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This delivery does not necessarily reflect the opinion of the members of the ESPON 2020 Monitoring Committee.

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# Table of contents

1. Introduction ............................................................................................................................ 5

2. Existing tools by ESPON and other relevant monitoring systems ........................................ 7

3. Project governance and participatory approach in relation to the Steering Committee ......... 14
   3.1 Methods to facilitate and sustain the participatory process ........................................... 14
      3.1.1 Detailed approach to project governance and participation of stakeholders in relation to the Steering Committee ........................................... 14
      3.1.2 Support to setting up the Steering Committee .................................................... 14
   3.2 Dialogue with the steering committee and facilitation of meetings ............................. 15
      3.2.1 Facilitation of meetings ...................................................................................... 15
   3.3 Appraisal of the status quo of the macro-regional strategies’ monitoring .................... 17
   3.4 Conclusions from the participatory process .................................................................. 18
   3.5 Risk assessment ......................................................................................................... 18
   3.6 Proposal of schedule for the first stakeholder Committee ........................................ 19
   3.7 Background document for the preparation of the EUSBSR Meeting .......................... 20

4. Draft concept for the tool ..................................................................................................... 21
   4.1 Development of a user friendly web client application ................................................ 21
      4.1.1 European user-interface ..................................................................................... 21
      4.1.2 Customisation of user-interfaces for the macro-regions ..................................... 23
   4.2 Development of functionalities .................................................................................... 23
      4.2.1 Interactive mapping .......................................................................................... 23
      4.2.2 Interactive analytical features ............................................................................ 25
   4.3 Develop and implement web services ........................................................................... 25
   4.4 Develop and implement an administrator component ................................................ 28
   4.5 Monitoring database .................................................................................................. 30
   4.6 Help and guidance documents .................................................................................... 33

5. Strategy for selecting indicators and collecting additional data .......................................... 34
   5.1 Monitoring framework: selection of indicators for macro-regions through a participatory process ................................................................. 34
      5.1.1 Literature review of secondary analyses and data sources ................................ 34
      5.1.2 Monitoring framework: European scale module ................................................ 34
      5.1.3 Monitoring framework: macro-regional modules ............................................. 35
   5.2 Data collection and processing ................................................................................... 36
      5.2.1 ESPON database ............................................................................................... 36
      5.2.2 Countries outside ESPON space ........................................................................ 36
      5.2.3 Alternative data sources .................................................................................... 36
   5.3 Production of graphics and maps ................................................................................ 40

6. Detailed time planning of the various meetings and activities ........................................ 41
Annex 1: detailed analysis of existing tools ................................................................. 44
7.1 Tools related to the Macro-Regions ........................................................................ 44
7.2 Benchmark of existing ESPON Tools. Potential added value for EMTM ............ 47
7.3 Monitoring platforms ............................................................................................ 50
List of Figures
Figure 18 Example for presentation of the result of appraisal .......................................................... 18
Figure 2 User interface of the interactive map .................................................................................... 24
Figure 3 Proposed ESPON-EMTM roles. ............................................................................................ 29
Figure 4 Application backend. Database structure in blue and web services in red ...................... 32
Figure 5 Example of boxplot of land recycling in its broad sense per country ............................. 40
Figure 6 Alpine and Danube web tools (FRC, 2017)........................................................................ 44

List of Tables
Table 1 Indicative facilitation plan for a Steering Committee meeting in relation to one Macro-regional Strategy...................................................................................................................................... 15
Table 2. Agenda of the meeting .......................................................................................................... 19
Table 3 Codes for processing the response body correctly................................................................. 25
Table 4 Meeting, activities, events........................................................................................................ 41
Table 5 List of deliveries..................................................................................................................... 43
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>CSP</td>
<td>Center for Systemic Peace</td>
</tr>
<tr>
<td>EC</td>
<td>European Commission</td>
</tr>
<tr>
<td>EGTC</td>
<td>European Grouping of Territorial Cooperation</td>
</tr>
<tr>
<td>EMTM</td>
<td>European and Macro-regional Territorial Monitoring</td>
</tr>
<tr>
<td>ESPON</td>
<td>European Territorial Observatory Network</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>IBRD</td>
<td>International Bank for Reconstruction and Development</td>
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<tr>
<td>IDA</td>
<td>International Development Association</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>UN HDRO</td>
<td>Human Development Report Office of the United Nations</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>UNDESA</td>
<td>United Nations Department of Economic and Social Affairs</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>UNWTO</td>
<td>United Nations World Tourism Organisation</td>
</tr>
<tr>
<td>WEO</td>
<td>World Economic Outlook</td>
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<tr>
<td>WTO</td>
<td>World Trade Organisation</td>
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1 Introduction

The following document is the Inception Report to the ESPON European and Macro-regional Territorial Monitoring Tool (EMTM) and contains an elaborated plan for all work packages:

- A short analysis on existing features and functionalities in tools produced by ESPON and other international/national/regional/local monitoring systems that could be included in the current tool
- Draft concept for the tool
- Draft strategy for the proposal for selecting indicators and collecting additional indicators for analysing trends, strategies and actions
- Project governance and participatory approach in relation to the Steering Committee.
- Detailed time planning of the various meetings and activities

The aim of this ESPON project is to develop a **practical and operational ESPON European and Macro-regional Territorial Monitoring Tool** to continuously observe the development trends and patterns taking place in Europe, its macro-regions, regions and cities. The tool should support European, macro-regional, national and regional policy makers and other stakeholders with territorial information, data, maps, graphs, analytical features and short reports. By reading and interpreting the quantitative statistical information in the light of policy objectives and aims, the results of this activity shall help policy makers to monitor development trends and policy performance, identify development opportunities and territorial challenges, as well as better understand the diversity and position (benchmarking) of regions and cities in the heterogeneous European context.

