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TEVI – Territorial Evidence Support for European Territorial Cooperation Programmes

Targeted Evidence Support

Best Practice User Guidelines: Result Indicators for ETC Programmes

Best Practice User Guidelines:
Result Indicators for ETC Programmes

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Best Practice User Guidelines:
Result Indicators for ETC Programmes

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Abbreviations

AIR	Annual Implementation Report
CB TIA	Cross-border TIA
CF	Cohesion Fund
DID	Difference-in-difference
EC	European Commission
eMS	e-Monitoring System
EPO	European Patent Office
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
ESPON	European Territorial Observatory Network
ESPON EGTC	ESPON European Grouping of Territorial Cooperation
ETC	European Territorial Cooperation
EU	European Union
GDP	Gross Domestic Product
MA	Managing Authority
MAPP	Method for Impact Assessment of Programmes and Projects
MCA	Multi-Criteria Analysis
NACE	Statistical Classification of Economic Activities in the European Community
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
R&D&I	Research and Development and Investment
R&I	Research and Investment
SME	Small- and Medium-Sized Enterprises
TEVI	ESPON Territorial Evidence
TIA	Territorial Impact Assessment

1 Introduction

The Best Practice User Guidelines aim to develop a set of practical guidelines for policymakers and programme managers to *create and collect territorial evidence* for European Territorial Cooperation (ETC) programme steering throughout the policy cycle. More concretely, the focus of the guidelines on creating and collecting territorial evidence consists in selecting and applying appropriate **result indicators**[1] in their programmes.

The starting point of this guidance dovetails the idea that territorial evidence knowledge shall be accessible and useful in practice for programme managers, joint technical secretariats and policymakers involved in the practical implementation of ETC programmes – i.e. in all stages of the programme life cycle. During the different stages of the policy cycle, different types of (territorial) information are needed to form an evidence base that is in line with the different requirements associated with the single steps of the policy cycle:

- Agenda setting – foresight oriented estimation of potential effects as used in problem perception and agenda setting – impact assessment
- During and after the policy implementation – justification of actions –– monitoring and evaluation
- During and after the policy implementation and policy termination – promotion of actions –– justification and transparency vis-à-vis the public
- Decision making and during and after the policy implementation – self-reflection of policy –– reflexive learning, self-evaluation.

This guidance ties two realms – territorial information and evidence (in the form of indicators) and their role in programme design. The aim is to show how (result) indicators are used as information source for programmes throughout its life cycle (Figure 1.2). The focus on programming and on the entire life cycle represents a holistic approach that benefits creating, collecting and making best use of result indicators. Reasoned programme design as well as programme implementation are preconditions to a successful use of result indicators. Indicators, especially result indicators, represent the territorial information of ETC programmes and, as such, are a fundamental element of territorial evidence. For this reason, this guidance places much emphasis on them. Impact may be more challenging to capture in the ETC context as compared to the implementation of other ESIF programmes. In addition, the use of result indicators is, in principle, more challenging compared to output indicators. Accounting for these difficulties, this document provides specific information and guidance on:

- Carrying out a needs analysis (section 2.1) and selecting thematic focus of the programme (section 2.2):
- clarifications on how to approach the setting up of an intervention logic as well as the subsequent selection of result indicators, including characteristics of appropriate result indicators for the purpose of ETC programmes within the context of the programming (sections 2.3);

[1] Result indicators as information source for logically linking needs/problems identified in the programming areas trough objectives, inputs, and outputs of the programmes with the actual effects of the ETC programmes (i.e. the intervention logic).

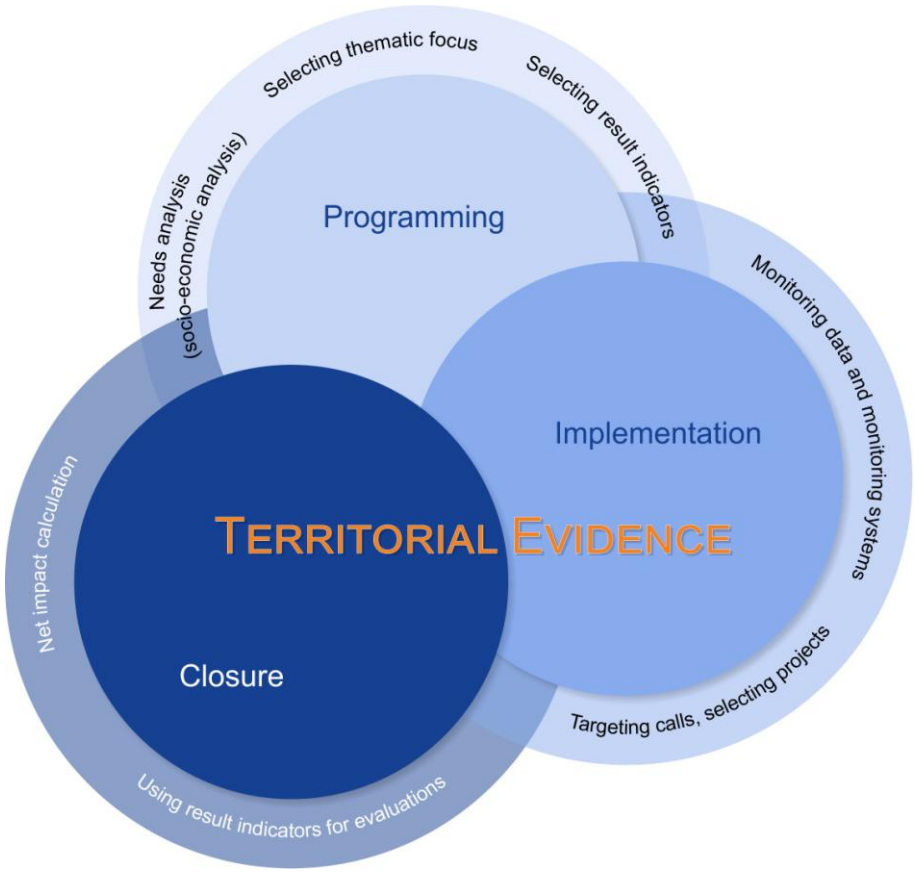
- description of methodologies for developing sound result indicators: synthetic indicators (section 2.3.7)
- considerations regarding the use of result indicators in implementation of the programme (sections 3.1 and 3.2) as well as closure(calculating net impact – section 4.2);
- technical guidance on the TEVI interface with regards to use the web-tool (section 4);
- using data for public relations (section 6);
- external services and training requirements (section 7).

Along the different elements of the guidance, it is important to bear in mind that besides the evidence (appropriate result indicators), the *actual data and appropriate geographical* resolution is of equal importance. The latter depends on the type of indicator and territorial evidence requested and has to be identified correctly.

1.1 Structure: Connecting Territorial Evidence with the programming cycle

The structure of the guidance is designed to connect required territorial evidence with an emphasis on result indicators at each stage of the policy cycle. The figure below presents the structure of the project, designed along the programming cycle. The different elements are clickable and refer directly to respective section.

Figure 1.1: Programming cycle

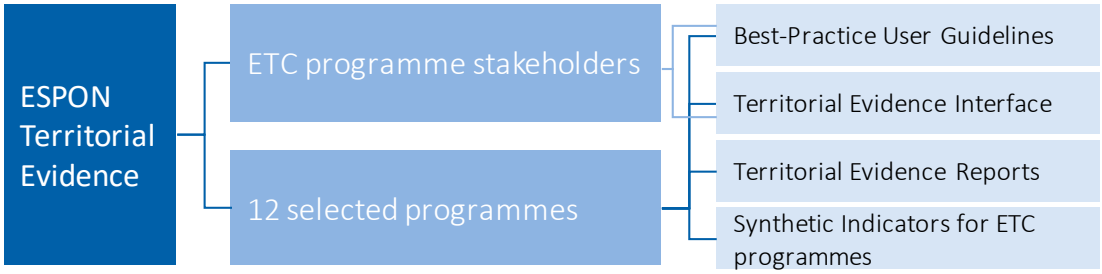


Source: Consortium, 2019. *[Click on the figure to go to the sections.]*

1.2 The Background of the Best Practice User Guidelines

The Best Practice User Guidelines for ETC territorial evidence (in the form of result indicators) are one of the four main outcomes of the ESPON Territorial Evidence Project (TEVI) (see figure below). Result indicators are especially challenging for INTERREG programmes and must be appropriately developed and applied in order to measure the effects of INTERREG programmes.

Figure 1.2: Outcomes of the ESPON TEVI project



Source: Consortium, 2019.

Besides the Best Practice User Guidelines which should support stakeholders in selecting and working with result indicators, the project also delivers the Territorial Evidence Interface, an ESPON web-tool which visualises data and synthetic indicators for ETC programmes. The work carried out with the 12 ETC (INTERREG) programmes also results in 12 Territorial Evidence Reports for each of these programmes. Finally, the TEVI project develops a methodology and a set of synthetic indicators appropriate for measuring the effects of ETC programmes as a contribution to providing territorial evidence for such programmes. These indicators are developed and applied on 12 participating ETC programmes which serve as pilots. The methodology of the development of indicators has been built on the assumption of their transferability and applicability to other ETC programmes. Custom synthetic indicators can be built in the Territorial Evidence Interface.

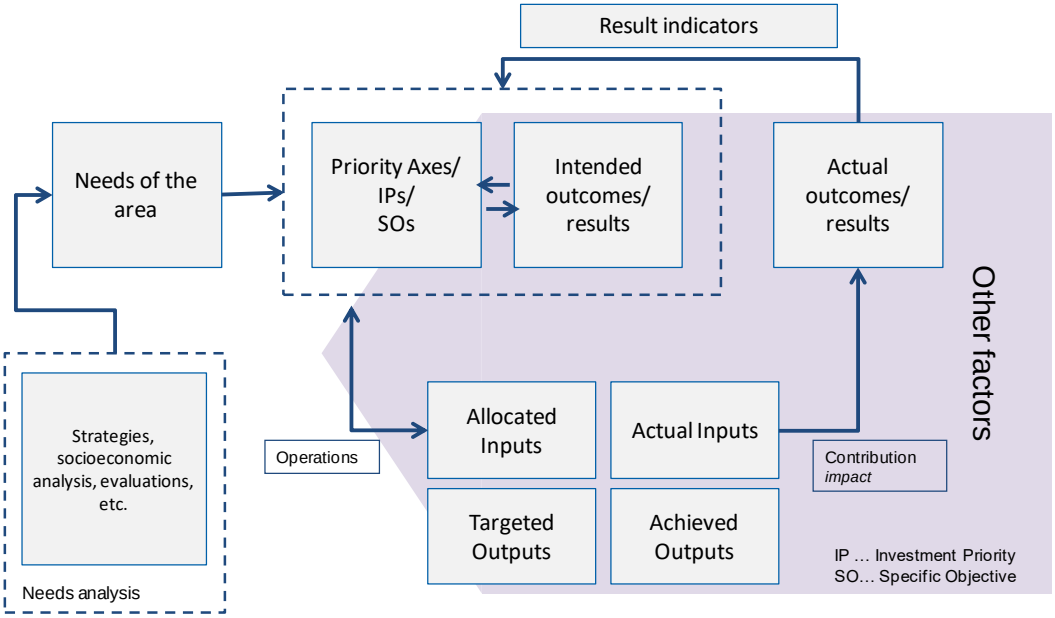
For the 12 participating ETC programmes, the TEVI project has developed Territorial Evidence Reports which present the territorial evidence of their interventions, including the measurement of the newly developed synthetic indicators.

The synthetic indicators are also available to be accessed on the Territorial Evidence Interface.

2 Programming Phase

In line with the formal requirements set out in the new regulation proposals (COM[2018] 3752, COM[2018] 3743 and COM[2018] 3724), an intervention logic model forms the basis for the programming. Intervention logics seek to create logical chains which connect the identified needs of the programme areas with the intended change of the intervention, according to the "Theory of Change". The Theory of Change produces a narrative of how the change envisaged will take effect, establishing the contribution to results in the programme area. According to the model (see below), identified needs should be reflected in the selection and formulation of specific objectives as well as intended outcomes or results. Based on the identified frameworks, actual inputs and outputs define the actual outcomes and results. These, in turn, should be accurately measured by selected result indicators, capturing the effects of interventions.

Figure 2.1: An intervention logic model



Source: OIR, 2013 based on: Barca, McCann, 2011: 4; European Commission, 2013a: 5

In order to appropriately measure the impact of programmes, result indicators should be aligned with specific objectives. The aim is to capture the territorial specificities and the intended change. Without sufficient alignment between specific objectives and result indicators, difficulties may arise related to the measuring and monitoring the actual impacts of the inter-

[2] EC, 2018, Proposal for a Regulation of the European Parliament and of the Council laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, and the European Maritime and Fisheries Fund and financial rules for those and for the Asylum and Migration Fund, the Internal Security Fund and the Border Management and Visa Instrument

[3] EC, 2018, Proposal for a Regulation of the European Parliament and of the Council on specific provisions for the European territorial cooperation goal (Interreg) supported by the European Regional Development Fund and external financing instruments

[4] EC, 2018, for a Regulation of the European Parliament and of the Council on the European Regional Development Fund and on the Cohesion Fund

vention. The selection of result indicators is a very important step for an ETC programme. In order to facilitate this process, Section 2.3 of these guidelines is devoted to explaining the characteristics of good result indicators.

Every intervention should follow a clear cause-effect chain, linking the needs via the input, output through to the results, and in return addresses the needs and ultimately mend them. In addition, policy is not happening in the void as various oth er intervening factors (overall socio-economic development, other policies targeting the same territory etc.) may play a role influencing the results of the policy and thus the achievement of the objectives (i.e. the addressing of the societal/territorial needs). Within the intervention logic, information about the causal chains plays a crucial role and therefore the role of indicators is a very prominent one.

The following sections provide guidance at each of these steps: identification of needs (2.1), selecting thematic focus (2.2), as well as selecting result indicators (2.3).

Useful Interact literature

- Presentations on how to measure territorial cohesion and cooperation (2018) – Link
- Publication on how to measure territorial cohesion and cooperation (2018) – Link
- Developing common indicators for Interreg (2019) – Link

2.1 Needs analysis

Key points

- Needs analysis is the starting point of programming;
- Needs to be addressed by the programme should refer not only to problems but also to strengths and opportunities;
- The socioeconomic analysis contributes to the definition of cooperation needs which is an essential element of intervention logic; it helps specify the objectives of the programme;
- Information on the socioeconomic context should be collected from relevant data sources; desk research and consultations should input additional information;
- For the visualisation of the socioeconomic situation of programmes, the Territorial Evidence Interface can be used.

"*The starting point in designing any public intervention is to identify a problem to be addressed*" (EU Commission 2015a[5]). The "need-driven" approach has been the overarching principle of EU co-financed funds – with *"need"* being defined as observable significant differ-

[5] European Commission (2015a): Guidance Document on Monitoring and Evaluation; European Cohesion Fund, European Regional Development Fund: Concepts and Recommendations; Brussels

ence between the status quo and a situation as it should be (need is then the gap in results – see Kaufman et al. (1999[6])) – for years.

Concretely, this identification of needs is a crucial element of policy formulation and therefore a compulsory element of any ex-ante assessment of policies[7]. The previous and ongoing programming periods of the EU have been characterised by a stringent hierarchy of societal needs, which are to be addressed by the objectives of EU policies. By establishing such overarching goals, the following governmental and territorial levels are bound, to some extent, to "break down" these needs to their respective level.

The problem with such approach of political agenda setting is the underlying hypothesis that the overarching needs of a heterogeneous territory such as the European Union can be identified. In the case of the EU, this may lead to a rigid break down of needs to the national and regional scales. The consequences can be:

- Danger of "chimney thinking" – due to the necessity of linking every EU support to the EU 2020 goals, the territorial needs analysis has often led to too trivial causal links thus establishing societal and territorial needs in programming areas which were not really the most pressing ones, but which were "fitting" the overall hierarchy of needs as established by EU 2020.
- The problem of "capturing" societal and territorial needs on the right geographical scale. Very often needs could not be properly depicted by appropriate indicators due to the lack of territorially-based information in the right geographical resolution.
- Due to this lack of appropriate information and the narrow scope of the needs, the similarity of policy targets and policy support strategies has led to a duplication of approaches all over Europe, which in some policy fields (e.g. innovation, Research and Technological Development) resulted in increased competition and overlaps between regions rather than fostering the search for and development of niches based on the actual strengths of regions.
- In some programming circumstances (e.g. territorial cooperation), the hierarchy of needs (e.g. territorial cohesion and cooperation as primary needs to be addressed through the programmes instead of "smart, sustainable and inclusive growth") is effectively hindering the achievement of the policy objectives.

In many cases, these shortcomings have led to the following policy formulation approach: taking *actions* (as used in the past), then formulating *objectives* and finally attaching the relevant *needs*. However, each guideline published by the EU Commission[8] stipulated a rather different policy formulation approach which consists in, first, finding and capturing the *needs,* then deducting the policy *objectives*, formulating the *conditions to achieve the objectives* (the

[6] Kaufmann, D.; Kraay, A.; Zoido-Lobaton, P. (1999): Aggregating governance indicators ; Policy, Research working paper ; no. WPS 2195. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/167911468766840406/Aggregating-governance-indicators

[7] In the single Operational Programmes of EU policies this step is anchored in a thorough territorial analysis of the programming areas and the conducting of a SWOT

[8] see European Commission (2015a): Guidance Document on Monitoring and Evaluation; European Cohesion Fund, European Regional Development Fund: Concepts and Recommendations; Brussels

theory of change) and finally picking *actions* which are most likely supporting the achievement of the objectives.

From the perspective of ETC programmes, it may be easier identify objectives based on possible actions, given that only specific actions can be addressed by these programmes considering their resources. However, it is encouraged that stakeholders develop a reasoning which emphasises on needs as the starting point. At the stage of the identification of actions, stakeholders will still be able to select only those which can be addressed by the programme.

Identifying the different types of needs

The identification of needs is the basis for action of ETC programmes. The different methods of needs analysis provide information about the context of the area as well as delivers first information on the strengths, weaknesses, opportunities and threats of the cooperation area.

While identifying needs, it is important to remember that needs should not only be limited to problems (weaknesses and threats); they can also reflect opportunities and strengths. In line with this thought, "needs" can be divided into three groups, as showed in the table below.

Table 2.1: The classification of "needs"

Type of needs	Relation to the status quo	Connection to SWOT
Need to stabilise situations	... sustaining the status quo	Sustaining or reinforcing the strengths in the light of potential risks
Need to adapt	... positive development/ improvement	Strengthening of existing strengths to take stock of potential opportunities, diminishing of weaknesses, which prevent the capitalisation of potential opportunities
Need to change	... meeting of a societal shortcoming/desire, or of a societal right	Reduction of weaknesses

Source: Consortium, 2019.

