

The TIA quick check

Advanced Version

A methodology for a TIA ex-ante quick check
ESPON ARTS aims to develop a tool by which to analyse the impact of EU legislation that takes the sensitivity of regions into account. The analysis of regional sensitivity to EU directives and policies is intended as a simplified, evidence-based procedure of Territorial Impact Assessment (TIA). This 'quick check' should be as simple, comprehensible and user-friendly as possible.



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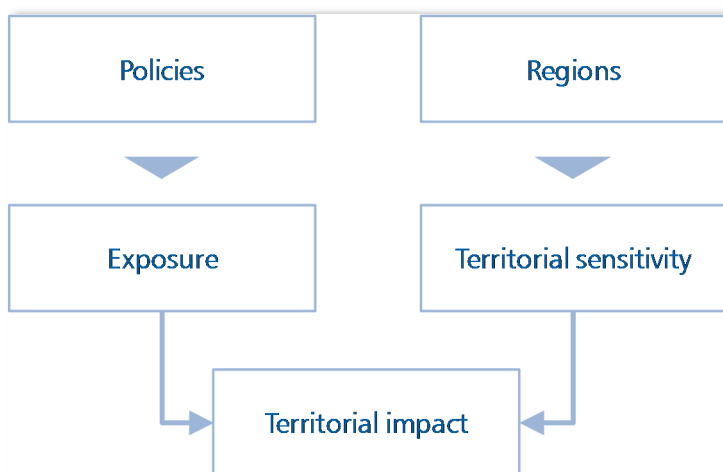


The methodology: based on the vulnerability concept

The TIA quick check is based on the vulnerability concept developed by the Intergovernmental Panel on Climate Change (IPCC). 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. In the TIA quick check the following definitions are used:

- The *exposure* describes the intensity by which EU directives and policies potentially affect European territory through a double logical chain. On the one hand single directives and policies 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 1
Territorial impact combining exposure with sensitivity



The result: An excel tool and a procedure for a TIA quick check

The objective of ESPON-ARTS was to devise a user-friendly methodology that allows one to make a ‘quick and dirty’ ex-ante analysis of the potential impact of EU legislation, policies and directives on the development of regions. To this end, the methodology combines a standardised indicator-based tool developed in Excel with a means to systematically collect expert knowledge in a workshop setting. The expert contribution serves as input for the analysis and for providing the interpretation of the output of the impact indicators.

The advanced TIA quick check enables one to use the standard methodological framework and also allowing users to define special indicators describing the exposure to policy proposals combine these with new indicators describing regional sensitivity. In this case, the tool provides the technical framework, but the indicators are defined individually.