In order to improve the relevance, efficiency and effectiveness of the policy making processes, monitoring and evaluation has a strategic role to play. The stronger political focus on the territorial dimension in various policies and strategies on one hand and the improved knowledge of territorial structures, trends and scenarios generated by ESPON on another, highlight the needs as well as the opportunities to create a monitoring platform that can provide and promote territorial information and evidence in relation to European and macro-regional policy orientations and objectives on a regular basis.

The main output should be a **simple and highly communicative web tool** that provides territorial evidence to stakeholders and policymakers in Europe as well as in the Baltic Sea, Danube, Alpine and Adriatic-Ionian macro-regions on key development trends over time and on the progress, implementation and contribution of policy objectives as defined in the EU macro-regional strategies and in the VASAB Long-Term Perspective. The final version of the tool should be deployed and made available via the ESPON website and establish a direct link to the ESPON Database.

The consortium working on the project is a **joint tender** between MCRIT (Barcelona), Metis (Vienna) and Hypertech (Athens), together with a **Strategic Macro-regional Forum** Chaired by Herta Tödtling-Schönhofer (Metis) with four experts from the macro-regions included in the study:

- Herta Tödtling-Schönhofer (Danube)
- Wolfgang Pfefferkorn (Alpine)
- Christine Hamza (Adriatic-Ionian)
- Jacek Szlachta (Baltic)

The three partners and experts of the Strategic Macro-regional Forum have a long record of European policy-oriented research and consultancy, have expertise on territorial cooperation, foresight and participatory processes as well as on the development of advanced monitoring systems.
The **Autonomous University of Barcelona (UAB)** participates as subcontractor to provide complementary datasets and indicators based on Big Data, satellite, remote sensing and other sources at detailed geographic level.

**MCRIT** acts formally as the **main partner** of the joint tender and the contact person and contact details are the following ones:

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2 Existing tools by ESPON and other relevant monitoring systems

Aiming to design an efficient and clear overall structure of the new monitoring tool, catalogue of services to be provided, and its software best solution, benchmark activities of existing monitoring systems is a crucial to take the best of already existing tools. To this end the consortium has initiated a process of identifying relevant monitoring platforms and monitoring products (e.g. OECD, EUROSTAT and DGRegio). These systems are analysed to gain knowledge of the best elements of each one of them.

A summary of this analysis is shown in the following tables, while the detail of each system can be found in an annex.

### ESPON tools

<table>
<thead>
<tr>
<th>Monitoring platforms</th>
<th>Main features</th>
<th>Which features can be useful for EMTM?</th>
</tr>
</thead>
</table>
| The European Territorial Monitoring System (ETMS) | - mapping facility allowing production of maps by indicators  
- filtering by different territorial typologies  
- allowing benchmarking of specific regions  
- analytic component that allows analysis of aggregated and mean trends of indicators by different kinds of territorial typologies.  
- a synthetic representation of territorial trends by different regional typologies, analytically in linear time lines | Similar solution of trend watch with detailed explanations of the typologies and possibility to create multiple selections in the map, should be considered also for EMTM purposes. |
| ESPON Urban Benchmark Webtool - CITY BENCH | - interactive map which enabled the user to derive information about selected unit  
- selection of units via setting interval of attribute values directly in chart  
- 4D chart which provides the information about proximity of the cities in 4D indicators’ space, when each axis represents value of different indicator  
- 3 step guidelines when opening the tool  
- video tutorials with explanation how to use the tool | Implementation of territorial typologies other than NUTS. Video tutorials with explanation how to use tool and step guidelines when opening the tool |
| OLAP Cube | - enables to combine different data types like NUTS units, LC/LU layers, population density grids etc.  
- flexibility to support user defined analytical units on-fly and without need for GIS systems  
- use of a multidimensional data model, allowing complex analytical and ad-hoc queries with a rapid execution time | Rapid execution time of the data is one of the most important features that should be considered for EMTM purposes. |
<p>| Online Mapping Tool (RIMAP) | - viewing and exporting of thematic maps of ESPON indicators | Expert mode functionality and user support with short explanations on all functionalities, and a more |</p>
<table>
<thead>
<tr>
<th>Monitoring platforms</th>
<th>Main features</th>
<th>Which features can be useful for EMTM?</th>
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</table>
| European and Macro-regional Territorial Monitoring Tool (EMTM) | - the indicators grouping based on: Theme, Policy and Project  
- expert mode functionality when on indicates that all functionalities available in the tool are accessible. If the expert mode is off, the tool is more simple and straightforward to use  
- option to restore tool back to the default settings or the user settings  
- possibility to share self made map by email, Facebook, Twitter and LinkedIn  
- great user support by short explanations on all functionalities, a more detailed user guide and six tutorial videos on topics such as: “How to Create a Map in 3 Steps”, “Indicators comparison” and “How to customize a Map”  
- detailed user guide and tutorial videos | The possibility to enter an expert mode that gives you an access to various extra options such as Lorenz curves, box plots and spatial autocorrelation is an interesting feature. |
| Hyperatlas (v2) | - an expert mode which provides some additional visualization techniques (redistribution)  
- statistical charts (Lorenz curve, boxplot, spatial autocorrelation, area and zoning) | Similar solution of aggregating different types of outputs based on relevant topic/territory type which they belong to. |
| BSR Territorial Monitoring Tool | - well organized and provides easy access to indicators via thematic “entry points”  
- simple and complex monitoring system  
- all outputs concerning the particular indicator are listed together, sorted by output type (report, news, documentation, etc.) | Navigation tool, the various viewer configurations, option to change the transparency of the map as well as an information button. |