There are several main steps based on which needs can be identified. The following subsections provide detailed information on how to identify needs relevant to the programme area, applying different methods.

2.1.1 Socioeconomic analysis

The socioeconomic analysis forms the first step and backbone to the programming of the cooperation programmes. The socioeconomic situation of the programme area provides the basis for action, as it outlines the characteristics of the area and should lead to identification of relevant needs to be addressed by the ETC programme. As per the requirements set out in the proposed regulations by the Commission (COM(2018) 375[9]), among others, the programme has to present a summary of the main economic, social, and territorial disparities observed in the programme area, to be included in the section of main joint challenges. The baseline assessment of the state of economic and social factors affecting the programme

[9] EC, 2018, COM(2018) 375, Ibid.

area produces an overview of clear-cut needs and challenges which the ETC programme may alleviate via concrete actions.

Information about the socioeconomic context can be collected from national, regional and local strategies relevant for the involved regions. The analysis of the relevant socioeconomic context presented in the strategies should focus on the issues which can be addressed by territorial cooperation, for example common elements that can be identified in SWOT analyses.

In addition, analysis of the main social, economic, and territorial disparities necessitates the collection of a sufficiently large and complete dataset, able to fully capture the territorial dimensions of the programme area. Prime sources for data are generally public databases, such as Eurostat, the ESPON Scientific Database, and national statistical offices. The visualisation of data via maps of the programme area may provide additional insights on the territorial dimensions of indicators mapping e.g. economic development. The creation of maps necessitates the usage of GIS tools or tools like the Territorial Evidence Interface. The TEVI Interface (see Section 5) provides the user the ability to visualise data from the ESPON Scientific Database on NUTS-3 level for the chosen geographic region. As such, it functions to provide quick and efficient access to geospatial data visualisation techniques. The produced maps can be used to assess the programme area at a given point in time.

Potential data source

- Eurostat
- ESPON Scientific Databases
- Territorial Evidence Interface
- National Statistical Offices
- National, regional and local strategies

Another important element to understand the socio-economic situation and the main joint challenges is to consider the developments, impacts and lessons learnt in the prior programming period. In order to better understand how the socio-economical context has developed or shifted and what the new challenges to be addressed by territorial cooperation are, it is essential to review the results from impact assessments and evaluations of previously implemented ESIF instruments. Further details on how sound result indicators can contribute to evaluations can be found in section 4.

Using the Territorial Evidence Interface for visualisation of Synthetic Indicators and context indicators

The TEVI Interface features options which are disposable to programme authorities within the monitoring processes to:

- Visualise custom synthetic indicators;
- Visualise indicators available at ESPON database for each programme area for context information.

Via the Territorial Evidence Interface, context indicators may be imported from the ESPON Scientific Database and visualised or used for building custom synthetic indicators.

This data visualisation takes the shape of mapping and the form of time series charts. Users may select relevant context indicators via the tool from the database which correspond to the programme area. In light of any potential changes to the programme area, individual NUTS-3 regions can be added and removed at will by the user. Transformation features are available to the user to enable tailoring to specific requirements. Imported context indicators can be normalised across the selected geographic area, which allows for additional comparability of one region's performance vis-à-vis the selected programme area. Additionally, any generated maps can be exported and used in supporting documents or presentations.

Technical guidance for using the TEVI Interface is provided in section 5.

2.1.2 Desk research

Through a desk research, stakeholders should also analyse the most relevant documents which include evaluations, impact assessments conducted within the framework of the current/previous programming period. Previously performed evaluations or impact assessments help understand the changes that have taken place within the programme area in regards to needs.

The most important resource are relevant strategies from local, regional or national levels. The selection of the governance level depends on the type of the programme (INTERREG A or INTERREG B) as it determines the territories involved and the governance structure of involved regions/countries. In most cases regional strategies are the most relevant source of territorial evidence.

2.1.3 Consultations

Understanding the needs of the programme area consists in understanding the needs of potential beneficiaries. For this purpose, it is recommended that stakeholders conduct consultations/survey among potential beneficiaries of the programme in order to identify the intervention they would benefit from the most. Such an approach should ensure inclusion of a bottom-up perspective into the programme, thereby preventing the misalignment of specific objectives with the needs identified within the cooperation area.

Consultations could be undertaken in the form of a survey of potential beneficiaries. The list of potential beneficiaries should include as many types of beneficiaries as possible. Surveys should include closed and open questions in order to allow potential beneficiaries to pin down the specificities of their request and needs. The number of questions should be kept to a minimum in order to ensure a high response rate. An accompanying note explaining the purpose of the survey as well as a kind request for answering the questions before a specific deadline should be included.

2.1.4 Listing the needs

This initial process of identification of needs should culminate in a longer list of all needs identified in the programme area, based on the socioeconomic analysis, desk research as well as consultations. An important qualification to pay attention to is that ETC programmes can only address certain needs given its resources as well as intervention types which differ between INTERREG A and INTERREG B programmes. Therefore, stakeholders should focus on shortlisting the needs which can realistically be tackled with their ETC programme. This next step is addressed in section 2.2.

2.2 Selecting the thematic focus

Key points

- A sensitivity analysis (based on a Multi-Criteria Analysis) helps to identify intervention areas which can be successfully addressed by ETC programmes, thereby facilitating the selection of needs to be addressed by specific objectives;
- Previously identified needs should be shortlisted based on their relevance to territorial cooperation and the extent to which the programme has capacities to address them;
- Specific objectives of ETC programmes should be justified and rational, i.e. should be clearly referencing and addressing the needs of the programme area;
- Specific objectives of ETC programmes should only tackle issues that can be addressed through territorial cooperation;
- An intervention logic should be built for each selected specific objective.

Based on the need analysis previously carried out, the next step is the selection of thematic focus of the programmes. The section provides guidance for narrowing down the needs to be addressed by selecting specific objectives.

2.2.1 Sensitivity analysis (Multi-Criteria Analysis)

Sensitivity analysis can be used to assess areas sensitive to change, based on set of compound indicators and underlying Multi-Criteria Analysis (MCA) model. Multi-criteria analysis and decision support methods are rooted in the scientific tradition of operations research. They follow the spirit of procedural rationality and allow the analyst to take into account conflicting, multidimensional, incommensurable and uncertain effects of decisions and actions.

Multi-Criteria Analysis: Visualising Territorial Impacts

Multi Criteria Analysis

- Compound indicators combine sets of single indicators by combining and computing them with the support of an underlying model or modelling assumptions.
- Unlike synthetic indicators they do not simply aggregate through weights, but use systemic models to arrive at overall territorial information.
- Another application would be the use of Multi-Criteria Analysis to produce quantitative territorial sensitivity, exposure, and impacts assessments. As such, the method can be ap-

plied to assess the impacts of ETC interventions on the programme area. In this case, the effects deriving from a particular policy measure (exposure) are combined with the characteristics of a region (territorial sensitivity) to produce potential territorial impacts.
- The inclusion of expert judgements as a key input to the analysis provides this method with a high degree of flexibility, as it allows for the quantification of immaterial impacts of ETC interventions.
- MCA provides significant advantages over other methodologies: Applying MCA allows for the creation of accurate assessments of the results of an intervention, taking complex factors and relations into account.
- Disadvantages to applying MCA result indicators is their technical complexity and the associated costs, such as assembling of expert workshops, skills acquisition etc.

Multi-criteria analysis allows for the conceptualisation of regional flows and relations. These interregional relations produce a series of sensitivity indicators, which model the regions' sensitivity to a specified change. The specified changes can be developed and illustrated in a series of scenarios; each associated to different policy changes (such as a shifting of territorial or thematic concentration of funding).

Regions can subsequently be grouped into several classes of potential sensitivity via a clustering exercise, thus arriving at potentially very highly sensitive programme regions, potentially moderate sensitive programme regions and potentially low sensitive programme regions. The grouping of regions is determined by their relative performance across all indicators and statistically significant gaps within the ranking of regions included into the analysis.

Multi-Criteria Analysis: Main results

The results of the analysis may be visualised on maps, depicting the relative sensitivity of the individual programme regions to policy changes. It can allow the user to identify regions according to specific characteristics in connection to their sensitivity. When analysing the results one may identify several clusters of programme regions. In the case of R&D investment, this allows for example, the identification of lagging regions with a relatively high sensitivity to change. This makes these regions relatively more attractive targets for interventions and projects.

Other identified regions include highly sensitive regions which feature some lagging characteristics. They represent regions with one or the other specific weakness in the overall performance (either environment or innovation or other aspects) and are therefore open to improvements in these specific fields of interventions within the programme.

The third class of regions represents potentially moderate sensitive programme regions. These regions perform very well in all aspects of the scenarios and show only very specific weaknesses vis-à-vis all other programme regions. A potential policy intervention will have to be targeted toward these weaknesses and will have to support the existing strengths.

Finally, the fourth class of regions represents potentially low sensitive programme regions. These often feature metropolitan regions in the programme area. They are certainly the structurally strongest regions in the programme area and are thus potentially affected by territorial

policy in the sense of strengthening their already existing strengths – especially in the field of R&D and innovation as well as economic productivity.

2.2.2 ESPON TIA Tool

For a less complex and more accessible aid to shortlisting needs, stakeholders can access the ESPON TIA Tool which helps identifying potential impacts of interventions on territories.

The ESPON TIA Tool provides an ex-ante assessment of potential impacts and cartographic representations of regions which might be affected by an EU policy or an intervention in the fields of economy, environment, society and governance.

The ESPON TIA Tool is set up in an interactive way in a workshop setting, combining a set of indicators with expert judgement about the territorial effects of an intervention by selecting and assessing all relevant indicators. It needs to be highlighted that the tool relies on a process which needs good preparation from both moderator and participants to guarantee a successful workshop.

Conducting a Territorial Impact Assessment (TIA)

In the ideal case, programme stakeholders contract experts to conduct a TIA workshop on examining various scenarios for the programme design. The TIA can provide an ex ante overview of potential territorial impact of certain programme interventions. Alternatively, the ESPON TIA Tool can also be used in a simplified way by programme authorities who use the tool without external help and identify the relevant indicators for assessing programme´s potential impact as well as enter expert judgement without expert input.

Conducting an ex ante TIA is an easier alternative compared to the above-described sensitivity analysis in identifying the areas which are sensitive to change based on programme intervention. The outcomes of TIA can facilitate the decision on which needs should be selected to be addressed by programme priorities and specific objectives.

The new functionality of the ESPON TIA Tool enables conducting an impact assessment on cross-border areas. It is, therefore, well-suited for INTERREG A programme. INTERREG B programmes can also use the CB TIA mode, if they wish to limit the investigated programme area, or the general TIA, if they wish to examine the impact on the whole programme area (in such case, it should be taken under consideration that indicator values are normalised based on all included regions).

The new TIA tool has at its disposal useful features. For example, the ESPON TIA Tool provides a functionality to show the relation of the impact in a specific region to the average. The option allows showing the **distance to average** of three types of regions: the same regions as the selected typology, all regions or other regions which then need to be specified.

The tool also provides **visual presentations** of the impact on regions. The tab “votes” shows the outcomes of expert voting on a bar graph. Impact assessment is always shown for one type of expert judgement (usually the one that has received most votes). If the group wishes,

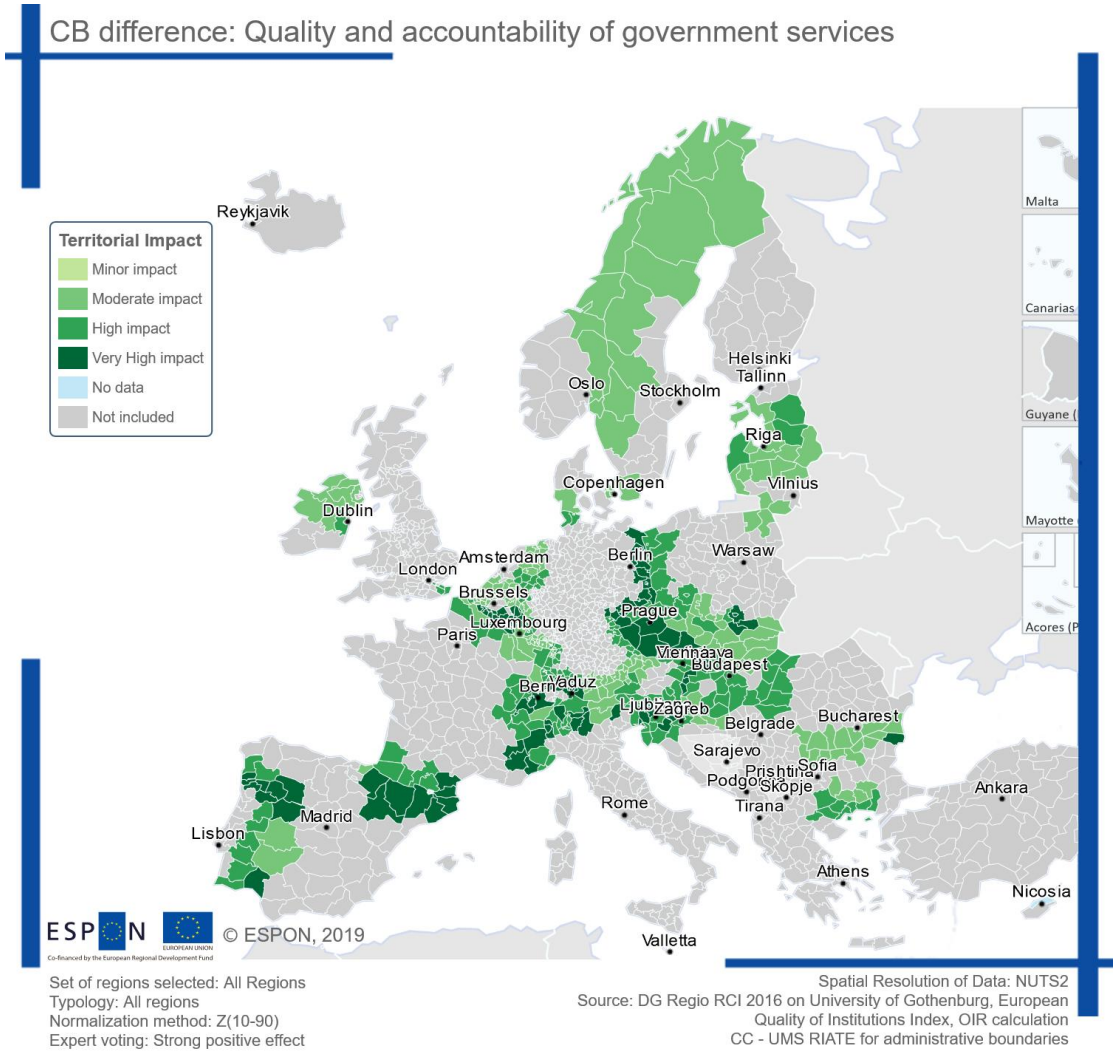
the moderator can show the impact assuming another expert judgement. This can be done by clicking on the bars with judgement in the tab “votes.”

Further visualisations are provided in form of pie charts showing the percentages of frequency among regions for different scales of impacts for each expert vote (tab “impact”) as well as a diagram presenting all kinds of values calculated for regions with a red line corresponding to the selected average type (tab “values”).

Example: Territorial Impact Assessment for cross-border regions

The map below provides an exemplary territorial impact assessment for cross-border regions in relation to quality and accountability of government services. The map visualises the strength of impact based on expert voting entered into the tool in regards to the examined exposure field.

Map 2.1: Example of cross-border TIA result



Source: ESPON TIA Tool, 2019.

The updated tool as well as further guidance on the updated TIA Tool will shortly be available on the ESPON Website. Currently, the old version of the tool can be accessed.

Link to ESPON TIA Tool

https://www.espon.eu/tools-maps/espon-tia-tool

2.2.3 Shortlisting the needs

The process of identification of needs will ultimately be used to specify the thematic focus of programmes, as set out in regulation proposals (COM(2018) 375) COM(2018) 374).

It is suggested to use at least the two criteria in shortlisting needs: 1) which needs can be addressed with territorial cooperation as well as 2) which needs can be successfully addressed by the programme. The second point calls for tapping into past experiences, successes and lessons learnt from the past. A general aid in understanding the possibilities of the two types of programmes (INTERREG A and INTERREG B), stakeholders are encouraged to revise the final report of WP11 of the Ex Post Evaluation of the ERDF and CF[10], regarding ETC. The report provides an overview of intervention areas which have successfully and less successfully been addressed by INTERREG A and INTERREG B programmes in the 2007-2013 period.

A more specific aid in shortlisting the needs are the results of sensitivity analysis or TIA Tool presented previously (see 2.2.1 and 2.2.2). The sensitivity analysis or the TIA Tool should help identify specific intervention areas that can be effectively addressed by the programme; thereby helping to narrow down the selection of needs to be addressed by selected policy objectives and specific objectives by programmes.

2.2.4 Rationality of the programme specific objectives

While selecting the specific objectives, a principle of rationality should be safeguarded. In order to be able to measure the effects of a programme, the programme objectives have to be defined in a clear and unambiguous way, i.e. fitting the problem they are related to. If this was not the case, it would not be possible to meaningfully measure the progress towards the targets of the intervention since the targets themselves would not be clear. This issue was depicted in Figure 2.3 as the *rationality of the policy objective.*

Rationality measures the level of understanding, transparency and accurateness of the intervention objectives *given the problems and cooperation needs of programme area* to be addressed. In general, occurrences of poor rationality often arise in thematic objectives involving intangible territorial element, such as environmental quality, institutional capacity and social inclusion. In these policy areas, it is often difficult to clearly identify the problem to be addressed and, as a consequence, to define programme objectives. Rationality should also account for the territorial aspect of cooperation.

[10] https://ec.europa.eu/regional_policy/en/policy/evaluations/ec/2007-2013/#11

Thus, the definition of the specific objective has to be fully relatable to the cooperation needs and problems in the programme area.

Examples

The following table highlights some examples of specific objectives that can be found in ETC programs. It specifies how far they meet the criteria of rationality and provides suggestions for improvements.

Table 2.2: Low and high rationality: examples

Specific objective	Assessment of "rationality"	Suggestions/comments
Sustainably planned and managed natural areas	LOW	The objective is quite generally defined: it is unclear, what is meant by "sustainably" The indicator should specify how natural areas should be planned and managed The link to the needs and challenges of the programme area needs to be clarified
To improve capacities for the sustainable use of cultural heritage and resources	LOW	The social problem is the sustainable management of natural resources but, as before, "sustainability" is not clearly defined. A precise definition of what is meant would improve the rationality of the objective in line with the issues of the programme area
To maintain biodiversity and natural ecosystems through strengthening the management and networking of protected areas	HIGH	It is clear that the objective is focused on specific elements of the natural capital of the regions The need is specified as the maintenance of biodiversity and natural ecosystems
Improvement and increasing of the possibilities for the internationalisation of SMEs	HIGH	It is clear that the need emerging in the area consists in a poor level of internationalisation of firms, and the Programme is focused on it

Source: Consortium, 2019.