How to do the advanced TIA quick check

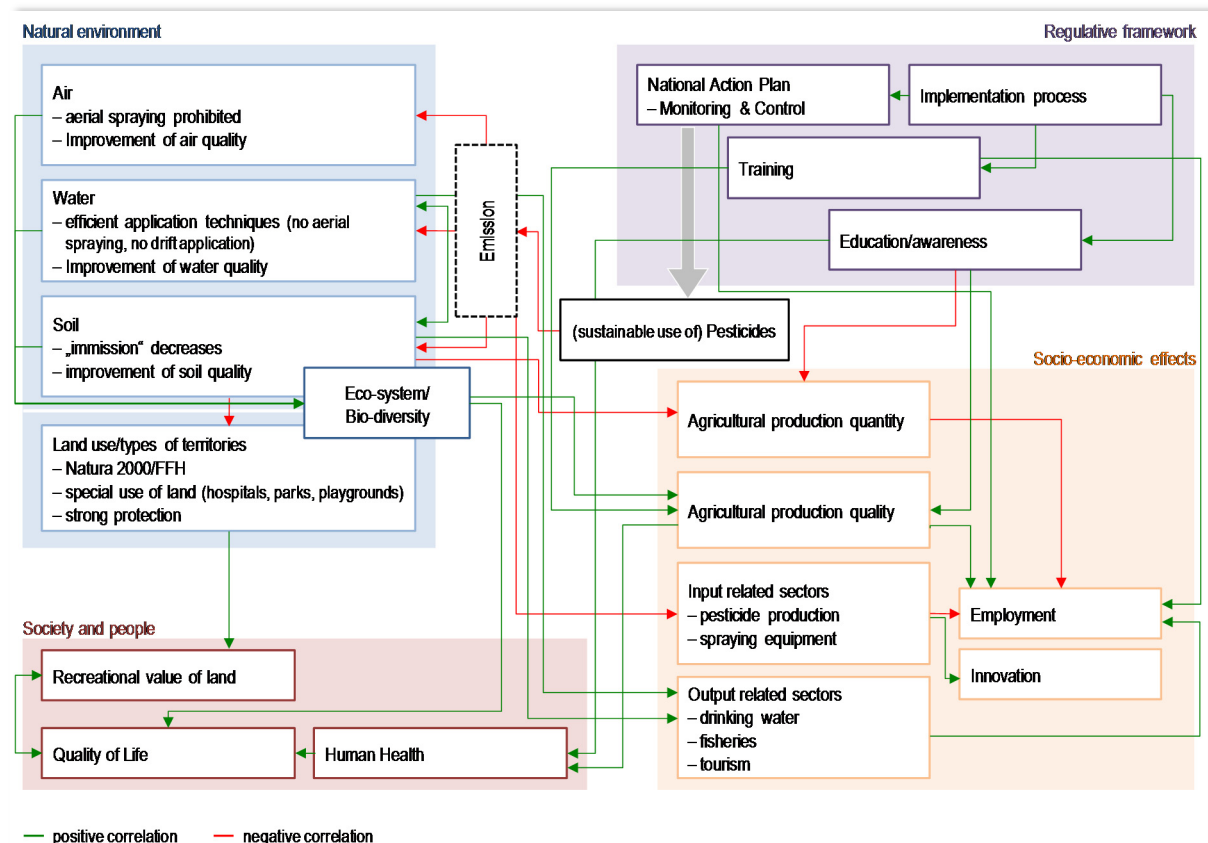
The advanced TIA quick check enables one to assess the impact of a policy proposal along self-defined thematic fields using new indicators for exposure and sensitivity of regions. The TIA-tool provides the technical setting for linking the exposure and sensitivity indicators, but the indicators themselves need to be defined individually. In principle the nine steps of the TIA quick check are the same as in the standardised quick check. However, the introduction of new indicators and hence new data requires some readjusting within the Excel tool. These changes to the tool take place in step (3) and (4), and if necessary, as consequence of the plausibility check (6).

(1) The conceptual model: How does a policy influence the development of regions?

In a first step, it is necessary to detect the potential effects of a policy (in the case of ARTS, EU-directives were chosen) on territorial development. Based on a careful study of the actual text of the proposal, the experts then draw a conceptual model that translates the text into cause/effect relations (the *intervention logic*). Not only intended effects, but also unintended and indirect effects are considered, and on as many different fields as possible. This exercise is best done in an informal workshop setting so as to maximize the amount of input.

The cause/effect relationships can then be drawn out. Here, links between all the effects deriving from the policy proposal (*exposure* in the vulnerability concept) and the receptive capacity of a region (*sensitivity* in the vulnerability concept) are made explicit. The result is a systemic picture or flowchart showing the conceptual model of the proposal according to its intervention logic and potential effects (see following example).

Figure 2
Conceptual model of the directive 2009/128/EC / Directive on the sustainable use of pesticides



(2) Are there discrete cause/effect chains? (branching)

In some cases, a policy will have only one chain of effects. In most cases, there are different, often mutually exclusive alternatives. For example, some policies only set targets, allowing member states to implement their own measures to meet these targets. Depending on the measure, the policy can have quite different territorial impacts. In other cases, the effects of a policy will vary according to type of region. In order to deal with this variability the policy is “branched” into different cause/effect chains, and each one is analysed separately.

(3) Which types of regions are affected?