**Other tools**

<table>
<thead>
<tr>
<th>Monitoring platforms</th>
<th>Main features</th>
<th>Which features can be useful for EMTM?</th>
</tr>
</thead>
</table>
| Statistical Atlas | - navigation tool is well organized and easy to use (containing search, toggle overseas regions, zoom in and out – also by mouse scrolling wheel, home map view, go forward and back in map view history, and help button)  
- the various viewer configurations  
- option to change the transparency of the map as well as an information button that provides the user access to information on the statistical data used for the creation of the map | Navigation tool, the various viewer configurations, option to change the transparency of the map as well as an information button. |
<table>
<thead>
<tr>
<th>Monitoring platforms</th>
<th>Main features</th>
<th>Which features can be useful for EMTM?</th>
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</table>
|                      | - with left mouse click the relevant statistical information for the region appear in an information box  
- LUCAS viewer has access to the Photo Viewer which shows the LUCAS photos collected on the point selected.                                                                                                                                                                                                                                                                                                                                                      | Easy access to the information details can be useful as an inspiration for EMTM.                                                                                                                                                                              |
| Urban Data Platform  | - easy navigation tool with all indicators  
- possibility to compare cities  
- easy access to the information details  
- easy way to change data on city, func. urban areas and metro regions                                                                                                                                                                                                                                                                                                                         | Simple and easy way to compare the overtime variation of the selected regions.                                                                                                                                                                                 |
| Territorial Dashboard (Pre-Release 2018) | - "identity card" for the selected region or country providing information about all the available indicators in the various domains  
- a trend comparison of the selected region against the other regions belonging to the same administrative area  
- possibility to compare the overtime variation of the selected regions thus providing an easy tool for preliminary benchmarking and projection  
- Territorial Dashboard that offers ad-hoc "Thematic analyses" covering specific topics by the combination of the available indicators with analytical capabilities                                                                                                                                                                                                                         | Interesting visualization of side to side map and graphic to illustrate complex data across different dimensions                                                                               |
| Regions and Cities Illustrated | - movable colour legend with information on last data update with possibility to manually adjust the classes by sliding the class distributors up or down  
- possibility to change the width of map  
- quick selection of the individual territories  
- different visualization options allow comparison and analysis in a user-friendly way  
- user-friendly timeline, easily moving the slider or use the controls to the left to change the year or animate the timeline  
- possibility to directly change the indicator on the map which is linked to the chart on the right side  
- indicator filter which allows filtering of the displayed regions based one or more indicators  
- the record list displays all regions of the typology. You can scroll through it and select a region to be highlighted in the map and chart. Type in the name of a region in the original language to search for a region.                                                                                                                                                     |                                                                                                                                                                                                                                                               |
<table>
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<tr>
<th>Monitoring platforms</th>
<th>Main features</th>
<th>Which features can be useful for EMTM?</th>
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</table>
|                       | - the table can be pivoted what is useful when only a couple of regions are selected  
 |                       | - possibility to “PLAY” development through years  | Structure of the data – by topic and by type of territorial unit can be useful features for the EMTM. |
| Cross Sector Economic Monitor | - well sorted data (by country, topic and indicator)  
 |                       | - entry-approach “by country” is very good organised  
 |                       | - combination of the quick access to the most important (or most interesting) information  
 |                       | - possibility of detailed analysis for expert users  
 |                       | - the interactive behaviour of charts and maps  
 |                       | - interconnection of all particular elements (e.g. selection of any unit in chart induces response in map, etc.)  
 |                       | - possibility to enlarge the map window to full-screen mode  
 |                       | - possibility to detach single element and get its url  
 |                       | - visualisation of trends in tables  
 |                       | - selection of country/unit for analysis by typing the name  | The tool itself provides an example of a very nice and effective GUI for exploring geo-based data, with lot of interesting and effective features and functionalities, which could improve the overall impression of the tool and user interest into information which is being explored. Access to the user’s forum, which provides important users feedback and possibility to save current settings, can be useful for EMTM. |
| IMF Surveillance      | - navigation menu is quick info on indicators (via hover) when selecting the indicator  
 |                       | - links to datasets, metadata and reports  
 |                       | - access to the user’s forum, which provides important users feedback  
 |                       | - separated sites with datasets, metadata or detailed description of indicators, with direct access links interconnected in the Data Mapper  
 |                       | - map and charts are interactive and interconnected between each other, with impressively rapid response  
 |                       | - possibility to prefer map view or the view on spatial distribution of indicator values in 2D space  
 |                       | - full-screen mode is available  
 |                       | - selection of the units has a very well organized structure of region hierarchy  
 |                       | - possibility to download data values for selected indicator or graphic elements in png format directly from the tool  
 |                       | - bar size is automatically modified depending on number of displayed units  
<p>|                       | - possibility to “PLAY” development, scenarios etc.  |</p>
<table>
<thead>
<tr>
<th>Monitoring platforms</th>
<th>Main features</th>
<th>Which features can be useful for EMTM?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- possibility to save current settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- information about “no data” is provided for each indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OECD Statistics</td>
<td>- wide list of statistics based on extensive database</td>
<td></td>
</tr>
<tr>
<td>- list of key indicators is available for download directly on OECD statistics portal</td>
<td>Variety of possible charts that can be produced.</td>
<td></td>
</tr>
<tr>
<td>Regional Innovation Monitor Plus</td>
<td>- a simple benchmarking tool for registered users is included into the portal, which enables to compare different regions or years of interest based on user selection</td>
<td></td>
</tr>
<tr>
<td>Europe 2020 Indicators</td>
<td>- possibility to compare indicators/statistical values for more spatial units and more years</td>
<td></td>
</tr>
<tr>
<td>- possibility to explore each statistic value or indicator for all European countries in a table, chart or map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- chart symbology can be customized by the user</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- all elements can be downloaded, including user’s customization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- possibility to “PLAY” development through years in visualisations</td>
<td>Possibility to compare indicators/statistical values for more spatial units and more years can be useful for the EMTM.</td>
<td></td>
</tr>
<tr>
<td>Europe 2020 Monitoring Platform</td>
<td>- simple page design</td>
<td></td>
</tr>
<tr>
<td>- easy and fast orientation in the portal</td>
<td>Nice page design</td>
<td></td>
</tr>
<tr>
<td>Sustainable Development Goal Indicators – SDG</td>
<td>- option to choose a goal from the list to find information and data on the relevant sub-indicators</td>
<td></td>
</tr>
<tr>
<td>- time graph with the development of each sub-indicator at one glance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- option to compare country to the EU average and other EU Member States at the same time</td>
<td></td>
<td></td>
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<tr>
<td>- direct access to the data for each indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- option on every map to embed visualisation</td>
<td>The portal is user-friendly and simple. Option to embed the visualisation and share it on social media.</td>
<td></td>
</tr>
<tr>
<td>International Human Development Indicators</td>
<td>- nice GUI with interconnected map and chart</td>
<td></td>
</tr>
<tr>
<td>- interactive changing of values in all components on mouse hover over the relevant unit in map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- displaying of all or selected only units in chart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- sorting of values in chart (ascending, descending, alphabetical)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- displaying of “trend line” in chart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- customization of colour scales used for cartogram</td>
<td>The tool has interesting solution in relation to EMTM and its Data Analysis Tool purposes - Stat Planet World Map - provides very nice GUI with interconnected map and chart. The tool provides the user a lot of interesting functionalities such as direct links with indicators’ explanations with key worlds in texts, and frequently asked questions</td>
<td></td>
</tr>
<tr>
<td>Monitoring platforms</td>
<td>Main features</td>
<td>Which features can be useful for EMTM?</td>
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</table>
| OECD Better Life Index | - possibility to create your own Better Life Index (set the importance of each topic to your personal preference with the help of the mixer tool)  
- an effective way how to visualise and compare values of multi-dimensional indicator for more analytical units  
- possibility to compare selected unit with other units selected from menu  
- textual explanation for each compound  
- short comprehensive “report” including values, charts and description of most important indicators and their development for each country | This portal provides an example of highly specific visualisation method designed for specific type of “multi-dimensional” indicator which is very interesting, however, it can be used only for this specific type of indicators.  
The possibility to create your own index and share it on social media as well as on website. |
| Transport Explorer | - write/add texts directly into the tool interface (text can be exported and saved)  
- possibility to add user´s indicators  
- selection of indicators for both axes in the scatter chart  
- option to embed the visualisation and share it on social media | The portal provides an interesting mapping/charting tool for exploring indicators related with transport.  
The possibility to write/add texts directly into the tool interface, in a dedicated frame for texts (which can also be exported and saved) can be useful for EMTM reports generation. Also, option to embed the visualisation and share it on social media. |
| HELCOM Map Data Service | - simple navigation tool containing zoom in, zoom out, option to choose the basemap and button to clear map selections  
- tool is linked to Metadata catalogue where you have all information about data coverage and resources | The graphical user interface that contains a table of contents of all spatial datasets with many functionalities that could be used when viewing the datasets, e.g. identify and attribute table functionalities.  
The button to clear map selections in the navigation tool can be interesting feature to be considered in the EMTM. |
| European Atlas Of The Seas | - top banner with links and buttons to change the language, send a feedback, show help, and show some information about the Atlas  
- a map layers pane allowing to choose the projection of map, choose the content of the map (Thematic Map & DIY), manage the layers order and get info about them, select the year of the data with the time-slider, measure area and distance through polygon | The map layers pane is well organised with nice option to print map in different formats and sizes with or without legend. |
<table>
<thead>
<tr>
<th>Monitoring platforms</th>
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<th>Which features can be useful for EMTM?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>and polyline, print map in different formats and sizes with or without legend, choose a background (base-map)</td>
<td></td>
</tr>
</tbody>
</table>
3  Project governance and participatory approach in relation to the Steering Committee