2.2.5 Territorial cooperation dimension of programme specific objectives

A second principle to keep in mind while selecting specific objectives is the focus on needs that can be addressed by territorial cooperation. The dimension of territorial integration among Member States represents the peculiarity of ETC actions, differentiating them from policies undertaken by regional and national authorities. Therefore, the objectives of ETC programs also require a clear focus on territorial cooperation. This aspect must be defined in a clear way, in order to point out how cross-border cooperation is contributing to the achievement of results that could not have been obtained through policies promoted by single regions or countries.

In order to be able to address needs through territorial cooperation, it is necessary to understand the intensity of cooperation between the regions. Taking into account the level of intensity of cooperation will help specify the objectives and, consequently, measures that could be undertaken within the programme.

Table 2.3 shows the different levels of territorial cooperation between territories, from the easiest one (information sharing) to the most complex one, the reaching of a critical mass and

common organisation. In particular, this necessitates the establishment of clear links between territorial cooperation and the final result indicator.

Table 2.3: Theoretical levels of territorial cooperation (from the easiest to the most complex one)

Form of cooperation	Intensity
0. No cooperation	Low
1. Information sharing	
2. Exchange of good practices	Medium
3. Learning	
4. Coordination of actions	
5. Sharing markets – adding variety	High
6. Synergies in the present state of the organisation	
7. Reaching critical mass – common organisation	

Source: Politecnico di Milano, 2018.

Once a clear and unambiguous identification of the objectives of the programme according the rationality and the form and extent of territorial cooperation are provided, the selection and definition of the indicators can be started focusing on the interdependency between objectives, outputs and results (Figure 2.3).

As a result, the definition of the specific objective has to clearly address the territorial characteristics of an INTERREG programme and refer to what is the added value of transnational and cross border cooperation.

Examples

The following table highlights some examples of specific objectives that can be found in ETC programmes. It comments in how far they meet the attribute of "territorial cooperation" and provides suggestions for improvements.

Table 2.4: Low and high territorial cooperation: examples

Specific objective	Assessment of the criterion "territorial cooperation"	Suggestions/comments
More entrepreneurial youth	LOW	The specific objective does not specify the cross-border dimension of the need: how cross-border actions could address the need in a better way than alternative regional/national Programmes? The low rating does not mean that territorial cooperation could not contribute to develop and implement solutions but formulation of the specific objective does not clarify how territorial cooperation is expected to help.
To develop and implement solutions for increasing energy efficiency and renewable energy usage in public infrastructures	LOW	The specific objective does not specify the cross-border dimension of the need: how cross-border actions could address the need in a better way than alternative regional/national Programmes? The low rating does not mean that territorial cooperation could not contribute to develop and implement solutions but formulation of the specific objective does not clarify how territorial cooperation is expected to help.

Specific objective	Assessment of the criterion "territorial cooperation"	Suggestions/comments
Extension of common supply of education and qualification activities in order to utilise human resources potential in cross-border region	HIGH	The information is rather precise in regards to territorial cooperation The objective specifies its focus on common education programmes and activities, in order to further integrate the job market of the area. It can be clearly attributed to "coordination of action".
Contribute to protect and restore biodiversity	HIGH	Even if territorial cooperation is not specified in the objective, it is clear that the protection and restoration of biodiversity is a cross-border need, requiring coordinated strategies and actions

Useful Interact literature

- Coordination and cooperation: how? (2017)
- How do macro-regional strategies deliver: workflows, processes and approaches (2018)

2.2.6 Selecting policy objectives and specific objectives

The new regulation proposals set out a different framework for selecting thematic focus of INTERREG programmes. For INTERREG programmes, following the elements of the proposed regulation COM(2018) 374[11], a thematic focus within a programme is expressed by the formulation of programme priorities. Priorities can be phrased freely, as long as they relate to either one of the 5 policy objectives (defined by COM(2018) 375[12]) or one of the 2 INTERREG-specific objectives (defined by COM(2018) 374[13]). For each selected objective, more than one priority can be included in the programme, however at least one has to relate to an INTERREG-specific objective and not more than 3 different objectives can be selected.

Figure 2.2: Policy Objectives and INTERREG-specific Policy Objectives for the 2021-2027 programming period as proposed by the regulation proposals

Policy Objectives

- Smarter Europe, through innovation, digitisation, economic transformation and support to small and medium-sized businesses
- Greener, carbon free Europe, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change
- more Connected Europe, with strategic transport and digital networks
- more Social Europe, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare
- Europe closer to citizens**,** by supporting locally-led development strategies and sustainable urban development across the EU

[11] EC, 2018, COM(2018) 374, Ibid.

[12] EC, 2018, COM(2018) 375, Ibid.

[13] EC, 2018, COM(2018) 374, Ibid.

Interreg-specific Policy Objectives

- better Interreg governance;
- A safer and more secure Europe,

Useful Interact literature

- Reflection Paper on Interreg post-2020 (2018)
- Update on post-2020 regulatory framework (2019)

Source: EC, 2018, COM(2018) 375 and EC, 2018, COM(2018) 374.

The selection of specific objectives provides the framework of the programme and defines its interventions through project applications. As the overarching framework for action, the policy and specific objectives function as responses to the needs and challenges identified in the previous step. The selection of the individual specific objectives ties directly into the intended change stemming from the identified needs and specificities of the programme area. Therefore, the selection of specific objectives should mirror the needs and this justification should be reflected in description of the "Priority" (see COM(2018) 374). This requirement is addressed below (2.2.4). as "rationality" of programme objectives. Appropriately selected policy objectives are essential for a sound and successful monitoring system.

The real issue with respect to capturing societal and territorial cooperation needs is to "fit" the problem identified to the potential of the intervention. The geography of policy plays a role: it is important to know at which territorial resolution policies will show their footprint. For example, in case of an industrial policy the footprint is at the level of several MS. Locally/regionally dispersed effects have to be captured with the right "geography of effects"; indicators have to take this into account. On the other hand in certain areas of environmental policy the footprint connected to environmental media such as water basins, air movement, ecosystems, will be right "geography of effects" and will not necessarily fit the programming areas. Even within single programming areas effects may be differentiated; policy input in principle is point data (i.e. beneficiary, final recipient) – while effects are not necessarily (output mostly territorially close to input[14], results territorially linked to the need identified – welfare creation).

This means that formulation of specific objectives should again take into consideration the capacities and orientation of programmes in addressing the selected needs, in terms of resources available as well as the possibility to bring about effects at the geographically appropriate level. Regarding the capacity to bring about effects by programme intervention, an issue to keep in mind is that specific objectives should be formulated in order to address needs that can be addressed via territorial cooperation. Given that the objective of ETC programmes is to approach common issues with territorial cooperation between neighbouring regions, the specific objectives of programmes should focus on addressing needs relevant to territorial cooperation. This requirement is addressed below in section 2.2.5.

[14] but still not necessarily in case of affiliations, headquarters receiving grants and redistributing to other business units

Moreover, in order to help selecting the needs which can successfully be addressed by programmes through selection of specific objectives, it is recommended to consider the results of a sensitivity analysis (see section 2.2.1).

2.2.7 Building intervention logics for each specific objective

Having selected specific objectives, programme stakeholders should compose intervention logics for each selected SO in order to provide a clear rationale behind each selection. Intervention logics will further facilitate implementation of the programme.

The relevant elements at this stage are: need, specific objective as well as measures (selection of indicators follows next). Identified specific objectives should be directly relatable to the relevant need, as described in 2.2.4; it should also reflect the territorial cooperation dimension, as described in 2.2.5. Finally, it is advisable to also provide a preliminary ideas for measures that could be undertaken within the specific objective in order to foresee possible interventions in regards to the needs.

For example, the following template can be used.

Table 2.5: Exemplary table for drafting elements of an intervention logic

Relevant shortlisted need	Specific objective	Exemplary measures	Effect foreseen	Result indicators	Output indicators
Need 1	.....	.....		*To be added in next steps...*	*To be added in next steps...*
Need 2	.....	.....		*To be added in next steps...*	*To be added in next steps...*
Need 3	.....	.....		*To be added in next steps...*	*To be added in next steps...*

Source: Consortium, 2019.

The proposal for specific objectives is subsequently discussed within relevant programme bodies. The final outcome follows after the necessary feedback loops.

While presenting and discussing the suggested specific objectives, it is crucial that stakeholders most familiar with the process present the outcomes of different elements of needs analysis, as well as sensitivity analysis that have led to shortlisting the needs. It is also equally important to explain the background behind the selection by presenting intervention logics to those members of programme bodies who were less involved in the process. This ensures that all programme bodies have an understanding of the needs as well as are aware the rationale behind the selection, what will facilitate individual decision-making and evaluation of the proposal. Any changes or additions should be also reflected in the intervention logics.

Example: building intervention logic

An example of an intervention logic with most important elements is presented below.

Need	Specific objective	Measures	Effects	Result/Output indicators
Significant lack of knowledge of what each other can offer, since the research centers are not always aware of the needs of the productive fabric and the solutions they can provide them, at the same time that the companies are unaware of the existing capacities in the territory in terms of I + D + i, as well as the solutions they offer them.	Improve the participation of the business sector in innovation processes and R+D+i activities closer to the market	*Promotion of new knowledge and innovation, especially related to enterprises, including for example:* Actions that promote technological development and promote the innovation culture in the productive tissue of the cooperation space, help enterprises develop innovative products and processes, promotion of new technology-based activities with growth potential, facilitate the exchange and use of information between public administrations and companies.	Enterprises have acquired new knowledge	*No of beneficiary companies that introduce new products for the company (R)*
			Enterprises have designed new innovation plans	Number of companies that have developed innovation plans (A)
			Enterprises have introduced innovative products/processes and/or improvements	% of company revenues as a result of new innovative products (A)
			Increased enterprise investments in R+D+i	*Increased number of enterprises that have invested in R+D+i (A)* *Size of investments in R+D+i (A)*

Source: ESPON TIA CBC, 2019.

2.3 Selecting result indicators

Key points

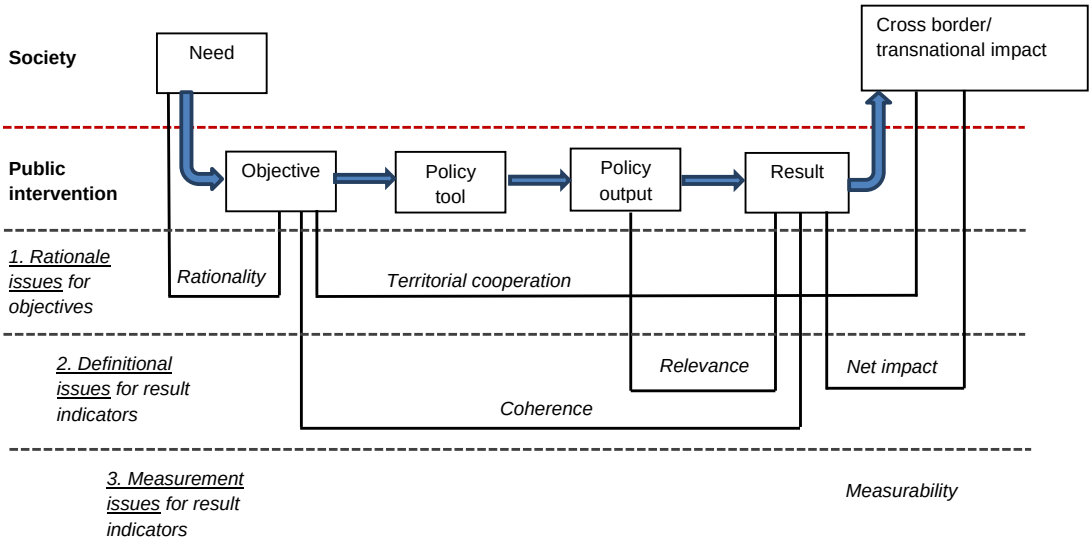
- Result indicators need to be coherent with the intervention targets, i.e. there needs to be close alignment between the objectives of the intervention and what the indicator measures.
- Result indicators need to be relevant: the indicator has to capture the result of the intervention, as opposed to the output.
- The net impact of result indicators concerns the link between the results of a intervention and its impact . Result indicators need to capture the net effect of the programme actions on the defined targets, and the result needs to be free from, and unbiased with respect to, other on-going actions and processes.
- Selected result indicators should be measured in an objective way, consistent over time, comparable, and easily obtainable.
- Result indicators should also be measured at the appropriate and set spatial and temporal dimensions

The definition of appropriate result indicators is crucial for the monitoring of policies and the setting of future interventions. “Appropriateness” is, however, a vague concept, highly dependent on a multifaceted set of characteristics and properties of the indicators. In order to

define appropriate indicators, it is necessary to clarify what is meant by policy result. In the words of the European Commission (EC, 2014, p. 4), a policy result *"is the specific dimension of well-being and progress for people which motivates policy action, i.e. what is intended to be changed, with the contribution of the interventions designed"*. Result indicators measure this direct, causal change produced by the interventions, distinct from any other external factor influencing the same dimension of well-being. This definition is useful since it clarifies that policy results have to be strictly linked with (but at the same time independent and conceptually distinct from) the objectives set by the policy, the actions undertaken to reach them and the long-term and cross-border impact deriving from the combination of the policy and other factors.

As a consequence, the definition of reliable result indicators for policies must be based on a set of objective criteria, able to overcome all the potential issues arising in this process. Figure 2.3 shows the conceptual framework within the TEVI project in order to guide policy makers in the identification of appropriate result indicators.

Figure 2.3: The logical model of public intervention and the criteria for the definition of appropriate result indicators



Source: Politecnico di Milano, adapted from Osuna et al. (2000).

The logical steps to undertake during programming are:

- Solid basis in identification of the needs of the programme area, on which the measures of the programme can focus;
- the definition of the relevant programme objectives, for the implementation of measures to address the needs, considering the rationality and territorial cooperation needs;
- the identification of specific outputs (i.e. the specific actions) which, in turn, will lead to results, meant as the contribution to the achievement of the objectives defined.
- the empirical verification, in the policy assessment phase, that the achieved results were able to contribute to the expected cross-border impact.
- indicators measuring the effects of policy interventions link the definition of result indicators with the logical chain of the programming cycle as shown in Figure 2.3. They take into account the following attributes: coherence, relevance, net impact, measurability and indicator dimensions

In the following chapters the characteristics are described in detail. Different examples of indicators provide practical hints for programming activities. The guidelines focus exclusively on result indicators, given that selection of output indicators is not as challenging.

2.3.1 Coherence between result indicators and programme objectives

Description

Coherence refers to the alignment of programme results (represented by result indicators) with respect to the programme's objective. Result indicators measure the progress towards the explicit targets defined by the policy makers[15]. As a consequence, result indicators must be fully aligned with the objectives of the programme, as they have to correctly measure the targets set. If a mismatch arises between these two elements, the intervention itself and the achievements would be flawed and arbitrary.

Quality criterion "coherence"

The targets to be measured by result indicators must be coherent (aligned) with programme objectives

Examples

Table 2.6 presents examples of different levels of coherence between specific objectives and result indicators.

Table 2.6: Low and high coherence: examples

Specific objective	Result indicator	Coherence	Suggestions/comments
Increase in product and process innovations in the field of CO2 reduction and sustainable energy	Share of SMEs implementing product or process innovations (Percentage)	LOW	This specific objective concerns innovation in a narrow fields (the environment and CO2 emissions), while the result indicator captures a more general propensity to innovate: the indicator is not precise enough in capturing the progress towards the objective. The coherence would be high if the result indicator was restricted to the field of intervention of the programme, i.e. CO2 emissions and sustainable energy.
Natural and cultural resources developed into sustainable tourist attractions	More sustainable joint natural and cultural heritage based tourist attractions (number of attractions)	LOW	The number of attractions does not capture the sustainable management of cultural/natural resources nor their attractiveness for tourism. Such a result indicator leads to a distorted measurement of the way in which the policy action contributes to addressing the issue..
Reduced nutrients, hazardous substances and toxins inflows into the sea	Amounts of nutrients, hazardous substances and toxins inflows into the sea	HIGH	The indicator is coherent with the objective because it is directly associated with the sea water pollutants that the Programme is aimed at reducing.
Increase in the product and process innovations in sectors relevant for the border region	Share of SMEs implementing product or process innovations (Percentage)	HIGH	The implementation of product or process innovation is fully consistent with the programme's objective. The result indicator is analogous to the one discussed among the low-coherence example, but here its use is appropriate since the area of intervention of the policy is not limited to a narrow field of the economy.

Source: Consortium, 2019.

[15] Mosse and Sontheimer (1996)

2.3.2 Relevance of result indicators to the result (rather than output)

Description

Outputs versus Results

- Outputs are the products generated by a policy or a programme in order to achieve certain results; the output is not the final goal of a policy or a programme, but rather the mean through which the policy objective is pursued
- Results represent the extent to which the objective of a policy or a programme has been achieved

The *relevance* of result indicators is the extent to which the result indicator is capturing a result of the programme interventions rather than their output. The difference between outputs and results must be made explicit, in order for the two indicator types to fulfil their functions. Outputs are the products generated by an intervention in order to achieve certain results. In this sense, the output is not the final goal of an intervention, but rather the mean through which the policy objective is pursued (OECD, 2009). The results, on the other hand, represent the extent to which the objective of an intervention has been achieved. For instance, a transportation policy could involve the investment of some funds (tools) for the building of a new highway (output) in order to decrease travel time of commuters (result). An intervention for unemployed people could invest public resources (tools) for the organisation of training courses (output) which will make it easier the reintegration in the job market (result).

Quality criterion "relevance"

The result indicator must clearly be able to capture an intended result of the programme, rather than its output.

Examples

In the two cases characterised by a low level of relevance the result indicators are

Table 2.7: Low and high relevance: examples from current INTERREG Programmes

Specific objective	Result indicator	Relevance	Suggestions/comments
Extension of common supply of education and qualification activities in order to utilise human resources potential in cross-border region	Joint education activities and qualification supply (Number)	LOW	The number of activities provided is not capturing the result of an intervention, but rather the tool used by an intervention in order to achieve the desired result An appropriate result indicator should measure the direct change in the job market generated by the provision of the abovementioned educational activities. For instance, if we assume that courses are mainly aimed at improving the skills of the participants so to facilitate their reintegration in the job market, a result indicator with high relevance could be represented by the unemployment rate in the eligible area.