A policy proposal may affect only particular regions (e.g. coastal regions, regions with presence of particular productions or facilities like nuclear power plants etc.) or different types of regions could be affected in different ways. Therefore, it is essential to only include those regions being affected in the analysis. Exposed regions are selected using typologies (e.g. rural/urban, central/peripheral, advanced/lagging, high/low presence of certain sectors). ESPON ARTS provides a set of pre-selected types of NUTS2 regions to choose from, but the advanced TIA quick check allows one to define specific types of regions that could be affected.

The user has to fill the Regional Exposure Matrix (REM) by assigning each NUTS 2 region either an ‘0’, indicating that a region is not that type of region, or ‘1’, classifying a region as being part of that specific type of region.

Figure 3
Example for filling in a new type of regions in the Regional Exposure Matrix (REM)

| | A | B | C |
|----|--------------------------|------------------------------|-----------------------------|
| 1 | <input type="checkbox"/> | <input type="checkbox"/> | type of region "tourist" |
| 2 | AT11 | Burgenland | 0 |
| 3 | AT12 | Niederösterreich | 0 |
| 4 | AT13 | Wien | 0 |
| 5 | AT21 | Kärnten | 0 |
| 6 | AT22 | Steiermark | 0 |
| 7 | AT31 | Oberösterreich | 1 |
| 8 | AT32 | Salzburg | 0 |
| 9 | AT33 | Tirol | 0 |
| 10 | AT34 | Vorarlberg | 0 |
| 11 | BE10 | Région de Bruxelles-Capitale | 0 |



(4) What are the fields of exposure and how can the sensitivity of regions towards this exposure be described?

In the next step, the conceptual model is translated into a set of indicators that describe the intensity of policy exposure.

- One indicator describing the potential exposure deriving from an LPD. – This indicator will be filled in into the Directive Exposure Matrix (DEM).

For each defined field the exposure of a directive is defined by expert judgement in a qualitative attitude along the following classes: high positive exposure intensity (strong increase) / low positive exposure intensity (increase) / no exposure / high negative exposure intensity (strong decrease) / low negative exposure intensity (decrease).

Besides identifying a fitting indicator, the exposure field also needs to be evaluated as being either harmful ('cost') or favourable ('benefit') for the regions welfare. The tool will automatically transform the experts rating into numbers for further calculation

Table 1
Example for filling in the Directive Exposure Matrix (DEM)

| Effects on ... | | Natural environment | | | | | |
|--|--|------------------------|--------------------|--|--|-----------------------------------|-------------------|
| Details | | Soil | | | Landscape and cultural heritage | | Air |
| Detailed effects on ... | | erosion | pollutants in soil | share of artificial areas / soil sealing | conservation of natural heritage (landscape) | conservation of cultural heritage | pollutants in air |
| potential effects on: | | Indicator value | | | | | |
| 1 Tourist | | no effect | no effect | decrease | increase | no effect | no effect |
| 1 Urban | | no effect | decrease | no effect | no effect | increase | strong decrease |
| comments | | reduction of acid rain | | | | | |
| Transformation: from indicator value to territorial welfare | | | | | | | |
| exposure type: cost or benefit for region? | | cost | cost | cost | benefit | benefit | cost |
| potential effect on terr.welfare | | | | | | | |
| 1 Tourist | | 0 | 0 | 1 | 1 | 0 | 0 |
| 1 Urban | | 0 | 1 | 0 | 0 | 1 | 2 |

- One Indicator describing the sensitivity of a region. This indicator will be normalized in the range 0.75 to 1.25. – This indicator will be filled in into the Regional Sensitivity Matrix (RSM).

The normalization follows a linear procedure and normalized values range from 0.75 up to 1.25. Basically, normalized sensitivity indicators represent coefficients that can increase (if greater than 1) or decrease (if lower than 1) each directive's impact on a specific field.

For this step the following definitions are needed:

- X_{norm_i} , the normalized value of the sensitivity indicator for impact field i
- X_i , the original value of the sensitivity indicator for impact field i
- X_{min_i} , the minimum original value of the sensitivity indicator for impact field i
- X_{max_i} , the maximum original value of the sensitivity indicator for impact field i

Then, normalization follows this formula:

$$X_{norm_i} = 0,75 + ((1.25 - 0.75) * ((X_i - X_{min_i}) / (X_{max_i} - X_{min_i})))$$












(5) What is the territorial impact in European regions? (Territorial Impact Matrix, TIM)

Based on the Directive Exposure Matrix and the pre-defined sensitivity of the regions the territorial impact is calculated automatically and sorted into 9 classes of impact.