This core part of the assignment first of all has the objective to create ownership for the stakeholders in the Macro - regions and facilitate consensus building. The ESPON EGTC will be supported with an appropriate set-up of the Steering Committee and to ensure the institutional links in relation to the five geographic modules from the very beginning. Also the national coordinators for the Macro - regions will be involved in the process of building up a monitoring tool. An essential component of this task is also to govern and facilitate the process of participation and collaboration. This means especially supporting the stakeholders in giving structured feedback on the development of the monitoring tool (related to their needs and demands as main users) throughout the project duration. The preparation, organisation and documentation of the Steering Committee meetings as well as dealing with the corresponding feedback to the events completes this activity.

3.1 Methods to facilitate and sustain the participatory process

The participatory process and the dialogue with the Steering Committee will be based on three main methods:

- Online interaction with participants (see 3.2)
- Semi-structured interviews (see 3.3)
- Place-mat format for face-to-face deliberative events (see 3.2)

In addition to this, we will use a phase model for the appraisal of the actual status of monitoring in each macro-regional strategy. This will be important for the definition of the starting point and for determining “a ‘realistic first/next step’ for each macro-region” and for the tailor-made approach. With this set of methods the key political messages for each Macro - region should be identified, the design and the validation of indicators should be driven forward and there will be an analysis of graphics and maps as a way to validate messages and indicators. This includes visualisation of the results and preparing them for dissemination (see 3.3).