Specific objective	Result indicator	Relevance	Suggestions/comments
Promote investment in R&I by strengthening cross-border co-operation between companies and research institutions	Number of companies participating in cross-border networks and innovation clusters	LOW	The indicator is capturing an output of an intervention rather than a result: the participation of local actors in cross-border projects is the tool through which the policy makers want to stimulate the increase in investments for innovation activities. A result indicator characterised by a high level of relevance should therefore focus on measuring, for instance, the share of budget devoted to R&I by local firms or their innovative output (trademarks, patents).
Fostering the involvement of enterprises (primarily SMEs) in the innovation system	R&I expenditure in the business sector in % of GDP (%)	HIGH	Suppose the tool used by this intervention to be publicly-funded innovation activities for SMEs. If it is the case, the number of enterprises involved in the projects is the outcome of the intervention. This outcome is expected to promote autonomous, privately-funded innovation activities. Therefore, the SMEs expenditure in R&I activities is a relevant result indicator, because it correctly captures a result instead of an output.
Improve the environmental quality conditions of the sea and coastal area by use of sustainable and innovative technologies and approaches	Quality level of coastal bathing waters (according to the dir. 2006/7/CE)	HIGH	The measures, of various kind, to improve environmental quality are the outcome of the intervention. The result indicator is in this case correctly focused on the objective (i.e. defined based on standard indicators) quality level of coastal bathing waters.

Source: Consortium, 2019.

2.3.3 Net impact of result indicators

Description

The *net impact criterion* concerns the link between the results of a programme and its impact, differentiated from impacts of other interventions. The policy or programme impact is defined by the long-term effects on specific dimension of the programme area. These long-term effects depend on a variety of different factors, most of them not under the control of the policy maker or the programme authority[16]. The programme results, on the other hand, are short or medium-term effects, directly resulting from the outputs generated by the programme. In other words, the causal link between programme results and impacts is not as evident as the one between outputs and results. It is therefore extremely important for the result indicators to capture the net effect of the programme actions on the defined targets, obtained when the result is free from, and unbiased with respect to, other on-going actions and processes. This issue can be conceptually addressed and empirically solved with the use of different quantitative and qualitative methods for net impact assessment addressed in section 4.2.

Quality criterion "net impact"

A result indicator must be able to capture the net effect of the programme, as separated from effects of other interventions.

[16] (World Bank, 2004)

Examples

The table below presents some examples in relation to net impact of result indicators.

Table 2.8: Low and high net impact: examples from current INTERREG Programmes

Specific objective	Result indicator	Net impact	Suggestions/comments
Increase the number of researchers active cross border/internationally, cooperating with the industry and working in the area	Researchers in R&D (Number of people)	LOW	Firms' investments in innovation could be influenced by other factors (exogenous economic shocks, level of human capital, as well as other funding sources) The DID method could be applied to isolate the effect of the programme
Improvement and increasing of the possibilities for the internationalisation of SMEs	Foreign investments of local firms, expressed as a share of the overall value added they produce	LOW	Several exogenous factors have an impact on the propensity of firms to internationalise (institutional factors, exchange rates, conditions in the job market, as well as other funding sources) The DID method could be applied to isolate the effect of the programme
Contribute to protect and restore biodiversity	Excellent conservation status of habitat types and species of Natura 2000 sites in the programme area (Number)	HIGH	In the short run, i.e. in the period of implementation of the intervention, this result indicator is not expected to be influenced by other elements (like climate change, for instance) apart from the intervention undertaken within the programme. It can be considered as unbiased from any external confounding factor. However, it should be considered whether other programmes could impact this result indicator
Improved transport flows of people and goods	Travel time of passengers (% of reduction of travel time)	HIGH	The result indicator can be considered as unbiased, because the time needed for a trip is not affected, in the short term, by any other factor (like the development of new means of transport, for instance) apart from the improvements generated by the intervention (this is not to say that technology does not have an impact but, rather, that in the short term it does not have an impact on the result indicator). However, it should be considered whether other programmes could impact this result indicator

Source: Consortium, 2019.

2.3.4 Measurability of result indicators

Description

The measurability refers to several criteria on which the selection for the best measurement of a certain result indicators should be based. The criteria have to reflect specific characteristics that result indicators should have. Result indicators should in fact be:

- *objective:* results have to be measured in an objective way. They have therefore to be as un-sensitive as possible to different methodologies and approaches for their collection, and have to provide a straightforward interpretation of the change occurred. In this sense, quantitative indicators are preferable to qualitative ones;
- *consistent over time:* since result indicators should monitor the gradual approach towards the specific targets set by the policy maker, it is important for their empirical measurement to be regularly available over time, without long time lags;

- *comparable:* to the broadest extent possible, indicators should allow a comparison with other policy contexts, so to understand whether the change occurred is more or less relevant;
- easily *available:* since the collection of indicator data can be a time consuming procedure, especially for qualitative data such as surveys and focus groups, the programme authority should make sure that such data is readily available in central sources such as statistical offices. Whenever possible, without decreasing the quality of indicators, existing data sources should be used for this purpose.

These measurability issues must be taken into consideration in the phase of definition of the programme's result indicator, since poorly measurable indicators might undermine the assessment of the programme actions.

It is suggested that for each selected indicator concrete data sources are investigated before the indicator is shortlisted and selected. If indicator data is to be collected by projects, it should be easily measurable. If it is to be obtained from statistical offices, programme stakeholders should make sure that such up-to-date data is available and there are no data gaps. As a result, for each suggested indicator a concrete source of data should be indicated.

Cooperation with authorities of statistical offices is recommended in order to have a better overview and understanding of data availability, completeness as well as time-lag between collecting and publishing.

Quality criterion "Measurability"

The result indicator must be measurable in terms of it objectivity, consistency over time; it must also be comparable and data should be easily obtainable.

Examples

Table 2.9: Low and high measurability: examples

Specific objective	Result indicator	Measurability	Suggestions/comments
To raise capacity for better management of energy in public buildings at transnational level.	Share of regional, sub-regional and local energy efficiency plans including adapted measures for public building stock.	LOW	Different administrative definitions and modes of provision of energy efficiency plans in public buildings are likely to prevent a clear comparison. Such data is not available from official statistical sources, and therefore the cost associated to their collection (including for instance the translation of administrative documents in different languages) is expected to be high.
To facilitate the implementation of low-carbon, energy and climate protection strategies to reduce GHG emissions	Effectiveness of the public sector organisations in the implementation of low carbon strategies (Percentage)	LOW	The result indicator is a quantitative measurement, whose definition is however not clear. The term "effectiveness" is ambiguous, and the empirical measurement of efficiency typically involves issues of a lack of counterfactual evidence: how would have public organisations behaved without the public intervention?

Specific objective	Result indicator	Measurability	Suggestions/comments
Reduce the transport time with environmentally friendly forms of transport for people and goods	Rail transport time between nodes in relation to road transport (Travel time by train in relation to the travel time by car in percentage)	HIGH	Data on travel time is easily available from route planning software. Its measurability is therefore high. Moreover, it correctly weights the environmental friendly mode of transport (train) with the more pollutant mean of transport (car). Doing this, it provides a measurement of the increased advantage of choosing one travel option over the other.
Improving the innovation base for companies in the program area.	R&D expenditure in the business sector in% of GDP (per cent).	HIGH	Official statistics provide data on R&D expenditure. This result indicator is probably not unbiased from the influence of external factors. Nevertheless, it has a high level of measurability, given the availability of official statistics at the regional level on this theme.

Source: Consortium, 2019.

2.3.5 Indicator dimensions

Description

A further issue, which is transversal to those summarised above concerns the various dimensions at which the indicator can be measured. A result indicator should be defined at appropriate dimensions of intervention, e.g. the dimension of individual, region, macro area, at which we expect the policy action to produce a significant result. The different dimensions of measurement can be divided into two categories: temporal and spatial dimensions. The change generated by the policy action has, as above, a temporal dimension: before and after the implementation. The change has, however, also a spatial dimension, defined by the set of stakeholders on which the policy will induce a result.

To ensure the usage of appropriate territorial dimensions, the Result-Based Accountability methodology can be applied. As opposed to constructing and using an indicator focussed on the policy result across the entire population or territory, the indicator can instead measure the performance of the intervention within the client group. These performance measures are relatively stronger linked to target groups of the programme, such as potential beneficiaries. This provides a strong degree of measurability, as well as relevance, of the indicator values in terms of programme performance. Via appropriate targeting of spatial, demographic or structural dimensions, the indicators are able to more accurately reflect the results of the intervention in target groups.

Quality criterion appropriate “indicator dimensions”

The indicator must be measured at the appropriate spatial and temporal dimensions.

Example

As an example, an intervention aimed at increasing the number of visitors of the regions in the eligible area can be considered. The spread and size of the result clearly depends on several aspects, such as the budget of the intervention, the spatial distribution of the beneficiaries, the kind of action undertaken. In the definition of result indicators, policy makers should make clear at which spatial level they expect the policy to induce a change.

This issue does not concern the definition of the result indicator itself. For instance, in case of an intervention aimed at enhancing innovation of SMEs, providing funds to beneficiaries for cross-border R&D activities, an appropriate result indicator could be the change in the number of EPO applications. This indicator could be measured at the dimensions of:

- beneficiaries (firms receiving funding);
- economic sector (in case the policy targets specific sectors);
- regions within the eligible area (those where beneficiaries are located);
- the whole eligible area.

For all these four alternatives, the formulation of the result indicator would be the same (change in EPO applications), but it would be measured at different spatial levels. Of course, going from the finest (beneficiaries) to the most general level (the eligible area), the net impact induced by the programme alone is expected to become less and less evident. Thus, the choice of the most correct level of analysis depends on several elements, like the budget invested or the size of the area and potential beneficiaries involved in the policy action.

2.3.6 Selecting result indicators: practical considerations

The selection of result indicators is not an independent step from the rest of the programming process. While the section 2.3 provided general guidelines for facing the conceptual and methodological issues potentially arising in the definitional process, each investment priority deserves specific considerations. Recalling the eleven thematic objectives defined for the 2014-2020 programming period, the occurrence of particular issues in the definition of result indicators is strictly related to the goal of the programmes.

Changing level of difficulty in capturing different kinds of interventions

In general, *interventions aimed at fostering specific behaviours of individual actors in the productive sector,* like stimulating research and innovation or the competitiveness of firms, are the *least problematic* to be evaluated. The intended result of the public intervention is generally defined in an unambiguous way, leading to minor issues of coherence. Moreover, empirical evidence on it is often provided by official statistical offices, and the scientific literature on policy evaluation developed reliable methodological tools able to isolate the net effect of the public action. The goal of strengthening R&D activities can be captured by indicators of patent and trademark applications, while the aim of increasing the competitiveness of firms can be captured by measures of firm productivity.

More *issues arise when the programme intends to stimulate specific behaviours that are expected to generate an externality* (i.e. an indirect effect) in another field. This is the case of *interventions aimed at promoting virtuous behaviours of firms and individuals,* as for instance climate change adaptation, resource efficiency, that are expected to produce an indirect effect on environmental quality. The indirect relationship between the result (i.e. the improvement of environmental quality) and the programme output (i.e. the undertaking of environmental-friendly behaviours) makes it difficult to isolate the causal, net effect of the programme. In this case, issues regarding net impact are particularly relevant, because the result indicator would

probably be influenced by a number of factors external to the public action. For instance, in the example described above, a result indicator defined by the change in pollutant emissions is associated with several elements influencing environmental quality. All these should be carefully considered, in order to understand which are methodologies are most appropriate in isolating the "net" effect of the programme.

Capturing qualitative indicators

Finally, the last category of thematic objectives is the one represented by those goals that have a qualitative nature. Interventions aimed at promoting sustainable and quality employment, social inclusion and discrimination, for instance, are characterised by conceptual issues which are prerequisites for the definition of appropriate result indicators. Problems of rationality (Figure 2.3) may arise if a clear and precise definition of the objective itself is not provided. For instance, it must be clearly specified what it is meant by the terms "sustainability", "social inclusion" and "employment quality", in order to be able to consider possible empirical measures for the results.

2.3.7 Methodologies for building ETC indicators

Key points

- Synthetic indicators help measure interventions which have impacts in several fields/areas
- Synthetic indicators are built by combining single indicators and assigning them weights (priorities among different objectives)
- Qualitative indicators can be applied to capture the results of interventions which may be difficult to picture using purely quantitative indicators
- Qualitative indicators can be built based on a focus group or a survey

The sections above provided an overview of the qualities of good result indicators. This should help programme authorities examine the available result indicators and select appropriate indicators able to measure the impacts of the programme. If, however, no indicators are available to appropriately measure specific interventions, programme authorities can:

- build such custom synthetic indicators to measure impacts in several fields/areas,
- construct qualitative indicators which can be used to picture results of interventions potentially more difficult to capture with quantitative indicators, such as of interventions related to forming institutional networks, or

Synthetic Indicators

Synthetic Indicators

- Synthetic indicators are composed of multiple sub-indicators, each reflecting a desired result of the intervention, weighted according to the policy preferences of the programme. The different weighing of the individual sub-indicators allows the indicator to reflect on the relative importance of one intervention result vis-à-vis the other.
- The construction of synthetic indicators requires sufficient availability of data in the form of sub-indicators on the preferred geographical scale (NUTS-3 for cross-border pro-

grammes, potentially NUTS-2 for transnational programmes).

- The advantage of using synthetic indicators is their ability to reflect on multiple objectives of the intervention, as well as trade-offs between them. Further, via the different weights attached to each of the sub-indicators, the synthetic indicator may reflect on their relative importance. Additionally, synthetic indicators are thematically accessible and do not require detailed statistical knowledge in their construction.
- The disadvantage of synthetic indicators is their data intensity. Synthetic indicators require complete datasets for each of the sub-indicators which are used as components. Additionally, normalisation techniques have to be employed in order to make the sub-indicators comparable to each other. Thus, the values of such combined indicators should be interpreted carefully.
- Synthetic indicators can be built in the TEVI tool

Policies and programmes often generate several results, and sometimes a trade-off among them may arise. Whenever this is likely to happen, it is necessary to define composite synthetic indicators represented by a combination of several single indicators.

The previous section showed that some of the currently proposed indicators are not appropriate because they capture a specific result of an intervention, without taking into account also other effects or externalities. For example, in case of interventions aimed at the valorisation and preservation of the cultural and natural capital of regions, a result indicator represented by the number of overnight stays in the region, for example, is a good proxy for the change in the attractiveness of the cultural and natural assets of the area, but it measures neither the sustainable use of these resources, nor the potential impact on the environmental quality of the intervention. Similarly, the use as a result indicator of a variable such as the number of Natura 2000 sites (a rather common choice in ETC Programmes) has the shortcoming of carefully measuring the effect on environmental quality generated by the project, at the expenses of providing no evidence on attractiveness and sustainability.

In other words, moving towards objective of the intervention requires the simultaneous achievement of distinctly different results. These results (and therefore the indicators measuring them) are capturing the different kinds of values generated by the intervention. For instance, the valorisation of cultural and natural heritage is likely to increase the attractiveness of the area involved, which can be correctly measured by the change in presence of tourists. At the same time, the intervention will likely raise the environmental quality of the region, which can be empirically captured by the change in the number of Natura 2000 sites. Finally, investments in the cultural and natural field may promote a more sustainable use of these resources, which could be measured, for instance, by an indicator on the seasonality of tourism.

In this example, the implementation of the project is therefore generating three kinds of values since they affect the attractiveness of the region, its environmental quality and the sustainable use of its cultural and natural assets. Hence, the use of a single indicator for the assessment of the results would not be appropriate, as it misses some of the results produced by the intervention.

The aggregation of several indicators, however, introduces a further element of complexity. The simplest way of aggregating these variables, represented by the calculation of their arithmetic mean, implies that the relative importance of one variable over the other is exactly the same. Nevertheless, in several cases programme authorities may be more interested in reaching a certain result over the others. For example, programme authorities might be primarily interested in improving the attractiveness of the area, rather than achieving one of the other two result, on environmental quality and sustainability. If it is the case, then, the arithmetic average would not be an appropriate method for the aggregation of the three indicators. Rather, a weighted mean should be calculated, where the system of weight mirroring the priorities of the intervention.

Weighting of indicators within a Synthetic Indicator

An example of this is reported in Table 2.10. The single result indicators are reported in the column on the left, each of them representing a criterion of choice, i.e. a way in which the implementation of the policy is expected to generate value of a certain kind. Overnight stays measure the extent to which the policy is increasing attractiveness, the seasonality in tourism captures the effect on sustainability and the number of Natura 2000 sites proxies the change in environmental quality produced. The value of these indicators is therefore measured as their change over time, between the moment of implementation of the policy and the period at which results are expected to arise. In the example below this value is abstractly defined by "a", "b" and "c".

Table 2.10: Combination of different variables in a synthetic result indicator

Result indicator	Value	Weight (no priority among the different objectives)	Weight (priority for increasing attractiveness)
Overnight stays in the region	a	0.33	0.50
Seasonality in tourism	b	0.33	0.25
Number of Natura 2000 sites	c	0.33	0.25
Synthetic indicator		(a*0.33)+(b*0.33)+(c*0.33)	(a*0.50)+(b*0.25)+(c*0.25)

The aggregation of these values needs to take into consideration the objectives and priorities of the intervention. If there is no priority among the three objectives of the policy, then the arithmetic mean can be used as a strategy for the combination of the indicators. This case is represented in the third column of Table 2.10, where all the criteria (i.e. result indicators) have the same weight. Nevertheless, in case a ranking of priorities exists, for instance that the increase of attractiveness is a priority compared with the other two objectives, this has to be mirrored in the set of weights used for the aggregation of the single variables. The example reported in Table 2.10 (last column on the right) shows the case in which the relative importance of increasing attractiveness (i.e. the indicator of total overnight stays) is twice the one of the other two objectives. The aggregation rule consists therefore in the weighted mean of the three values, as shown in the last row.

The weighting of the different criteria is a delicate phase of the definition on result indicators for two reasons. First, as said above, it requires a clear idea of all the objectives and results generated by the intervention and of their relative importance. Second, trade-offs may arise among different objectives. In the example of the intervention aimed at valorisation and preservation of cultural and natural heritage, it is evident that trade-offs could occur between, for instance, increasing attractiveness and environmental quality. An excessive number of tourists could lead to undesired congestion effects and pollution, threatening the environmental preservation of the cultural and natural resources. The same applies if one confronts the attractiveness and sustainability. The definition of the system of weight needed for the aggregation of single indicators must consider these potential effects.

Example: Synthetic Indicator

The map below present the synthetic composite indicator *Gross Value Added* benchmarked along ESPON space, as data availability allows. Gross value added approximates the value of goods and services produced in a given geographical dimension (in this case NUTS-3) over a defined time period. The composite indicator reflects the gross value added of knowledge intensive services and industries in a given area.

The synthetic indicator is composed of several sub-indicators which are individually picking up characteristics of the overall territorial dimensions in the framework of knowledge-intensive economic activities. The indicator is calculated in the following manner:

$$GVA_{i,t} = \frac{1}{2} * Y_{i,t} + \frac{1}{2} * E_{i,t}$$

In which the variable $Y_{i,t}$ represents normalised gross value added by knowledge intensive industries in region *i* and at time *t,* Analogously, $E_{i,t}$ represents normalised employment in a given region *i* and at time *t.* Each of the variables are normalised in the following manner, across the programme region and across ESPON Space. The individual values are scaled up by a factor of 100 to aid with the ease of interpretation.