Table 2
Example for the Territorial Impact Matrix (TIM)

| | | E1 | E2 | E3 | E10 | E11 | E12 | E13 | E14 |
|------|--------------------------|------|------|-------|----------------------------------|------|------|-----|------|
| AT11 | Burgenland | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | na | 0,00 |
| AT12 | Niederösterreich | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | na | 0,00 |
| AT13 | Wien | 0,00 | 0,00 | -1,06 | -0,77 | 0,00 | 0,78 | na | 1,79 |
| AT21 | Kärnten | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | na | 0,00 |
| AT22 | Steiermark | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | na | 0,00 |
| AT31 | Oberösterreich | 0,00 | 0,00 | -0,77 | -0,78 | 0,00 | 0,81 | na | 1,78 |
| AT32 | Salzburg | 0,00 | 0,00 | -0,76 | -0,99 | 0,00 | 0,80 | na | 1,74 |
| AT33 | Tirol | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | na | 0,00 |
| AT34 | Vorarlberg | 0,00 | 0,00 | -0,78 | -1,04 | 0,00 | 0,80 | na | 1,78 |
| BE10 | Région de Bruxelles-Capi | na | 0,00 | -1,19 | -0,75 | 0,00 | 0,76 | na | 1,69 |
| BE21 | Prov. Antwerpen | 0,00 | 0,00 | -0,91 | -0,76 | 0,00 | 0,80 | na | 1,74 |
| BE22 | Prov. Limburg (B) | 0,00 | 0,00 | -0,88 | -0,78 | 0,00 | 0,84 | na | 1,76 |
| BE23 | Prov. Oost-Vlaanderen | 0,00 | 0,00 | -0,88 | -0,75 | 0,00 | 0,83 | na | 1,73 |
| BE24 | Prov. Vlaams Brabant | 0,00 | 0,00 | -0,91 | -0,75 | 0,00 | 0,81 | na | 1,74 |
| F1 | erosion | | | F11 | conservation of culture heritage | | | | |
| F2 | pollutions in soil | | | F12 | economic growth | | | | |
| F3 | soil sealing | | | F13 | innovation | | | | |
| F10 | landscape diversity | | | F14 | entrepreneurship | | | | |

Table 3
Scale of potential territorial impact

| | | | |
|---|---------------------------|---|---------------------------|
|  | very high positive impact |  | minor negative impact |
|  | high positive impact |  | moderate negative impact |
|  | moderate positive impact |  | high negative impact |
|  | minor positive impact |  | very high negative impact |
|  | no exposure | | |

(6) Do the results make sense? (plausibility and quality check)

The results calculated in the territorial impact matrix allows for a first plausibility check. Usually the results show that a proposal only impacts a few thematic fields. The results should be discussed with the experts along two lines:

- Does the selection of regions provide a plausible picture? If not, the selection of the types of regions may need to be modified.
- Is the relationship between the different fields of exposure plausible? If not, the expert judgment about the intensity of exposure may need to be modified.

All values, typologies of regions and decisions about the exposure can be changed at this stage. The modified Territorial Impact Matrix (TIM) is then recalculated with the new values.