3.1.1 Detailed approach to project governance and participation of stakeholders in relation to the Steering Committee

The stakeholder approach will have three basic characteristics. First, the major reference points during the process of stakeholder feedback and dialogue will be the deliveries, in terms of content and timing. Second, the process will also be held flexible giving room to further consultations via mini-surveys and telephone contact upon need. Third, particular attention will be given to set up strong institutional links in order to secure continuous attendance at Steering Committee meetings. In close cooperation with WP3, the start of departure for each Macro - region will be appraised based on research undertaken in the context of the application of our proposed phase model for the set-up of a monitoring tool. This will be the basis for the tailor-made approach (see appraisal of the status quo, 3.3).

3.1.2 Support to setting up the Steering Committee

The Steering Committee (SC) will oversee the implementation of the project and will include representatives of the selected service provider, DG Regio, representatives of the four Macro - regional Strategies (MRS) and from the ESPON EGTC. Furthermore the ‘Macro - regional Forum’ and the member responsible for the respective region will be part of the SC. The main aim of these meetings will be to address the monitoring of the progress of the service contract and to provide inputs for the development of the monitoring tool. The Committee will give the project and ESPON feedback on the development of the tool from a user's point of view. Furthermore it will support the collection of data by providing contacts for the non-EU territories of the macro-regions.
There is therefore a need to ensure the participation of stakeholders representing the various MRS in the SC. In total there are 12 SC meetings envisaged during the project implementation. Eight of these meetings will take place and will be oriented to each Macro-region.

In practical terms, not all the meetings will involve all stakeholders from all regions. In the general meetings, and in order to establish a more direct contact with the service provider and the EGTC, there will be two representatives from each Macro-region in the SC. These representatives will also establish the bridge to the other stakeholders and national coordinators in each Macro-region. In total is foreseen to have a maximum of 15 participants in every SC meeting. Other stakeholders from each MRS can be invited as observers.

3.2 Dialogue with the steering committee and facilitation of meetings

The main aim of the meetings will be to monitor and assist the progress of the service contract in relation to each delivery and to provide particular inputs needed for the development of the monitoring tool. The main focus will be on the selection of indicators, maps, graphs and typologies. The Steering Committee will be managed throughout the project duration by the WP1 coordinator Jürgen Pucher and his assistant Jakob Weiss from METIS. An important and basic tool for this will be the list of members which will be updated regularly throughout the contract duration. It will serve as basis for the preparation of lists of participants for each Steering Committee meetings (besides the permanent members) and for other direct forms of participation and consultation.

3.2.1 Facilitation of meetings

A specific format will be developed for the continuous presentation of the feedback from the SC. This format will consider the different stakeholder groups and will document the feedback on a continuous basis. All meetings will be prepared in close cooperation with the ESPON EGTC and professionally facilitated by METIS. A detailed schedule will be elaborated for each meeting, indicated also the methods applied.

Table 1 Indicative facilitation plan for a Steering Committee meeting in relation to one Macro-regional Strategy

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00-10:15</td>
<td>Welcome and introduction</td>
<td>ESPON EGTC, service provider</td>
<td>Time schedule and programme of day</td>
</tr>
<tr>
<td>10:15-10:35</td>
<td>Presentation of the approach to project governance and participatory process</td>
<td>Service provider (Project leader, WP1 coordinator)</td>
<td>PowerPoint slides</td>
</tr>
<tr>
<td>10:35-11:15</td>
<td>Facilitated discussion and feedback in small groups (European institutions, macro-region stakeholders, others)</td>
<td>Facilitator (service provider) All participants</td>
<td>Small groups (15 min) Plenary session (presentation of group work, common discussion)</td>
</tr>
<tr>
<td>11:15-11:30</td>
<td>Coffee break</td>
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</tr>
<tr>
<td>11:30-11:50</td>
<td>Presentation of the strategy for monitoring of objectives of the macro-regional strategy for the region X</td>
<td>Service provider</td>
<td></td>
</tr>
<tr>
<td>11:50-13:15</td>
<td>Facilitated work and discussion applying the Placemat method</td>
<td>Facilitator (service provider) All participants</td>
<td>Small groups Plenary session (presentation of group work, common discussion)</td>
</tr>
<tr>
<td>13:15-14:00</td>
<td>Lunch break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00-14:20</td>
<td>Presentation of the strategy for the identification of indicators for the monitoring the activities and possible contributions to changes in the macro-region X</td>
<td>Service provider</td>
<td></td>
</tr>
<tr>
<td>14:20-15:45</td>
<td>Facilitated work and discussion applying the Placemat method</td>
<td>Facilitator (service provider) All participants</td>
<td>Small groups Plenary session (presentation of group work, common discussion)</td>
</tr>
<tr>
<td>15:45</td>
<td>Summary and outlook</td>
<td>ESPON EGTC, service provider</td>
<td></td>
</tr>
<tr>
<td>16:00</td>
<td>End of meeting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The so-called 'Place-Mat'-discussion group will be the method in the workshops. This method is very suitable for exploring concepts, ideas and content in groups of up to six persons. Usually, it is applied in the following steps:

1) Think of the experience and knowledge you have on the topic at stake.
2) Write your answers down on the Placemat diagram.
3) Identify the five most important responses and put them in the center of the Placemat. It is important, that all group members agree on the central five responses.
4) Presentation of the central five responses in the plenum

This method facilitates the inclusion of all participants, also those who do not like to speak in front of a plenum. Through full participation of all members of the small group a process is started, during which the experience of cooperation on an equal basis can be made and problems encountered can be exchanged. Experience made with this method shows that it leads to better collaboration. In terms of room / space needed is quite flexible and not too demanding. Ideally, each small group can sit around one table. If applied at the Steering Group Meetings at the MRS-level, a sixth phase could be built in to seek consensus among all participants.