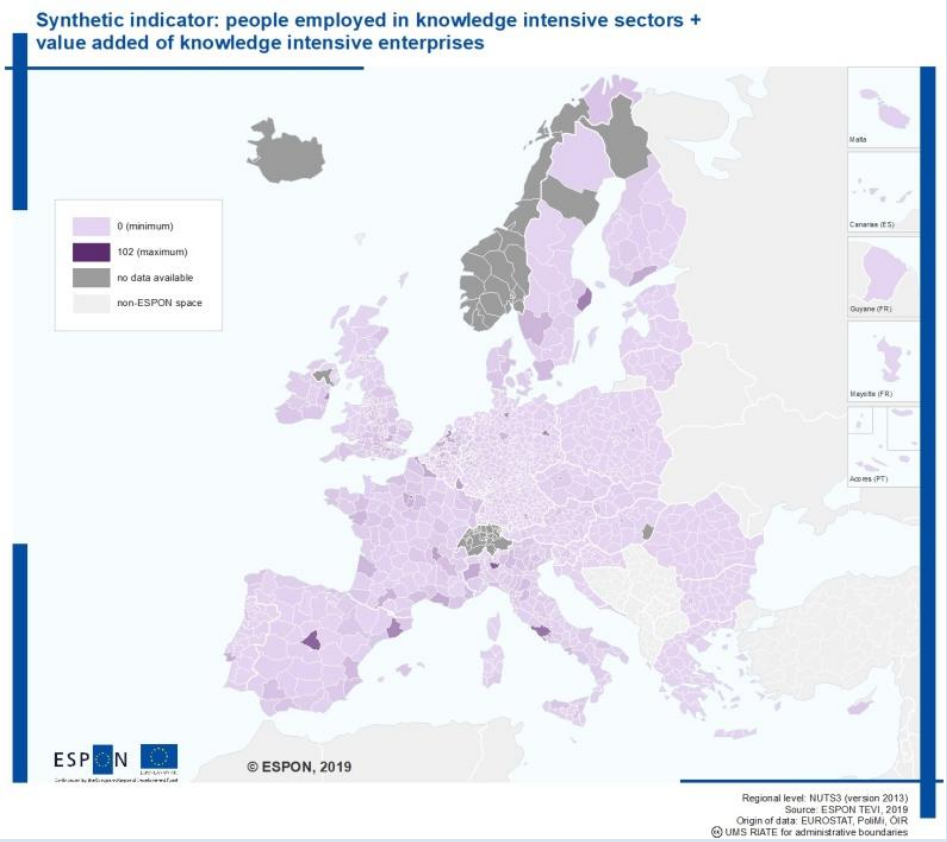
$$E_{i,t} = (e_{i,t} - \min(e_{i,t}))/(\max(e_{i,t} - min(e_{i,t}))$$

As data sources, Eurostat data is used. Gross value added by knowledge intensive industries is represented by the indicator Gross value added of financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities[17] of the NACE data set and the corresponding employment indicator of the NACE data set for the same economic activities[18]

[17]nama_10r_3gva

[18]nama_10r_3empers

Map 2.2: Example of a Synthetic Indicator



Important consideration regarding interpretation of Synthetic Indicators

It is important to remember that the selection and combination of indicators building a synthetic indicator impacts the interpretation of the value of the indicator. The interpretation of the value of an indicator in one region, especially compared to values in other regions, is due to the *combined* effect displayed by the indicators. As the aggregate value of the indicator per region is composed of a selection of sub-indicators, a clear relation has to exist between the individual components. The weighting of the individual components depending on the policy preferences of the policy maker also play a significant role in the final value allocated to a given NUTS-3 region.

The above difficulties can be illustrated with two examples:

- Indicator *Innovation:* The indicator is composed of two sub-indicators, growth in patent registrations at the EPO and trademark registrations.
- Indicator *Sustainable Tourism:* The indicator is composed of three sub-indicators, growth in overnight stays, area of NATURA 2000 sites and seasonality in tourists (measured by the distribution of tourists over a given year and inverted).

In contrast with the indicator *innovation*, the indicator *sustainable tourism* is composed of sub-indicators which can move easily in opposing directions. With large numbers of tourists coming into a region during summer months, the seasonality may increase. This is reflected by an increase in the component overnight stays, but a decrease in the component seasonality

(conversely, this trade-off may also occur if more tourist overnight stays lead to a downgrading of NATURA 2000 sites due to environmental damage). As such, the value of the indicator may not necessarily change, or even may decline despite the increases in overnight stays, if the increase in seasonality is stronger.

It is important to be mindful of the relations between the individual sub-indicators, as the value allocated to a given region is the result of varying values of sub-indicators. An increase in one sub-indicator may be counteracted by an opposing development of another sub-indicator.

These interrelations between indicators take place in the "background" and are not visible on the maps, including those produced in the TEVI interface. This applies especially to indicators with less related indicators such as the indicator *Sustainable Tourism* and in case of comparing the indicators in case of programme- and EU-context where data is normalised respectively. Therefore, Synthetic Indicator maps should be used carefully while *drawing conclusions* about reasons for differences between regions. In order to better understand the differences, one has to refer to the data and analyse the differences between the values of each respective indicators, out of which synthetic indicators are built, in the regions.

Qualitative Indicators

Qualitative indicators

- Qualitative indicators can be applied to capture the results of interventions which may be difficult to picture using purely quantitative indicators. Especially the results of interventions connected to building institutional cross-border or transnational frameworks may be difficult to adequately capture using purely quantitative indicators.
- Collection of data for qualitative indicators generally involves either the inclusion of focus groups to provide an assessment of the developments and impacts of the intervention on the programme area, or a survey.
- The main advantage of using qualitative indicators is their versatility: when neither the net-impact nor the gross change can be determined by calculations, therefore the impact of the programme has to be assessed qualitatively entirely.
- The main disadvantage of employing qualitative indicators is the *lack of comparability* across programmes, but also across points in time. As the judgement which flows into creating these indicators is subjective, there is always the risk that the indicator value at the beginning of the programming period is not necessarily comparable to the one at a later point in time. Additionally, as the construction of indicators generally requires the assembly of focus groups and similar, qualitative indicators can be costly.

There are several methods for building qualitative indicators. If authorities decide to use qualitative indicators, it should be considered that the method will produce indicators which are not comparable. It is, therefore, recommended to use such indicators as complementary.

Qualitative indicators can be formulated by programme stakeholders in order to capture impacts which cannot be captured by quantitative indicators. Since measuring such indicators bases on qualitative and subjective judgement of relevant actors, it is necessary to reflect on

how data can be collected for such indicators during their definition. Below three main ways of measuring qualitative indicators are briefly described.

Qualitative indicators in a workshop setting (focus groups)

The determination of programme impacts on qualitative indicators can be made by a panel of experts in a workshop setting. Inclusion of a broad range of experts may help to provide accurate and up-to-date assessments of any potential future impacts of the intervention. However, participants should be selected depending on the need for information. Organisers should be guided by the following question: who will have the necessary information to assess the indicator. In effect, such a workshop resemble a workshop on qualitative impact assessment, given that experts will be assessing programme`s impact in regards to certain indicators. A scale, for example 0-5, should be established for judging impacts.

The workshop should include an *introductory* part, which details an overview of the indicator(s) as well as present them in the context of related intervention logics. An introductory part should also include relevant context indicators to inform expert decisions, as well as other relevant information (such as status of the funding disbursed, output indicators). Moderators should carefully select the data to be presented in order not to overload the experts, but have additional extensive data available at request for the further process.

The preferable setting of the impact assessment itself depends on the type of interventions to be assessed and the composition of the panel. If a number of indicators situated in the same or similar thematic fields, with participants mostly of experts for this field, a full panel moderated discussion on each indicator would be the advised method. In such a setting, each indicator would be presented one after another by the moderators, with data and maps made available to the participants. Any disagreement between the experts is open to discussion, ideally leading to a consensus at the end. If no consensus can be reached, the decision has to be made by voting. Record keeping of the workshop session should include clear explanations of the justifications provided.

Qualitative indicators via survey

Data for some qualitative indicators can be obtained via surveys. Surveys can be conducted via phone or online. Stakeholders can undertake them themselves or contract external services to collect the data. An online survey is often an easy solution as it provides the opportunity to reach a large number of people in a short time. An even greater advantage is that questions can be translated into any language, but the responses may be processed together. Results can be compared between different regions. However, the method also has disadvantages, and it is important that the user knows how to design an online survey to ensure reliability and validity.

The questions formulated in the survey should be able to feed data directly into the relevant indicator in an uncomplicated way. Also from the perspective of respondents, the fewer, shorter and simpler the questions are, the more likely it is that potential respondents will an-

swer. The potential respondents depend on the nature of information to be obtained. This should be actors who are more likely to have the information and provide answers for the specific questions. In order to increase the accessibility of the survey, the questions should be translated into languages of participating regions and the surveys in respective languages should be disseminated to respondents.

Example: production of qualitative indicators with a survey/questionnaire

The table below provides an exemplary questionnaire regarding cross-border cooperation.

Table 2.11: Example Format Questionnaire

Question	Rating -0-5	Explanations/Experiences
How do you assess the quality of cross-border cooperation of public sector bodies in 2018 compared to 2014?		
How do you assess the quality of cross-border cooperation of companies in 2018 compared to 2014?		
How to you assess the cross-border governance structure in 2018 compared to2014?		
How do you assess the obstacles in the field of taxes that concern cross-border workers and companies?		
How do you assess the obstacles in the field of social security that concern cross-border workers and companies?		
….	….	….

Source: ESPON TIA,CBC 2019.

Interviews

Another method for gathering information, especially when dealing with background information, is interviews with relevant persons. Interviews can contribute to more profound insights into the actual issues regarding the performance of a programme. They contribute to a thorough picture of effects, especially because the interviewees can provide information going beyond the information gained by the very formal structure of a survey. Therefore, they can be used to complement surveys.

Ideally, interviews are conducted according to the following steps:

- Set up of a list of potential interviewees
- Elaboration of an interview guide
- Indication of the interview via telephone
- Agreement of the date of the interview via e-mail
- Conducting the interview
- Writing of draft minutes
- Agreement on the final minutes with the interviewee via e-mail
- Final minutes of the interview

The questions asked during an interview should target exactly the information needed for stakeholders. As complementary to surveys, interview questions should be open in order to allow interviewees expression in their own words. Such information from open-question interview normally is not quantifiable; however, it can serve as additional insight for stakeholders.

3 Implementation

Several issues should considered with regards to territorial evidence during the implementation phase. These are presented in the following sub-sections.

3.1 Monitoring data and monitoring systems

Key points

- Output indicators can be monitored more frequently than result indicators; the latter can be measured and reported on in the final stage of projects/programmes;
- Availability of results can vary depending on the intervention area (as defined by the specific objective);
- Measurability of indicators also varies depending on, e.g. whether it is qualitative or quantitative;
- Some interim indication on whether or not results are likely to take place can be deduced from indicators;
- Monitoring system should be continuously updated with the obtained data;
- The TEVI tool can be used to visualise data from ESPON Database as well as data on synthetic indicators of twelve participating programmes;
- In case a result indicator is not unbiased, the difference-in-difference method can be used for isolating the impact of the programme from impact of other interventions.

Monitoring of a programme is about controlling the progress towards fulfilment of objectives, along the designed intervention logic. As the fulfilment of objectives is measured by indicators, controlling the progress also requires definition of baseline and target values.

- Indicators:
- financial indicators corresponding to the *input*;
- output and result indicators as well as projects implemented corresponding to the *output*;
- Target: the intended qualitative or quantitative value of an indicator after the implementation of an intervention.
- Baseline: the quantitative or qualitative value of an indicator prior to an intervention

More specifically, monitoring of the programme consists in controlling the inputs, i.e. financial data and outputs in form of projects implemented or under implementation. Ideally, along with the controlling of output and result indicator, data collection should be carried out. This, however, requires continuous data collection in order for programme bodies to have up-to-date information.

In terms of programme monitoring, both output and result indicators have different functions (see section 2.3.2). Output indicators report the immediate and direct products of an intervention, while result indicators measure its effects and a certain short-time (as opposed to long-term effects, i.e. impacts) time-lag between intervention and manifestation of the expected effects (results). Due to the nature of these two indicators, it is to be expected that output indicators can be monitored continuously, unlike result indicators which can only be monitored after closure of an intervention.

It is important to note that the **availability of results may significantly vary across actions of different kind**. For instance, in case of incentives for R&D activities of private companies, where the result indicator could be represented by the change in the number of patent applications, their achievement can be expected to occur in the medium-term (because the process of creation of new knowledge takes time). Therefore, trying to measure this result in the very short period could lead to misleading conclusions, since the observed change in the result indicator would be probably due to factors exogenous to the programme intervention. Other types of actions, for instance incentives for international cooperation of firms, would probably lead to measurable results on a shorter period. If the result of such action is measured in terms of change in international trade, the result can be expected to be measured in the short or medium run. Objective and generalisable guidelines addressing issues related to the decision of the level at which the result indicator should be measured (see section 2.3.5) and to the definition of the temporal horizon do not exist. This decision has to be carefully evaluated by policy makers on the basis of objective parameters. Recalling the examples above, for instance, the average time for patent applications to be submitted could represent a temporal threshold after which result indicators can be meaningfully analysed and interpreted.

As soon as data is available, it should be entered into the monitoring system. While data from projects can be obtained directly and immediately after being reported, data from statistical offices there may be a time-lag before data is made available. For this reason it is recommended to consider this while selecting indicators as well as to collaborate directly with the statistical authorities in order to have a better overview of data availability. With a monitoring system including up-to-date data, programme authorities will be able to proactively influence and steer the programme to achieve set target, for example through performing gap analyses and targeting calls for projects.

Useful Interact literature

- Publication Q&A Indicators and data collection (2017) – Link
- Presentations project monitoring and reporting (2019) – Link
- Presentations on eMS – future of the Interreg monitoring system (2019) – Link
- Presentations eMS (2016) – Link
- Presentations: AIR and Performance Review – (2019) Link

3.2 Targeting calls for projects and selecting projects

Key points

- Gap analyses are recommended to examine which specific objectives are underrepresented and favour such projects.
- Programme authorities can target projects by ensuring that:
- Project intervention logics is aligned with the programme intervention logic; including that the project results will contribute to the foreseen programme results
- Projects select and measure appropriate output and result indicators;
- If measurement of result indicators by projects is not reasonable, project managers should reflect on how the project contributes to the results;

ETC programme interventions are essentially the projects funded by those programmes. For this reason it is crucial that programmes monitor the extent to which selected projects contribute to the progress towards programme objective. Based on such monitoring gap analyses can be performed. Moreover, alignment of projects with programme should be safeguarded by ensuring that the projects are aligned with the intervention logic of the programmes. In other words, in order to ensure the impact of the programme, project aim(s) have to have a clear and direct contribution to the objective(s) of the programme. This contribution should be clearly measurable by the output and result indicators selected by the applicant from the shortlist of programme indicators.

Gap analyses

Gap analyses can be undertaken based on the above-described monitoring. In an ideal situation, data on output and results is available during implementation of the programme. If this is not the case, assumption that project activities in selected specific objectives will contribute to achievement of project outputs and results in regards to these objectives has to be made.

Based on the monitoring of inputs (financial data) as well as the projects which are currently under implementation, programme authorities can then identify whether certain intervention areas of specific objectives are underrepresented. For most accurate gap analyses, this should also involve monitoring the output and result indicators in relation to target and baseline values.

The results of gap analyses should be clearly communicated to potential project applicants so that they can tailor their intervention logics to fit into the specific needs of the programme.

Useful Interact literature

- Presentations – connecting the dots: efficient preparation of last calls (2019) – Link
- Presentations – let`s capitalize! (2019) – Link

Alignment of programme and project intervention logics

In theory, if the programme intervention logic has been properly constructed, there should be little discrepancy between programme and project intervention logic. This is because programme objectives should target the needs of the programme area (in a top-down view); if that is the case, projects ideas that originate within the programme area naturally tackle these needs (from a bottom-up perspective). In practice, however, the coherence between programme and project intervention logics should not be taken for granted.

ETC programmes bring together the top-down and bottom-up approach. For this reason programme stakeholders share the control over what type of interventions are undertaken with project applicants who propose those interventions. In other words, programme stakeholders can only selected project from the pool of project ideas submitted.

There is several ways in which programme stakeholders can ensure the alignment of programme and project intervention logics through targeting the calls for proposals, in relation to the result indicators.

Via the application forms as well as respective guidance, programme stakeholders can make sure that applicants properly link their projects with the intervention logic of the programme. This can be done in a through, at the same time:

- Providing a precise description of the project's contribution to programme objectives; and
- Selecting appropriate output and result indicators from programme indicators, and making sure that they appropriately measure project outputs and results.

While the two elements are an obvious requirement for a project application, this requirement is often fulfilled in theory but not in practice. Projects often fail to position themselves within the programme intervention logic, exposing shortcomings in either one or both of the above-mentioned requirements. In order to better target projects, programme stakeholders can remedy this problem by providing guidance on alignment of programme and project intervention logic as well as apply strict criteria on this alignment during selection phase.

Requirements on outputs and results

Project applicants may be further required to provide a more detailed description and evidence of outputs and results of the projects.

Stronger emphasis may be placed on reporting achievement of outputs or contribution to results. If it is possible and sensible, project partners should be requested to report on result indicators in order to emphasise the direct link between projects and expected results of the programme.

Should programme authorities decide that projects are unable to report on result indicators, some reflections could still be required on the selected result indicators. Project applicant should be able to foresee how exactly the project outputs could constitute a contribution to results and to the relevant result indicator. Investigating whether or not such contribution has taken place is the function of programme evaluations. Nevertheless, through such an exercise project applicants will be able to understand the overall expected contribution of the project to the results of the programme.

Useful Interact literature

- Project communication (2018) – Link

4 Closure

During the closure of the programme, territorial evidence is essential for evaluating whether the programme has met its objectives. Sound result indicators are key to performing evaluations. There are several net impact calculation methods suggested, including quantitative as well as qualitative methods.

4.1 Result indicators as basis for evaluations

Key points

- The soundness of result indicators can directly impact the quality of evaluations given that result indicators are an important tool of evaluations;
- In order to strengthen the evidence base for evaluations, programme stakeholders can adjust the design of project reports as well as request additional reporting from project managers.

The soundness of result indicators is directly linked to the quality of evaluations which rely on the evidence provided by the indicators. The principles presented are largely overlapping with principles of evaluations, as laid out in EC Better Regulation Guidelines. Evaluations "aim to inform policymaking by assessing existing interventions regularly and ensuring that relevant evidence is available to support the preparation of new initiatives ("evaluate first" principle)" [19].