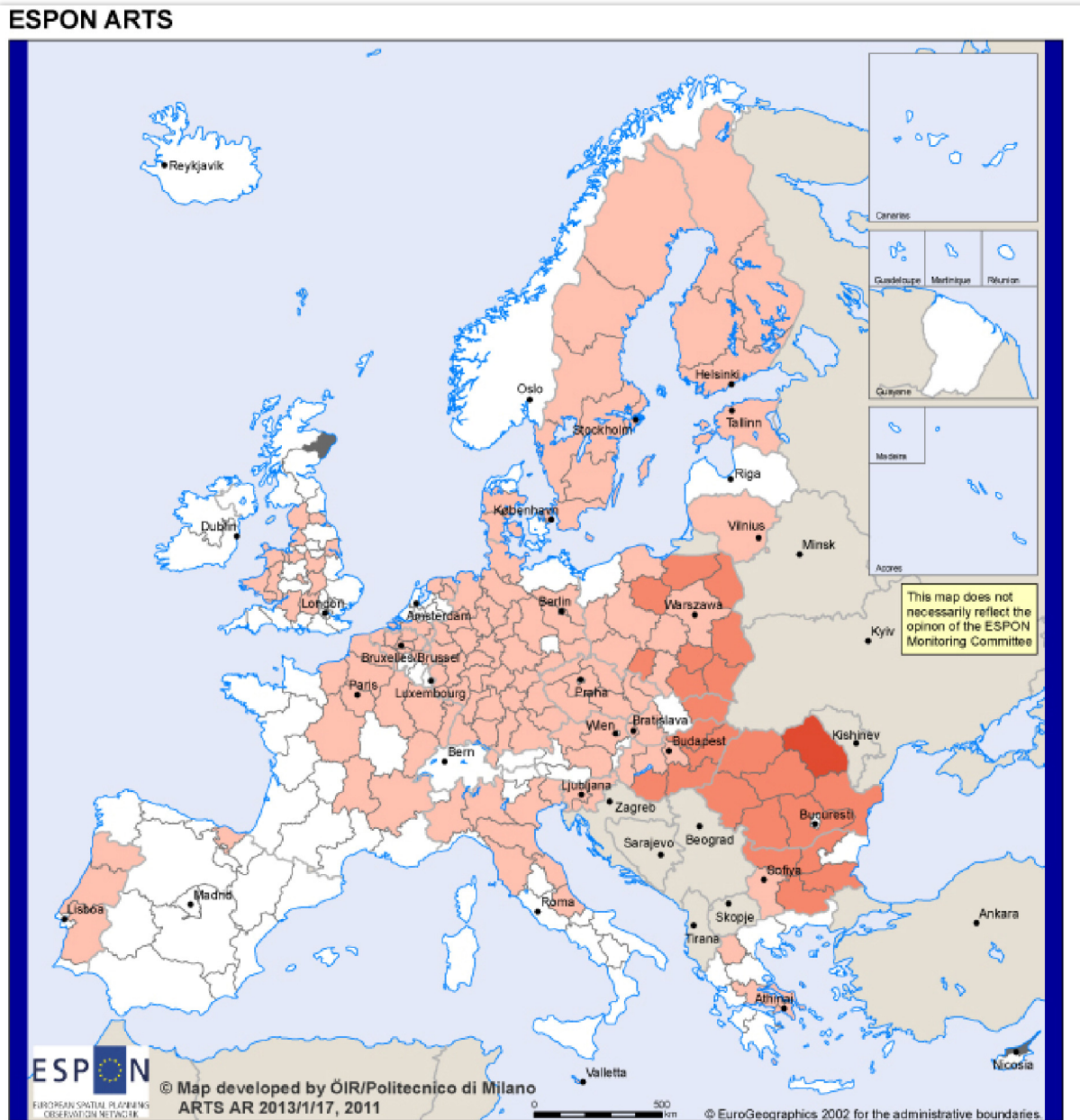


(7) Which regions will be hit in which fields? (mapping)

When the results are reliable, maps showing the impact along the different indicators can be drawn up. This can be followed by another plausibility check.

Map 1

Example for a Map depicting the territorial impact on one field



**Regions affected by Directive on air quality branch b
Economic Growth (GDP/capita) (F12)**

Negative Impact



Transformation and Compilation of Data based on:
ESPON DB, EUROSTAT, 5th Cohesion report, DG-AGRI



(8) What are the policy implications? (discussion)

The maps provide the framework for the subsequent discussion on policy implications. The territorial patterns of both the positive impacts and negative effects are examined and discussed. Furthermore, the issue of potential adaptive capacity should be raised, as well as governance strategies to facilitate a successful implementation

(9) How to communicate the results (reporting)

Based on the results of the territorial impact assessment and the expert discussion, a short report should be drawn up including maps on relevant indicators. This communicates the results of the ex-ante analysis to the relevant audience.



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