Previous to face-to-face interaction, it is convenient to engage in online interactions with selected participants based on brief 5/10 questions survey with pre-defined answers that may need 5/10
minutes from respondents. The activity has an awareness-rising purpose, as well as will contribute to get participants well focused on the most relevant issues to be discussed. From the answers received, personal interaction by email and/or phone can be carried out either with more interested or more relevant expert and stakeholders.

The status of the work will be constantly updated on a service website established for the project. Furthermore, it will be considered whether it might be possible to generate attention in social media e.g. through the use of twitter on the work and progress of the project. This, however, would need to be closely coordinated with the ESPON EGTC social media strategy. Possibly, it might even be best if the project team formulates social media content which is put online by the ESPON EGTC.

3.3 Appraisal of the status quo of the macro-regional strategies’ monitoring

This appraisal will be undertaken based on document research and in-depth semi-structured interviews by phone with key stakeholders. A semi-structured interview is based on guidelines with the main topics that have to be covered in each interview. This framework allows for comparability of all interviews and, at the same time, for flexibility in the conversation. The interviewees can bring in their ideas and the interviewer can bring up questions tailored to what the interviewee says. The result of this research will be presented based on the phase model in a graphic way and provided to the interviewees for validation at an early stage.

In order to better identify and characterise the stages of developing a monitoring system for MRS, we propose to use a ten phases model we developed based on a well-known work by the World Bank. The ten phases occur subsequently in theory. Although this theory makes sense, reality does not behave like a theoretical model. For instance, more general targets are frequently set before indicators are developed and have to be refined in parallel to indicator development. The model will be used (1) to appraise in what actual stage the MRS are, and (2) identify what is necessary to develop or refine during the service contract in order to make the next step toward a results-based monitoring tool.

Phase 1: Conducting a readiness assessment
Phase 2: Agreeing on results to monitor?
Phase 3: Developing key indicators to monitor outcomes
Phase 4: Gathering baseline data on indicators
Phase 5: Planning for improvements – setting realistic targets
Phase 6: Monitoring for results
Phase 7: Evaluative information to support decision-making
Phase 8: Analysing and reporting findings
Phase 9: Using the findings
Phase 10: Sustaining the M&E system within government

**Figure 1 Example for presentation of the result of appraisal**

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
<th>Phase 6</th>
<th>Phase 7</th>
<th>Phase 8</th>
<th>Phase 9</th>
<th>Phase 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>🟠</td>
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<td>Text...</td>
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<td>Text...</td>
<td>Text...</td>
<td>Text...</td>
<td>Text...</td>
<td>Text...</td>
</tr>
</tbody>
</table>

The traffic light system gives a first impression of the status. The explanations give details. The curve shows at one glance, where the gaps are and how severe they are.

A high section of the curve means a very good level in the respective phase has already been achieved. A low section of the curve means that nothing or only very basic activities have been undertaken.

### 3.4 Conclusions from the participatory process

This task will be elaborated as conclusion from the deliberative process. It will provide the necessary content-based input to develop specific modules/components in the monitoring tool (e.g. selection of monitoring indicators) in WP2 as well as the definition of the graphics and maps to be developed in WP3, and preliminary key political messages to be displayed.

Furthermore, the conclusions aim at the identification of key trends in Europe and in the macro-regions, their regions, metropolitan regions and cities (and other relevant territorial typologies). This will be done in relation to the policy aims and priorities, focusing on the progression of territorial development trends over time. The analysis should also be able to take up forecasting based on existing trends, and apply as much as feasible the monitoring indicators being proposed.

The analysis of the progress towards the objectives of each EU MRS should focus on analysing data related to strategy indicators and target values. In addition, the BSR region will have a territorial monitoring in relation to aims and objectives of the VASAB Long Term Perspective. While analysing the MRS activities and possible contributions to changes in the macro-region, information from Action Group Leaders on their activities and achievements will be used. Consideration will be given to indicators for policy areas and horizontal actions. All this will be reviewed and validated of the user-requirements concerning the monitoring tool itself.

### 3.5 Risk assessment

A lack of ownership of the monitoring tool could occur if there is no frequent participation in the meetings and processes. We will take all precautions possible in order to avoid this. One aspect in this regard is a solid appraisal of the start of departure for each MRS so that stakeholders get a good understanding of their situation. This could help them to mobilise resources and be motivated to make one or two steps further.
A possible lack of data also has to be mentioned here. Experience shows that the definition of useful indicators is one thing, finding the necessary data is the other thing. If the relevant data is here or not has to be clarified at an early stage of the process and this has to be done in close cooperation with the ESPON EGTC. It is especially difficult to get data from the non-EU countries in the MRS. A flexible approach is needed to tackle this issue. As there are about 10 countries, getting proper information at NUTS 2 or NUTS 3 is unrealistic. The ESPON ITAN project might be a first source to check for available data, as it dealt with collecting regional data in the neighbouring countries of the EU.

In relation to the EUSAIR there are four member states and four non-EU countries. This is in fact a challenge per se and therefore a close relation and cooperation with the technical secretariat is of great importance. At the kick-off meeting in February 2018 we learnt that the secretariat has already started monitoring and evaluating the strategy, a process that entails defining a baseline, defining indicators, defining realistic targets and measuring the difference with the baseline after the implementation of the strategy. This information has to be included in the research for our assignment.

### 3.6 Proposal of schedule for the first stakeholder Committee

The first stakeholder committee will take place in September 6th 2018 in Liepaja, in the framework of the VASAB CSPD meeting for the EUSBSR.