According to the Guidelines, "Evaluation is an evidence-based judgement of the extent to which an existing intervention is:

- Effective;
- Efficient;
- Relevant given the current needs;
- Coherent both internally and with other EU interventions; and
- Has achieved EU added value."[20]

Both evaluations and result indicators follow similar line of reasoning regarding interventions. The purpose of result indicators is to properly measure the intervention, while the purpose of evaluation is to evaluate its impact. Result indicators, thus, are an important tool for evaluations and the more accurately they can measure the effects of interventions, the more evaluations can rely on them in order to obtain meaningful results.

[19] European Commission (2015): Commission Staff Working Document, Better Regulation Guidelines, SWD (2015) 111 final, 19.5.2015.

[20] European Commission (2015): Commission Staff Working Document, Better Regulation Guidelines, SWD (2015) 111 final, 19.5.2015.

In order to have a strong evidence basis for evaluations, the result indicators should be regularly populated with data. It is, therefore, recommended to require project partners to report on not only output indicators but also result indicators whenever possible. In order to facilitate this process, project reporting can be designed towards targeting information relevant to understanding the results of the programme, thereby facilitating interventions. For example:

- Project reports can be designed to feed into evaluation requirements;
- In addition to programme indicators, project reports can foresee collecting of data for other indicators (e.g. for environmental evaluations) as well as target groups reached.

Especially ex post impact evaluations should focus on the evidence provided by the result indicators as these indicators can provide a statement on the achievements via the causal chains within the intervention logic. By the time of an ex post evaluation, data for result indicators should be available.

Useful Interact literature

- Publication Q&A Evaluation (2016) – Link
- Presentation impact evaluation (2015) – Link
- Presentation Theory Based Impact Evaluation: Methods, Simon Pringle – Link

4.2 Net impact calculation methods

As addressed in section 2.3.3, once a result indicator is available, it is very important to ensure that it informs about the effect of the intervention it was aimed to measure. For that purpose, within the effect measured, it is important to isolate the net effect of the intervention from effects of other interventions, thereby closing the “attribution gap”.

Three methods are proposed to establish net impact. The first one, Difference-in-Difference (DiD) method is quantitative and statistically quite complex. As alternatives, two other less complex and qualitative/semi-qualitative methods are proposed: the “small scale counterfactual” approach and the MAPP approach. The former is a similar method to DiD as it also involves comparison of treated and control groups. It is, however, based on processing much less complex data and involves qualitative data. The latter, the MAPP approach, can be used to isolate the net impact based on the funding allocated to a specific measure by the programme.

4.2.1 Difference-in-difference Method

Key points

- Applying Difference-in-Difference (DID) methods allows for the identification of a “pure”, causal effect of the intervention on the programme area. Via the identification of the causal effect, several other effects of the intervention on the programme area can be identified; This way, regions in which the intervention took place can be compared to similar regions in which the intervention did not take place (i.e. no projects were funded).
- Applying DID techniques necessitates the collection of sufficient data (i.e. the indicators of interest over a time-period from the beginning of the intervention to the present) of the treatment group (regions where the intervention took place) and the control group (region

where the intervention did not take place). Further, statistical software is required to compute whether a significant difference exists between the treatment and control group.
- The main advantage of applying DID techniques is the identification of the causal result of the intervention on the programme area, taking other effects (such as displacement effects) and externalities into account. This provides a clear picture of the results of the intervention.
- The main disadvantage of applying DID techniques is their relative statistical complexity, necessitating statistical training and the use of adequate statistical software. Further, a control group has to be established, i.e. regions in which the intervention did not take place. If this group cannot be established, the application of DID is not possible.

An important characteristic of a result indicator is the isolation of the "pure", causal effect of the intervention, i.e. its net impact (see section Net impact of result indicators). In many cases this is not an easy task because several external and confounding factors may influence the selected result indicators. In an ideal situation, stakeholders would like to compare the change in the result indicator in a world where the policy was implemented against a world where the policy was not implemented (and identical for all the rest). The difference between the two values would be an accurate measure of the direct effect of the programme. Obviously, this is not possible. Nevertheless, the Difference-in-Difference (DID) method allows overcoming this issue.

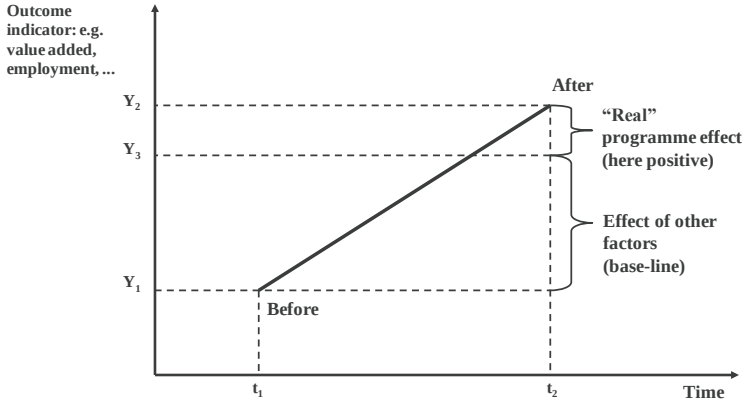
The DID technique found its first applications in the field of medicine, and an example from the medical field can be useful to understand the DID logic. In case of testing a new medical treatment, the reaction to this treatment depends on many characteristics of the patients, like age, weight, etc. For this reason, tests of this kind are often performed on couples of twins: one receiving the treatment and the other not. Since couples of twins are rare, the same test can be performed on two individuals as similar as possible in the relevant characteristics (age, weigh, etc.). If the perfect match to the treated patient is found, the two individuals can be compared and the effect of the treatment can be measured.

For instance, the case of in intervention aimed at promoting product and process innovation in the field of CO_2 reduction and sustainable energy, through the introduction of financial support for firms developing research activities in the relevant field can be considered. Sometime after the funding, the programme authority could be interested in assessing the result of the intervention by defining and measuring indicators of, as an example, patents and trademarks with relevant application for CO_2 reduction and sustainable energy. According to what was discussed in the previous sections, the choice of such indicators would be appropriate. Nevertheless, there is still an issue concerning the isolation of net impact that must be taken into account. The point is that the programme intervention is not the only factor likely to affect the propensity of firms to innovate. For instance, consumers' taste matters: an increase in the sensitivity of customers for the environmental issues could incentivise firms to adopt low-emission production processes. Also technological change is important: if new, environmental-friendly technologies are made available, firms could decide to adapt them to their

needs. If these two conditions occur, one could possibly observe a significant increase in result indicators (trademarks and patents) even if the contribution of the policy to this achievement was poor or even irrelevant, and this effect is almost entirely driven by the change in the relevant context conditions.

The DID method can be applied as in the medical case on an example, of a programme which aims at promoting R&D activities of companies in the manufacturing sector. The result indicator could be represented by the change in the number of patent applications. However, by itself, this indicator would not be very informative. If observation of a positive change is expected, it cannot be assumed that this change is due to the programme intervention or to exclude that, without the programme, companies would not have submitted the same number of patent applications.

Figure 4.1: Illustration of a DID



Source: Kaufmann/Schuh: Counterfactual Impact Evaluation.

The treatment, in this case, is represented by the intervention itself, i.e. the financial support provided to firms engaged in innovation activities. In an ideal (but unrealistic) world, one would like to observe the same firms under two distinct conditions: when they receive funding and when they do not, in order to check whether and how much the number of patent submissions would have changed. Clearly, this is not possible. Nevertheless, the treated units (the firms receiving funding) with the most similar untreated units (those that did not receive funding) can be compared. In a sense, we want to match each firm with the "twin" firm, i.e. companies which are as similar as possible. "Similarity" is defined based on all factors external to the programme intervention and having a potential effect on the programme results. For example, firms located in urbanised regions are more likely to undertake innovation activities, because the customers living in these areas are more sensitive to innovative products than those living in rural settings. If it is the case, treated and untreated units should be matched based, among other things, also on their location (urban vs rural). It can be further assumed, for instance, that the implementation of R&D also depends on the sector in which firms operate, and on its size. Therefore, the matching should associate units pertaining to the same sector and employing a comparable number of workers.

Once the matching of treated and untreated units is performed, the next step is represented by the comparison of result indicators (patents and trademarks with relevant application for CO_2 reduction and sustainable energy) separately for these two groups, in order to identify the pure effect of the treatment, i.e. of the intervention. For example, one finding may be that the change in the patent applications of untreated units is not significantly higher than the one occurred for the treated ones. This would imply that the result of the intervention is not significantly different from zero, i.e. that companies would have submitted the same number of applications without the programme. In the figure above (Figure 4.1:) this would imply that both groups of firms achieved, at time t_2, a level of the result indicator equal to Y_3. On the other hand, if the difference between treated and untreated units is positive and significant, this would provide a precise and net measure of the effect generated by the public intervention. In the figure above (Figure 4.1:) this would imply that, at time t_2, untreated units achieved a level of the result indicator equal to Y_3, while treated ones outperformed them, reaching a level equal to Y_2, or higher.

4.2.2 The "small scale counterfactual" approach

Key points

- The "small scale counterfactual" approach is a less costly and complex alternative to DID
- The approach involves less complex methods of establishing test- and control-groups.

The "small scale counterfactual" is a qualitative method analogous to DID but is less time and resource consuming than DID. It involves calculating the net-impact of the programme by comparing the actual development of a region`s values for a given indicator with a hypothetical scenario in which no actions have been taken by the programme in the region.

Unlike the proper counterfactual approach the test- and control groups are in this case not established through statistical matching methods (e.g. propensity scores, discontinuity- or pipeline approaches) but on a case-by-case selection matching funded with non-funding entities which show the same observable traits (i.e. qualities as expressed by the selection criteria of the measures which are to be assessed). This "small-scale" approach is justified by the fact that both test and control groups will be too small in reality to establish statistically sound matching methods; thus, it seems justified to compare in a DID assessment the changes over time of both the treated with the non-treated cases, which will provide a net effect of the assessed measure within the programme. As a result, this simplified method involves establishing a group of beneficiaries and a group of non-beneficiaries who are active in the same fields, enabling a comparison between the two groups. Data on the indicator(s) in question and the contribution of the groups to that has to be obtainable.

With two groups available, the change in value of respective indicators is compared and the difference between the two values represents the net effect of the programme.

4.2.3 MAPP-Method for Impact Assessment of Programmes and Projects

Key points

- The MAPP provides a statement of net impact based on the funding framework within the region;
- MAPP comprises of three elements: life curve, trend analysis which constitute a background for the influence matrix (net impact assessment); all of these elements are assessed based on expert judgement in a workshop setting;
- The method is particularly suited for analysing more complex long-term objectives that can usually not be assessed with the help of one or more quantitative indicators. It has an open context-orientated approach that allows identifying not only planned, but also unplanned impacts;
- With MAPP, a specific programme is assessed in relation to other ongoing programmes and/or other external factors. Thus net impacts can be estimated against gross development trends. It helps to bridge the "attribution gap", i.e. the gap between outcomes that can directly be attributed to a specific programme/project and higher level outcomes that are also influenced by other measures/factors;
- Its systematic approach and the use of a point system produce results of greater external validity than purely qualitative data, e.g. derived from interviews or focus group discussions.

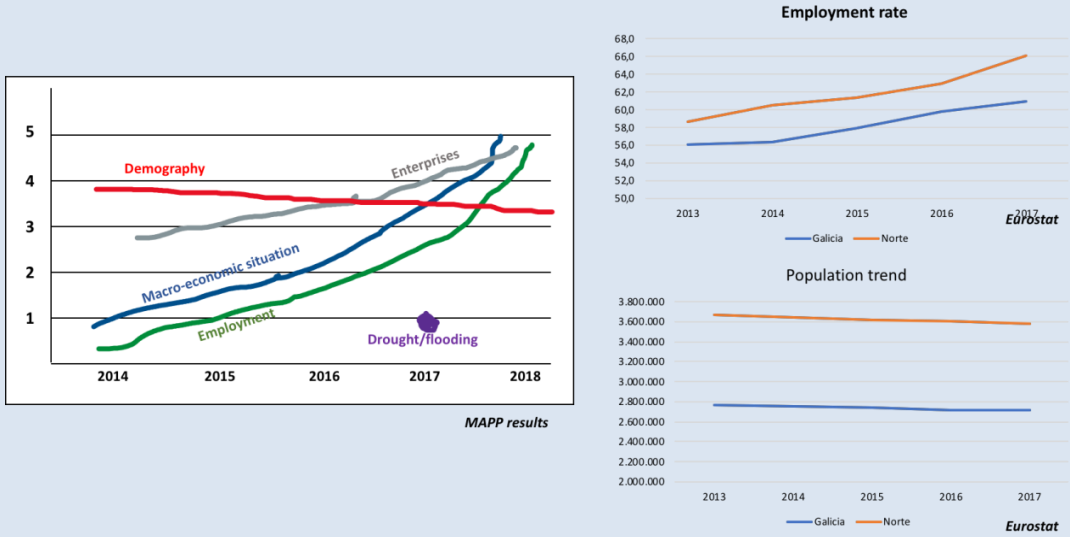
If indicators in question typically rely on various funding resources, the establishment of the funding framework for a region, via MAPP, can be used to identify the net effect. MAPP is an approach initially developed by Dr. Susanne Neubert at the German Development Institute[21]. It allows assessing impacts of interventions basing on three main elements: life curve, trend analysis, and influence matrix. The life curve sets the context for the assessment, the trend analysis shows the *overall* trends of different indicators (i.e. irrespective of any specific programme), while the influence matrix, basing on the two previous elements, constitutes the assessment of *net* effects based on the funding framework involved in the region. All of these tools use a point system (from 1 to 4) and are based on expert judgement. MAPP, thus, should be ideally conducted in a workshop setting. The three elements are described below.

Life curve shows the overall development trends (based on indicators to be selected by the group, e.g. employment) in the cooperation area along a certain time-frame, beginning before the programme started and ending at present. Participants should be asked to assess the development of each indicator each year according to a five point scale. These assessments can be supported by data on such indicators if available. Exemplary life curve is presented below.

[21],https://www.die-gdi.de/en/

Example: Life curve

Figure 4.2: Life curve produced in ESPON CBC TIA project



Source: ESPON CBC TIA, 2019.

Trend analysis is a matrix, detailed development trends on the TIA indicators are assessed over the same time period. Participants should be asked to score each indicator from 1 to 4 for every year and for every region, giving a general trend from the first to the last year as a gross magnitude. The regions for that purpose have to be defined by the participants, i.e. if NUTS3, any other administrative regional differentiation, or any functional regions the participants define themselves. A part of an exemplary trend analysis is provided below.

Example: Trend analysis

Table 4.1: A part of trend analysis from CBC TIA project

Trend analysis	Year Trend					
	2014	2015	2016	2017	2018	2014-18
Improve the participation of the business sector in innovation processes and R+D+i activities closer to the market (1B)						
No of companies that cooperate with research centres	1	1	2	3	3	+
Joint projects developed between enterprises and institutions	1	2	2	3	3	++
No of beneficiary companies that introduce new products for the company	1	1	1	2	2	+
Increased number of enterprises that have invested in R+D+i	1	1	1	2	2	+
Size of investments by companies in R+D+i	1	1	2	3	3	++
Improve the necessary and favourable conditions for the appearance of new business initiatives (3A)						
No of services for enterprise development created or supported	1	1	2	2	2	+
SME/companies with cross-border business	2	2	3	3	3	+
Enterprises created/improved in the cooperation space (of which by young/unemployed/social economy)	2	2	3	3	3	+
Companies that offer professional internships	1	1	2	2	2	+

Source: ESPON CBC TIA, 2019.

Influence matrix represents the net-impact determination, putting the programme up against other factors influencing the development of an indicator, with consideration of the background provided by the live curve and trend analysis. These can be other funding programmes (EU, National or private) as well as non-funding related developments. This method can be used either for qualitative assessments (where the influence value is taken into account when making the magnitude judgement from the trend analysis) or for semi-qualitative assessments (where the influence value is multiplied with the gross development). The development of the influence matrix has to be done in close cooperation with actors who have best understanding of other funding schemes available in the programme area. An exemplary influence matrix is presented below.

Example: Influence matrix

Table 4.2: Sample influence matrix

Influence matrix	CBC	ERDF	EAFRD	National	Others
Size of investments by companies in R+D+I	5%	40%	0%	25%	20%
Joint products related to historic, cultural and natural heritage developed	10%	35%	35%	0%	20%

Source: ESPON CBC TIA, 2019.

For given indicator, the total amount of funding available to the region is determined in the influence matrix. The share of the programme then constitutes the share of the gross impact of the programme. If no other funding scheme is available and the impact is likely to be based on funding for the most part, the gross impact can be considered as the net impact.

The problem with this approach is likely to be the data availability on a regional level. While for some funding schemes this is readily available, data availability and quality might vary significantly between countries. Additionally, the scope of the funding would have to be matched with the programme, which will only be possible for certain kinds of indicators.

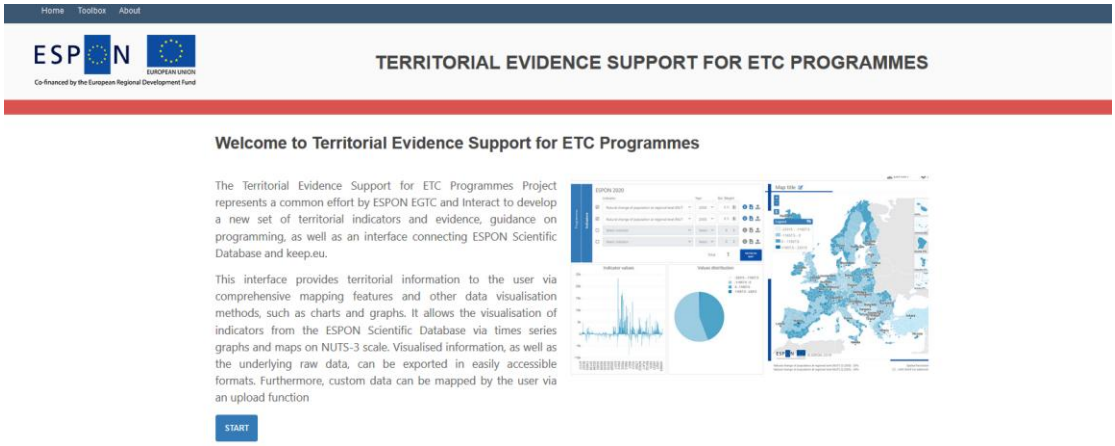
5 Technical guidance on the TEVI interface

Link to the ESPON TEVI Interface

The prototype tool can be accessed via the following link: http://82.223.5.80:3000/

The TEVI interface features a two-screen layout, with a welcome screen as the default point of entry to the web and a main screen with the functionalities of the tool. This way, in case of future integration with keep.eu website, welcome screen can be dropped and the main screen can be easily integrated as a new tab in keep.eu web application.

