr/

This project was selected and supported by

BiodivERsA COFUND Call (2015-2016)
« Understanding and managing biodiversity dynamics to improve ecosystem functioning and delivery of ecosystem services in a global change context: the cases of soils and sediments, and land- river and sea-scapes »

IMAGINE was funded by: the French National Research Agency, the German federal Ministry for Research and Education, the Belgian Science Policy Office and the Research Council of Norway.

IMAGINE is an Alternet Project. The idea of proposing this project and the initial consortium members was initiated during the Alternet Conference session on Biodiversa Calls.