Next we present the proposal of agenda for the meeting with the timing and description of the activities to be carried out:

**Table 2. Agenda of the meeting**

<table>
<thead>
<tr>
<th>Timing</th>
<th>Agenda item</th>
<th>Description/ Method</th>
<th>Who does what?</th>
<th>Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-09:15</td>
<td>Welcome and introduction</td>
<td>• Introductory words&lt;br&gt;• Presentation round&lt;br&gt;• Presentation of time schedule and programme of the day</td>
<td>ESPON EGTC, Jürgen Pucher (Metis)</td>
<td>• PowerPoint slides: Time schedule and programme of this session</td>
</tr>
<tr>
<td>09:15-09:45</td>
<td>Input presentation</td>
<td>• Presentation of the outline / current status of the study&lt;br&gt;• Presentation of the prototype</td>
<td>Jürgen Pucher (Metis)&lt;br&gt;Efrain Larrea (Mcrit)</td>
<td>• PowerPoint slides</td>
</tr>
<tr>
<td>09:45-10:10</td>
<td>Input presentation</td>
<td>• Presentation of the strategy for the monitoring of the objectives of the EUBSR</td>
<td>Jacek Szlachta (SGH Warsaw School of Economics)</td>
<td>• PowerPoint slides</td>
</tr>
</tbody>
</table>
| 10:10-10:55  | Discussion in small working groups using the Place-Mat method (part one) | Facilitated work and discussion applying the Place-Mat method, about 6 people / group.<br>• Small groups (30 min)<br>• Plenary session (15 min) (presentation of group work, common discussion)<br>Key issues:<br>• How to measure the progress towards the objectives of the VASAB and EUBSR? | Facilitator (service provider), Chair and Members of the consortium support groups (answering questions, etc.)<br>All participants | • Material for Place-Mat method (prepare large piece of paper, pens, post-its, pins,…)<br>• List of 29 indicators<br>• One person for note-taking during the plenary session<br>• One person of each group should be selected to
<table>
<thead>
<tr>
<th>Timing</th>
<th>Agenda item</th>
<th>Description/ Method</th>
<th>Who does what?</th>
<th>Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:55-11:30</td>
<td>Discussion in small working groups using the Place-Mat method (part two)</td>
<td>Facilitated work and discussion applying the Place-Mat method, about 6 people / group</td>
<td>Facilitator (service provider), Chair and Members of the consortium support groups (answering questions, etc.)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Small groups (20 min)</td>
<td></td>
<td>All participants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plenary session (15 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(presentation of group work, common discussion)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Key issues:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Is the selection of indicators appropriate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Which (key) indicators to include/ exclude/ added / extended?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Reliability and harmonisation of of data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30 – 11:45</td>
<td>Summary and outlook</td>
<td>Chair will summarise the main outcomes of the groups and plenary sessions and provide an outlook on the next steps</td>
<td>Jacek Szlachta (SGH Warsaw School of Economics)</td>
<td></td>
</tr>
</tbody>
</table>

### 3.7 Background document for the preparation of the EUSBSR Meeting

A background document is available in a separate file. It contains information relevant to the Baltic strategy, the already existing TeMo project as well as materials such as a survey aiming at getting information from the stakeholders.
4 Draft concept for the tool

The ESPON European and Macro-regional Territorial Monitoring Tool will have five geographic modules, one module covering the entire ESPON space and four modules for the macro-regions, available to the users through a unified interface. The complete system will be comprised of three cooperating subsystems:

- A **front-end web application** which will be the interface of the users with the monitoring tool
- The **back-end web services** which will expose information and data from the ESPON database to the front-end
- An **administrative interface** which will be used to manage all presented data and information
- A **database** with all data specific to the tool, taking into account that some data comes from external sources

In this chapter we will present a draft concept for all four subsystems.

4.1 Development of a user friendly web client application

The monitoring tool will allow for the process and analysis of structured or raw (big data) data sources, driving to critical insights and hence enabling policy makers and organizations to identify and visually explore trends, patterns, and key relationships in the data, and to make smarter decisions and verify or disprove existing models of operations. The tool will provide an interactive user experience and an easy to use interface that will offer a collection of methods and algorithms for the analysis and interactive visualization of different types of data. Multiple state-of-the-art techniques will be included to provide data insight, detect outliers, perform clustering, and identify correlations between the different attributes of the input data.

Specifically, the information will be structured in a series of multi-indicator dashboards accessible by area, typologies, statistical units, year etc. These dashboards will present relevant information in the form of maps, charts, line plots, pies, histograms etc. and provide interactive visual exploration tools (e.g. zoom, selection, filtering, panning) to assist in the identification of patterns in the data.

Multimodal graph-based visualizations will be applied and allow visitors to have a more comprehensive overview of various parameters or combinations of parameters. Such visualizations will allow the recognition of patterns in monitored data (e.g. identification of progress and development trends), and the detection of outliers (e.g. the disconnected points in the graph-based visualization).

These interactive tools will be much richer in comparison to the ones foreseen in the new ESPONDB, which aim to be only a preview tool for the data contained in the database.

The user-interfaces, fully customised to the needs of the different macro-regions, should also share a common structure to facilitate their maintenance and continuous update. The modules for macro-regions should be as different and specific as end-user may demand, but ideally, they must share the same underlying structure and be well integrated among them and together with the ESPON website.