Figure 5.1: The welcome screen of the TEVI Interface



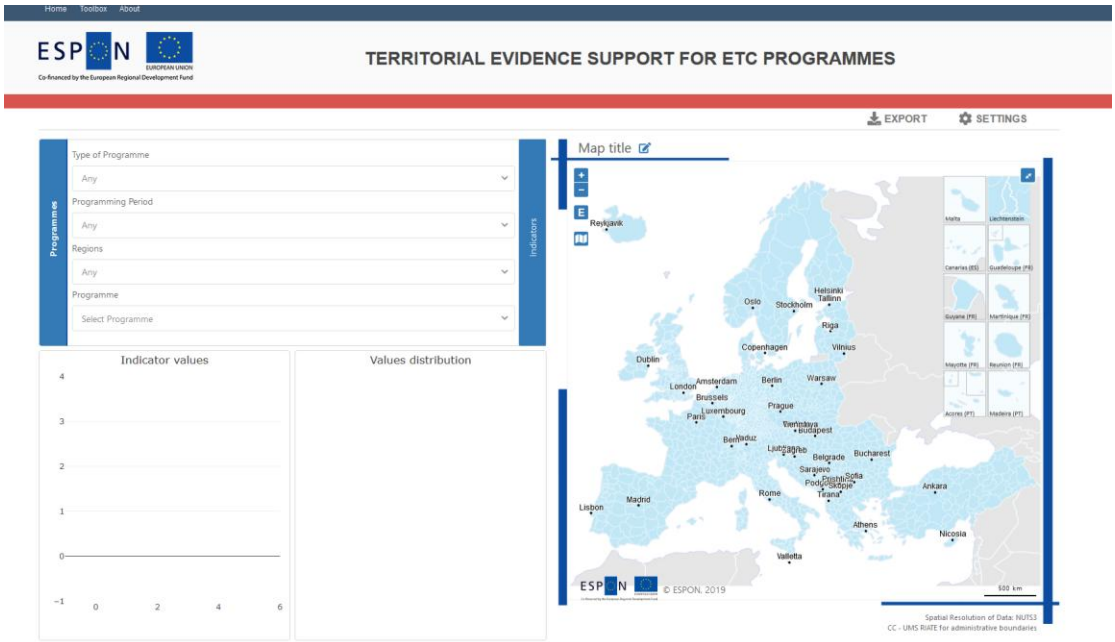
Source: Consortium, 2019.

The welcome screen features a text explaining the user the general aim of the tool and a "continue" button which will lead them to the main screen.

5.1 Interface features

The user can select an INTERREG programme from a dropdown list. Filters such as programme type, period or others are included to narrow the list to a more user-friendly size. Set of regions can be selected here, too.

Figure 5.2: The TEVI interface

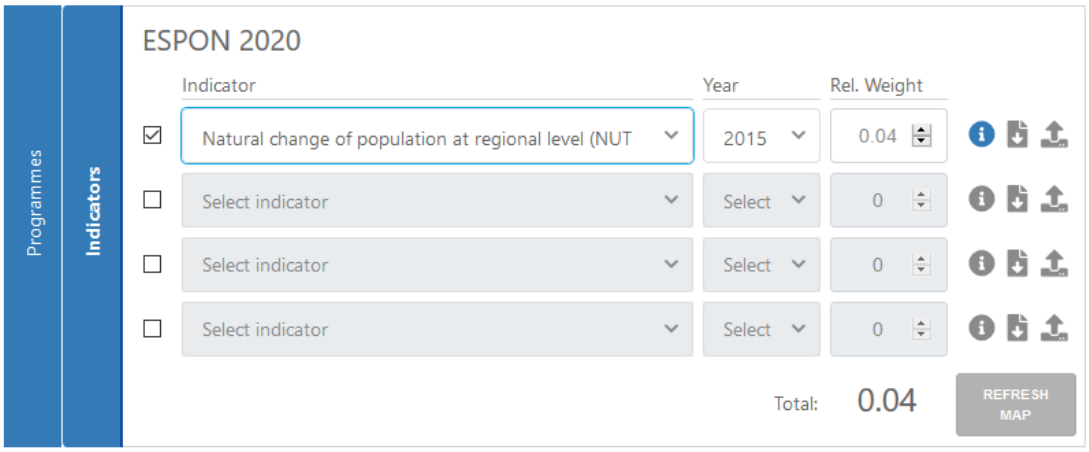


Source: Consortium, 2019.

Once programme is selected, user needs to select relevant indicators. An indicator selector shows up, with an "Add" button that will allow the user to add more (up to four indicators) which will add below another selector with its "delete" button.

Finally, the user can select what they want to visualise in the map/charts, either a single indicator (marked by the radio button next to each selector) or a combination (such as aggregation, correlation or any other that will come up in the future) of several of them.

Figure 5.3: Indicator selection



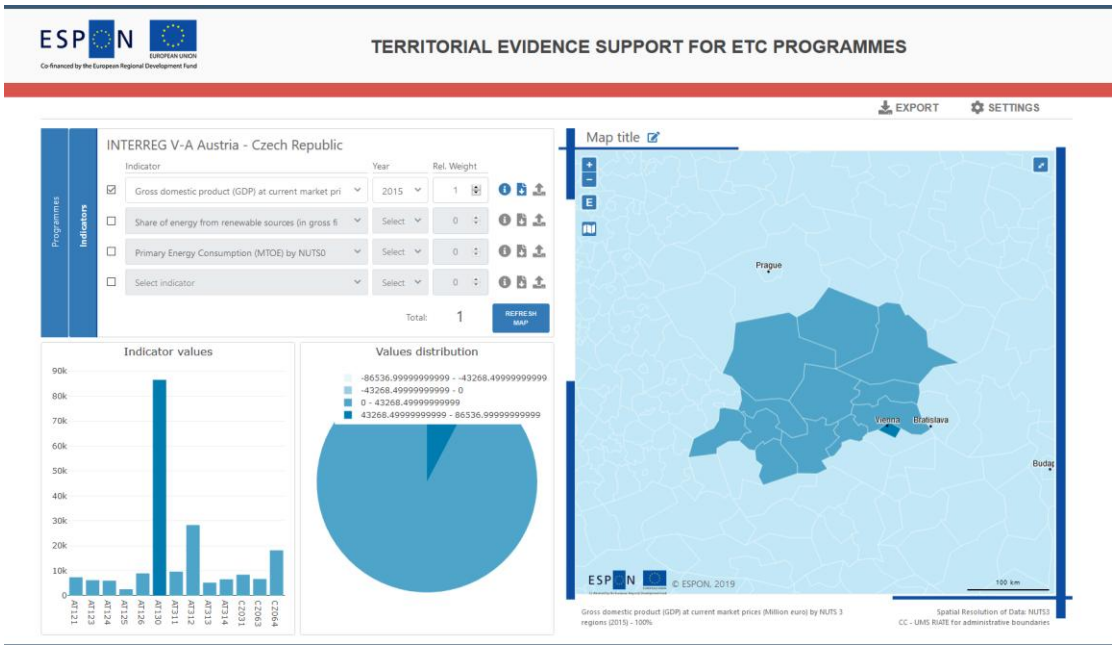
Source: Consortium, 2019.

The user can select the weighting of the indicator by adjusting the number in the “rel. weight” field. A sum of all weights is printed below the fourth row, indicating whether the sum of individual weights exceeds one. The weight can be changed by clicking the arrow fields at either side of the indicator

By clicking the buttons to the very right of the relative weight button, the user has the possibility to view information on the indicator, download the data, or upload an indicator of their own choosing.

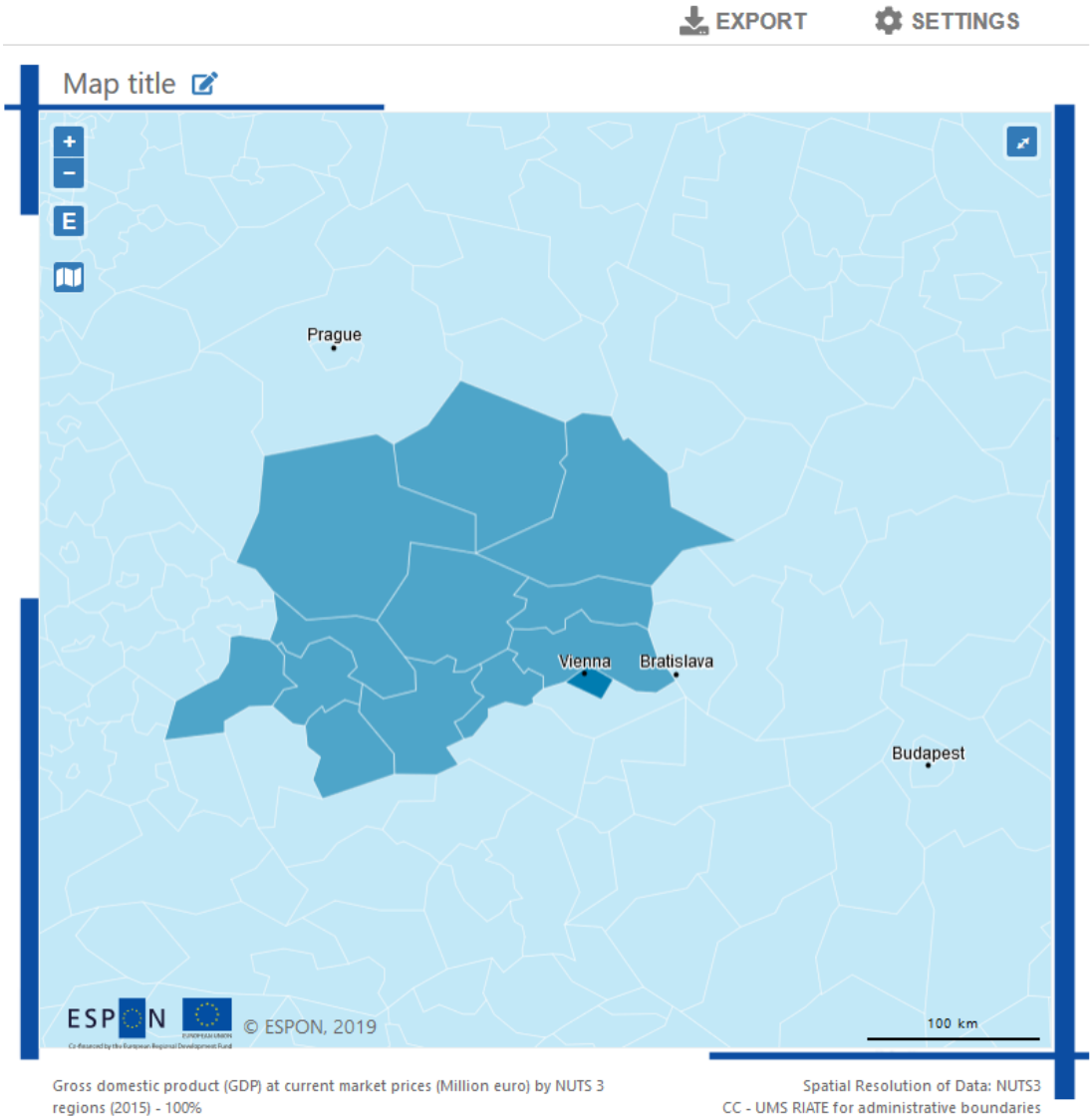
This area to the bottom left shows a chart with a time series of all regions average. Charts are clickable, and selecting a particular data will show the detail of the selected year/period on both the charting area and in the map area. Several charts are shown in this area to better visualise the data, including a time-series showing the evolution of the indicator's data by year/period. Clicking a year /period on this chart shows its detailed data in the other charts, as well as in the map. Map shows show the regional data of the selected indicator/combination and year/period. The usual map features, such as legend, zoom, pan, region highlight with data details and region selection, are available.

Figure 5.4: Indicator visualisation



Source: Consortium, 2019.

Figure 5.5: Mapping area of the interface



Source: Consortium, 2019.

Above the map area, several functions will be available to the user, such as map/chart exporting, sharing and any other it will come up in the future.

A legend will be shown, which can be exported via the tool, to let the user identify indicator selection at a later point in time.

- Settings: To select the colour scheme, with various settings. Colours and colour ranges can be selected, as well as their respective breaking points.
- Export: To export the map or the charts into a .pdf or .png.
- Share: To share a link with the specifications through mail or social media (twitter, Facebook or Google+).

6 Using data for public relations

Result indicators deliver valuable statements on the effects of interventions from which their successes can be derived. It is important to bear in mind, however, that the overview of the actual performance of interventions can be obtained only through evaluations. The information about the actual effects of programmes in respect to specific objectives is still very relevant to the performance of the intervention, even though it does not provide a full picture of its performance. Therefore, it can be beneficial for stakeholders to use result indicators in order to promote and disseminate the information about the successes of the programme.

In that respect, result indicators are much more informative about successes than output indicators. Output indicators are information about the products of interventions which do not necessarily have to be connected with effects or successes of an intervention (even though, ideally, such a connection should be present). Result indicators are more powerful in that aspect.

Once data for result indicators is available, it can be communicated to various audiences and via various channels in order to promote the programme. For the purpose of communicating to larger, general audiences such as citizens and potential future beneficiaries, information can be shared on the website and social media portals. Separate documents summarising the results, such as electronic leaflets, can be developed and made available for download from website and social media. The information on achieved result indicators can be supplemented with information on output indicators.

In addition, information obtained from result indicators can be easily used for internal reporting within the programme bodies, especially the Programme Committee. Given that such data is quite accurate in mirroring the effects of programmes, it can serve as a valuable input to understanding the effects and impacts of the interventions even before evaluations are available. As such, it can greatly facilitate programming and selection of future intervention areas based on previous successes.

The keep.eu interface tool allows for comprehensive data mapping on programme level at NUTS-3 scale. Programme stakeholders may select the desired indicator to map from the ESPON Scientific Database. In addition, these indicators may be weighted and aggregated to construct individual synthetic indicators. By providing a large degree of flexibility in terms of indicator selection, this tool may allow stakeholders to provide ad-hoc maps for internal political reporting and public relations. Further, the tool allows the visualisation of custom data, such as output indicator values on NUTS-3. This feature can provide additional options for internal and external reporting requirement of the programme.

Useful Interact literature

- The Communication Toolkit Version 3.0 (2019) – Link
- Communication of capitalisation in Interreg (2017) – Link
- Presentations: Let`s capitalise! (2019) – Link
- Social media trends in Interreg (2018) – Link
- EC Day 2018 evaluation (2018)

7 External services and training requirements

As can be implicitly understood from the information provided in the guidelines, working with result indicators is more challenging than working with output indicators, especially if the ambitions are to work with powerful result indicators. Starting from selection of result indicators, through possible building of custom indicators to data collection, programme stakeholders may need external help either through providing external services or training to stakeholders. External services/trainings may be beneficial in relation to:

- Programming: building of intervention logic and selecting result indicators;
- Conducting sensitivity analysis or TIA;
- Building custom result indicators;
- Collecting data for custom result indicators;
- Providing evaluations, net impact assessments.

At the programming phase, programmes may request external service providers to aid them with indicator selection, either within a programming contract or separate from it. At this stage, external service providers with expertise in ETC programmes and result indicators can help select appropriate result indicators. It is recommended to contract external help for the programming given that this would ensure selection of result indicators along the intervention logic. Service providers may be asked to not only select appropriate result indicators given the criteria for indicator selection as discussed in section 2.3, but also build more sophisticated indicators with methods presented in section 2.3.7. Subsequently, it may be recommended to contract experts to collect quantitative and/or qualitative data for the selected result indicators if it is beyond the capacity of stakeholders.

In some cases it also makes sense for stakeholders to organise trainings on the use of result indicators. Even if external experts are contracted to provide some work, it is still beneficial that stakeholders are trained on the same issues. Training on the underlying methodologies applied by external contractors to distil net-effects or construct result indicators may help the Managing Authority to steer the process in a more efficient manner. Comprehensive understanding of the underlying methodologies may provide options to tailor the output of external contractors during programming sessions and foster further learning effects. In addition, adequate training in these methods increases the knowledge base at the Managing Authority, thus potentially reducing long-term requirements for external expertise.

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8 Annex

8.1 Multi-Criteria Analysis (MCA)

Multi-Criteria Analysis as a tool for impact assessment

Multi-criteria analysis and decision support methods are rooted in the scientific tradition of operations research. They follow the spirit of procedural rationality (in the sense of Simon, 1982[22]) and allow the analyst to take into account conflicting, multidimensional, incommensurable and uncertain effects of decisions and actions. In general, an MCA presents the following features:

- There is no solution optimising all the criteria at the same time and therefore the decision maker has to find compromise solutions.
- The statement of preference and indifference is not enough in this approach, because when a measure is better than another one according to some criterion, it is usually worse in relation to others, so that many pairs of measures remain incomparable with respect to establishing a dominance relation.

"The principal aim in multiple criteria decision aid and analysis is not to discover a solution, but to construct or create something which is viewed as liable to help an actor taking part in a decision process either to shape, and/or to argue, and/or to transform his preferences, or to make decisions in conformity with his goals." (Roy, B. 1990)[23]

At first sight a multi-criteria problem is mathematically ill defined. The consequence is that a complete axiomatisation of multi-criteria decisions is quite difficult. MCA methods try to overcome this obstacle by adding information to the analysis, thus helping to enrich the picture and producing comparability. This additional information has to be gathered from the decision maker/stakeholder in the form of preferences, weights and decision patterns. Of course it has to be admitted that this additional information is strictly subjective and therefore strict rationality of choice is not assumed. Still, by applying this method the demand for introducing explicit value statements into the evaluation will be met without leaving the premises of scientific methodologies. Another advantage of this procedure will be the visualisation of goal conflicts between different stakeholders and decision makers as well as trade-offs between different success criteria of a political programme.

[22] According to Simon, 'behaviour is procedurally rational when it is the outcome of appropriate deliberation whereas procedural rationality depends on the process that generated it. Procedural rationality characterises decisions in domains that are too complex, too full of uncertainty or too rapidly changing to permit the objectively optimal action to be discovered and implemented' (Simon, H.A. (1982), Models of Bounded Rationality, Cambridge, MA: The MIT Press.).

[23] Roy, B. (1990), 'The Outranking Approach and the Foundations of ELECTRE Methods', in Bana E. Costa and A. Carlos (eds), Readings in Multiple Criteria Decision Aid, Berlin/Heidelberg/New York/Tokyo: Springer-Verlag.

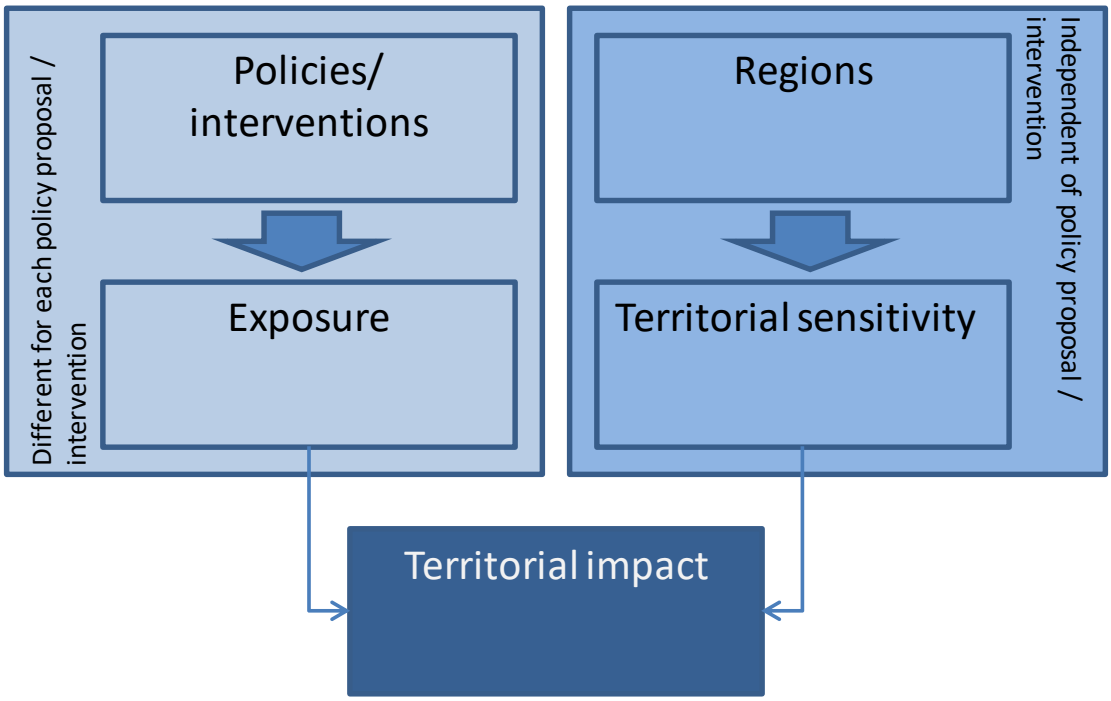
8.2 TIA Tool

Methodological background

The TIA Tool bases on the vulnerability concept (see Figure 8.1) developed by the Intergovernmental Panel on Climate Change. The effects deriving from a particular policy measure or interventions (exposure) are combined with the characteristics of a region (territorial sensitivity) to produce potential territorial impacts. In the TIA Tool the following definitions are used:

- The *exposure* describes the intensity by which EU policies or interventions potentially affect European territory through a double logical chain. On the one hand single interventions may affect specific classes of regions (regional exposure), without reference to the specificity of each region; on the other hand they may affect particular "fields" of the territorial realm, e.g. surface water quality, emissions, sectoral production (field exposure);
- The (territorial) *sensitivity* describes how single territories/regions are subject and evaluate impacts in specific exposure fields, due to their socio-economic and geographical characteristics and to the social values and priorities they are likely to show;
- The *territorial impact* is the final, likely effect of a given EU policy or directive as a product of exposure and regional sensitivity. The impact can be direct or indirect along specific cause-and-effect logical chains.

Figure 8.1: The concept of vulnerability



Source: ESPON TIA Tool, 2019.

The territorial impact is the product of the intensity of the exposure as estimated by the participants of the workshop and the pre-defined regional sensitivity for each region. The maps show potential territorial impacts based on a combination of the expert judgement on the "exposure fields" (indicators) with the territorial sensitivity of a region, described by an indicator on NUTS3 level. While expert judgement on the exposure field is a qualitative judgement (i.e. strong advantageous effect on territorial welfare/weak advantageous effect/no effect/weak

disadvantageous effect/strong disadvantageous effect), the territorial sensitivity is reflected by the quantitative indicator value.

The intensity of exposure is assessed by expert judgement, through the identification of the systemic picture along the fields of exposure. Expert judgements are converted into respective numerical exposure values (e ϵ {-1.5, -1, 0, 1, 1.5}). The regional sensitivity (s) is given by a sensitivity indicator. For all regions included in the typology, the indicator is normalised to be in the range of 0.75 to 1.25. There are three different options for the normalization of the data provided: Z(0-100), Z(10-90) and Log.

Based on the normalization the territorial impact (i) is calculated to be the product of the numerical value for the intensity of the exposure estimated by the experts and the normalised values for regional sensitivity ($i = e * s$). As a consequence the final scores depicting the impact are continuous and in the range of -1.875 to +1.875. These impact scores are then mapped to four positive or negative classes (plus the 0 class, indicating no exposure): minor impact (|i| ϵ [0;1]), moderate impact (|i| ϵ [1;1.2]), high impact (|i| ϵ [1.2;1.5]) and very high impact (|i| ϵ [1.5;1.875]).

8.3 Difference-in-difference

The quantitative approach to DiD – matching methods

To estimate the causal effect of a policy intervention means to compare “before” and “after” outcomes, yet, the economy moves around. – Thus it is necessary to include a control group – yet, individuals are different in observed and unobserved characteristics. The answer to this are matching approaches for assessing the counterfactual:

The goal is that beneficiaries should differ from non-beneficiaries only in one major way (towards the outcome of interest) – that they are non-beneficiaries. Therefore statistical approaches are needed, that identify in a (hopefully quite large) group of non-participants those units who are similar to the participants in all relevant pre-treatment characteristics (X). The simplest method of matching compares units (people, etc.) along important characteristics (observables) and then matches very similar units to pairs. In order to use the two groups (test- and control group) in DiD, matching tries to minimise the selection bias on observable variables. Matching assumes that there is no selection bias based on unobserved characteristics. Matching algorithms (kernel, nearest neighbour, stratification matching, caliper and radius matching) differ not only in the way the neighbourhood for each treated individual is defined, but In small samples the choice of the matching algorithm can be important, where usually a trade-off between bias and variance arises. there is no “winner” for all situations and that the choice of the estimator crucially depends on the situation at hand.

The performance of different matching estimators varies case-by-case and depends largely on the data structure at hand. To give an example, if there are only a few control observa-

tions, it makes no sense to match without replacement. On the other hand, if there are a lot of comparable untreated individuals it might be worth using radius/calliper matching.

As for the parameters of matching the following principles have to be taken into consideration:

(1) Conditional Independence Assumption (CIA)

There is "selection on observables" and participation is independent of outcomes once we control for observable characteristics (X)

- The CIA will be satisfied if X includes all of the variables that affect both participation and outcomes.
- Theory and institutional knowledge can indicate whether the CIA is likely to hold for a given X.

In probability theory, two events *R* and *B* are *conditionally independent* given a third event *Y* precisely if the occurrence or non-occurrence of *R and* the occurrence or non-occurrence of *B* are independent events in their conditional probability distribution given *Y*. In other words, *R* and *B* are conditionally independent if and only if, given knowledge of whether *Y* occurs, knowledge of whether *R* occurs provides no information on the likelihood of *B* occurring, and knowledge of whether *B* occurs provides no information on the likelihood of *R* occurring.

(2) Common Support Condition

We compare comparable individuals

- The support condition ensures the existence of untreated observations that "look like" all the untreated observations in the population.

Examples of matching approaches may be:

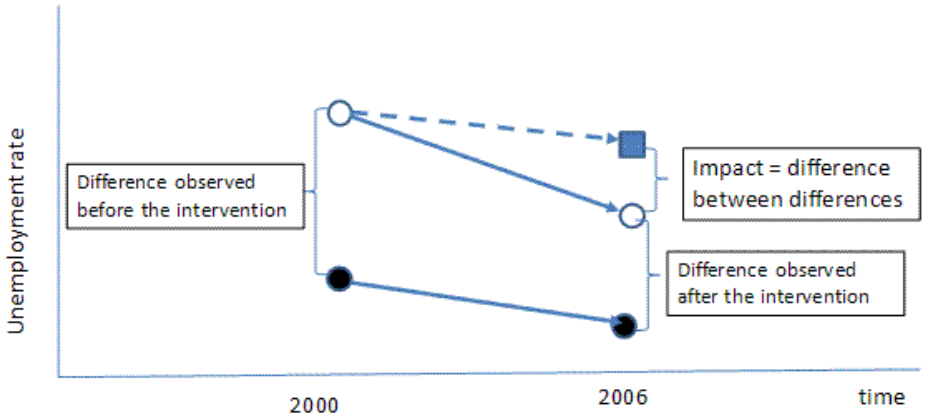
- Propensity Score Matching
- Discontinuity design
- Pipeline approach
- Instrumental variables

Example: Difference-in-difference

Difference-in-difference can be applied to identify causal impacts of interventions over the course of time. It is an especially useful method to analyse indicators which may be subject to externalities of the general economic situation, e.g. (un)employment rates. In the case of unemployment rates, for example, externalities (e.g. macroeconomic shocks) may impact the value of a certain indicator, as well as its development over time in relatively strong manners.

In the example below, unemployment rates of beneficiaries and non-beneficiaries of training measures in the Austrian ESF 2007-2013 were compared and analysed to distil the causal effect of the intervention. In the case of the example, the treatment group refers to the individuals who received training funded by the ESF. The choice of non-treatment group was relatively more difficult. For the analysis to produce accurate outcomes, the non-treatment group has to fulfil approximately similar characteristics as the treatment group.

Figure 8.2: Example of the development of beneficiary and non-beneficiary groups



Source: Kaufmann/Schuh: Counterfactual Impact Evaluation

= Development of beneficiaries of an intervention

= Development of non-beneficiaries of an intervention

The relationship can be formally described as the following:

$$\Delta_{B-A} = E + O_{B-A}$$

$$\Delta_{B\text{-}A} = E + O_{B\text{-}A}$$

In which

$\Delta_{B\text{-}A}$ is the difference between beneficiaries and non-beneficiaries,

E the real, but not identified impact of the intervention,

$O_{B\text{-}A}$ different changes (e.g. due to the macroeconomic setting).

In general within counter-factual analyses, two approaches can be applied:

(i) Use of non-beneficiaries of a measure, or

If these are not available, use of data on the performance of similar population groups before participating in the measure (the pipeline approach). Some care has to be paid in the interpretation of the results, however.

8.4 Normalisation

Comparing indicator values via normalisation

The use of synthetic indicators as a means to measure results of policy interventions more appropriately, necessitates their aggregation and respective weighing. One of the primary issues when aggregating the sub-indicators after their individual weighing concerns the scale of the sub-indicators which may hinder comparability and explanatory power of the final synthetic indicator. Take for instance the synthetic indicator presented in Table 2.10:

Table 8.1: Weighting of indicators

Result indicator	Value	Weight (no priority among the different objectives)	Weight (priority for increasing attractiveness)
Overnight stays in the region	a	0.33	0.50
Seasonality in tourism	b	0.33	0.25
Number of Natura 2000 sites	c	0.33	0.25
Synthetic indicator		(a*0.33)+(b*0.33)+(c*0.33)	(a*0.50)+(b*0.25)+(c*0.25)

Were one to simply aggregate the weighted sub-indicators *overnight stays in the region* (sub-indicator a)*, seasonality in tourism* (sub-indicator b), and *number of Natura 2000 sites* (sub-indicator c), due to the different scales of the individual components/sub-indicators, a minute increase in one may completely outscale a sizeable increase in a different one. For example, an increase of only ten additional tourists staying overnight in the programme area (sub-indicator a) can completely overpower an increase of one in the number of Natura 2000 sites (sub-indicator c). As such, given the different levels of efforts required to effect a one-unit change in each of the sub-indicators, comparing absolute values may blur the explanatory power of the indicator in respect to the effects of the intervention.

Normalisation of indicator values is recommended in order to create comparability across the values of individual the sub-indicators. The approach presented below is called *feature scaling.* It scales values of an individual sub-indicator between zero and one, with lower absolute values corresponding to a lower score and vice versa. The equation below can be implemented into excel using the standard functions available and makes use of MIN() and MAX() functions.

$$y'_t = \frac{y_t - \min(y)}{\max(y) - \min(y)}$$

Each value y_t corresponding to a specific NUTS-3 (NUTS-2) code produces a normalised value y'_twithin zero and one for that particular NUTS-3 (NUTS-2) code. The arguments *min(y*) and *max(y)* refer to the respective minimum and maximum values across the sub-indicator range.

Within the context of ETC programmes, a normalisation across geographical dimensions (preferably NUTS-3 or NUTS-2; however, the applied geographic scale is flexible as long as it is uniform across all components) is recommended. For example, in the case of sub-indicator *a* (Overnight stays in the region), per NUTS-3 regions of the programme area, a normalised value is assigned. This allows comparability to other sub-indicators due to the use of the same scale.

8.5 Application: Multi Criteria Analysis

Example: Sensitivity Analysis in Central Europe programme

The following map provides an overview of an MCA. It becomes clear that taking into account key indicators the results provide a heterogeneous picture of the potential sensitivity of Central Europe programme regions over a variety of estimated scenarios. The analysis extract was undertaken in the framework of the study “Challenges, needs and potentials of the CENTRAL EUROPE Region 2014-2020” for the Central Europe transnational ETC programme.

We grouped the regions in four classes depending on their potential sensitivity, thus arriving at potentially very highly sensitive programme regions, potentially highly sensitive programme regions, potentially moderate sensitive programme regions and potentially low sensitive programme regions. The grouping of regions is determined by their relative performance over all indicators and statistically significant gaps within the ranking of regions.

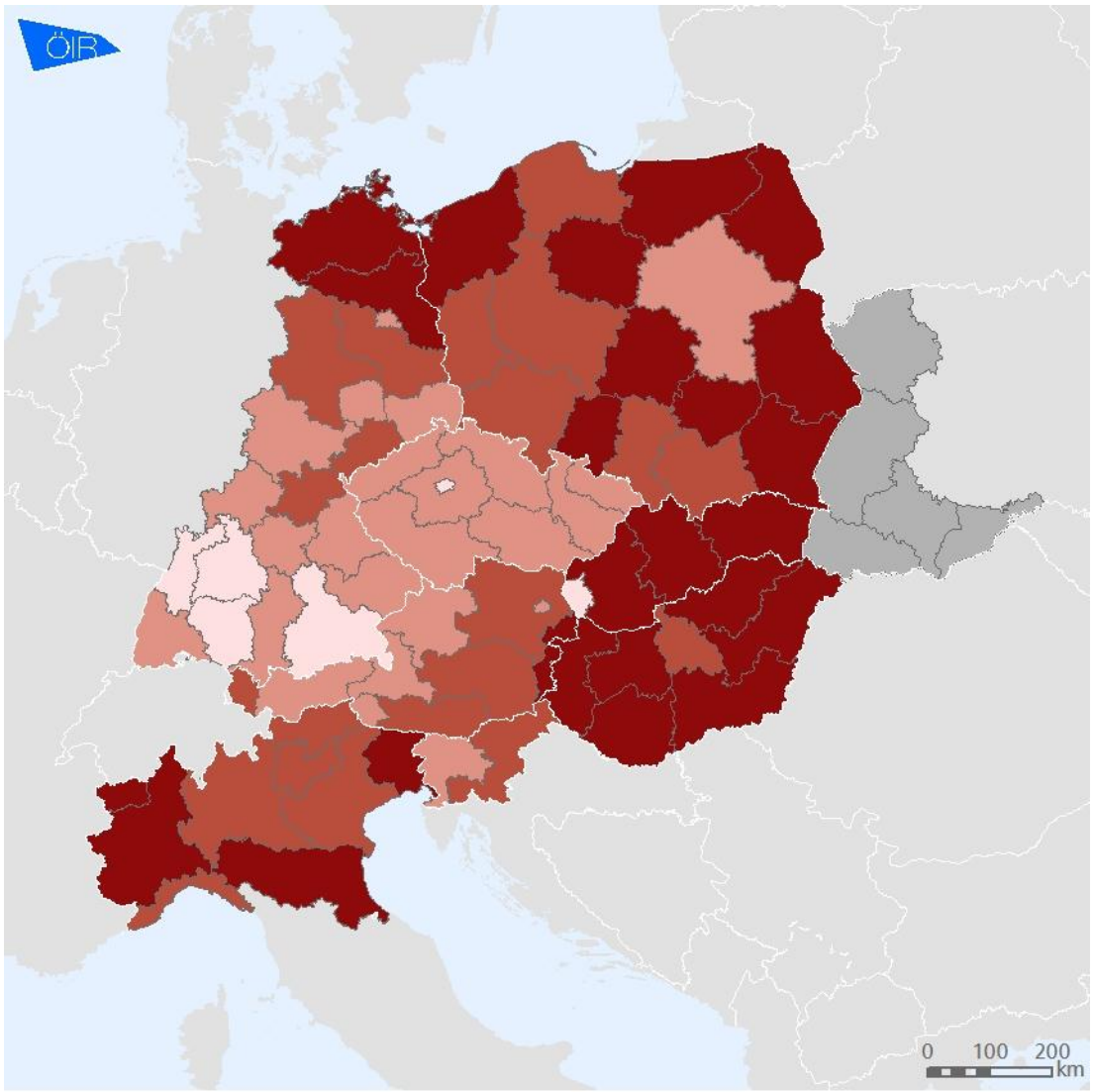
When analysing the results it becomes apparent that the most sensitive regions in the Central Europe programming area are to be found in Hungary, the Eastern and Central regions of Poland, the structurally weaker regions of Northern Italy (e.g. Marche). These are apparently those regions lagging behind most also in the sense of EU Cohesion Policy and are therefore by definition best targets of policy interventions (including transnational policy).

The Central Europe regions, which are still highly sensitive towards policy interventions, are spread over the central part of the Central Europe programming area and comprise regions in central Poland as well as Eastern Germany and Northern Italy and Lower Austria and Carinthia in Austria. They represent regions with one or the other specific weakness in the overall performance (either environment or innovation or other aspects) – thus are open to improvements in these specific fields of interventions within the CE programme.

The third class of Central Europe regions represents potentially moderate sensitive programme regions, which are located in the Czech Republic as well as Austria and Germany (mostly Southern and Central Germany). These regions perform very well in all aspects of the scenarios and show only very specific weaknesses vis-à-vis all other Central Europe regions. A potential policy intervention will have to be targeted toward these weaknesses and will have to support the existing strengths.

Finally the fourth class of regions represents potentially low sensitive programme regions. These are the metropolitan regions in the Czech Republic and Slovakia as well as in Southern Germany. These are certainly the structurally strongest regions in the Central Europe area and are thus potentially affected by territorial policy in the sense of strengthening their already existing strengths – especially in the field of R&D and innovation as well as economic productivity.

Map 8.1: Combined sensitivity



Source: ÖIR.

ESPON 2020 – More information

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