4.1.1 European user-interface

The European region module will integrate key policy concepts and priorities related to EU Cohesion Policy, the Territorial Agenda of the EU 2020, Urban Partnerships and the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development. The tool will also link into the main territorial challenges including: recovery from the global economic recession; economic
competition; climate change; ageing; migration; accessibility and connectivity. To this end we propose the tool to contain the following sections:

- A “Home” page containing news, examples, videos, tutorials, and presentations of the tool.
- Pre-made “Dashboards” per region/country, policies, and challenges with key indicators.
- A curated “Trends” section focusing on the progression of territorial development over time.
- An “Explore” section where the user will be able to create his own maps, graphs and tables based on several selections, combinations, comparisons, and data filters.
- A “Data” section which will give raw access to the underlying datasets.
- Other sections which will be identified by user requirements (e.g Useful Resources, Articles, Reports, Publications etc.)

The proposed sections are indicative and will be further refined as the project progresses.

4.1.1.1 Overall design

The interface of the monitoring tool will adopt the ESPON corporate identity and the graphic design of the new ESPON website. It will be based on the following basic principles:

- **Responsive web design**
  Responsive web design is an approach to web design aimed at crafting sites to provide an optimal viewing and interaction experience—easy reading and navigation with a minimum of resizing, panning, and scrolling—across a wide range of devices (from desktop computer monitors to mobile phones).

- **Accessibility**
  All mark-up will follow Web Content Accessibility Guidelines (WCAG) and pass W3C and WAI accessibility validation.

- **Data protection**
  We will follow and respect the European regulation on data protection with regard to the processing of personal data and on the free movement of such data.

- **Security**
  Security will be ensured in three different layers, the user session (securing data exchanged between the server and the users), the application (restricting the user access depending on the corresponding user rights) and the data (securing access to the content repositories).

- **Interoperability**
  Web interoperability is a crucial factor which has major effects on the functionality and usability of any tool. Proper design, development, testing and maintenance are required to provide a compatible website independently of platforms, browsers, operating systems and devices.

4.1.1.2 Technology

To facilitate harmonized content and overall website management, we propose the use of the [Drupal CMS](https://www.drupal.org), which is also the CMS that the ESPON website is built to. Drupal, treats most content types as variations on the same concept: a node. Static pages, blog posts, and news items (some possible node types) are all stored in the same way, and the site's navigation structure is designed separately by editing menus, views (lists of content), and blocks (side content which often have links to different site sections). Since these layers are kept separate, we can provide a completely different navigation and presentation of content to different users based on their specific needs and roles. Pages can be
grouped differently, prioritized in a different order, and various functions and content can be shown or hidden as needed.

On the client side, where interactive AJAX-driven rich components are needed, we propose to use **Angular**. Angular is a platform that makes it easy to build applications with the web. The library provides a number of features that make it trivial to implement the complex requirements of modern applications, such as data binding, routing, and animations.

### 4.1.2 Customisation of user-interfaces for the macro-regions

The four user-interfaces devoted to the macro-regional monitoring systems will be developed in the same software technologies and design criteria, also considering the existing design criteria and functionalities on the actual macro-regional websites.

Moreover, each of the custom-made monitoring modules for the EU macro-regions will be able to provide policy relevant information to selected target groups in three different aspects as required by the ToR:

- **a)** Monitoring of territorial trends and structures over time: this will be done by showing indicators in maps and graphics allowing to evaluate the evolution of the trends
- **b)** Monitoring the macro-regional strategy objectives: the tool will include information on the current objectives and target values with a linkage to the relevant indicators for measuring them
- **c)** Monitoring the activities of the EU Macro-regional Strategies and possible contributions to changes in the macro-region

### 4.2 Development of functionalities

An advanced toolbox will be developed to analyse the monitored data and offer a collection of methods for the visualization of these data. During the first steps of implementation, the existing ESPON tools will be examined, namely the European Territorial Monitoring System (benchmarking against other regions and cities, policy objectives and targets, regional averages, world and neighbourhood averages), the Baltic Sea Region Territorial Monitoring System (territorial dimension) and the ESPON HyperAtlas (multiscalar analysis, spatial autocorrelation, gini coefficient, etc, for evaluating changes in territorial inequalities over time).

#### 4.2.1 Interactive mapping

One of the main functions of the monitoring tool will be to visualize and analyse data in interactive maps and graphs by indicator, theme, and policy. This will be possible with the use of choropleth maps which display divided geographical areas or regions that are coloured, shaded, or patterned in relation to a data variable (indicator) and other graph types (line charts, bar charts, pie charts, scatter charts etc.)

### 4.2.1.1 Overall design

The user interface will be divided in three main areas (Figure below):

- **The map/graph panel** where the interactive map/graph will appear.
- **The data panel** which will include all selections, filters, layers, design etc. of the interactive map.
- **The time panel** which will include the year selection.
The monitoring tool will support the following requirements:

- The map designs will follow the design of the mapkit templates developed by ESPON.
- The maps will be interactive – regions and cities will be highlighted when selected and the name, code, indicator name and value will be displayed in a tooltip.
- Maps and graphs will be complemented with short explanations on the subjects.
- Sub-queries will be possible using typologies (e.g. urban-rural regions, metropolitan regions, border regions, mountainous regions, islands regions, sparsely populated regions, coastal regions, regions under industrial transformation), Statistical units (NUTS, LAU, Metropolitan area), and Year (one year and multiple years).
- Maps and graphs will allow the identification of progress and development trends over time (increase, decrease, positive, negative, distance to defined targets and in relation to the baseline).
- All relevant maps, figures, tables, and articles will be downloadable in various formats (jpeg, ai, PDF, docx, csv and/or xlsx depending on the type of content).

The data presented in interactive maps and graphs will be directly obtained from the ESPON 2020 Database Portal using web services. It is foreseen that a complementary database embedded in the tool may have to be developed for some datasets.

4.2.1.2 Technology

The interactive maps will be based on OpenLayers a high-performance web mapping library which runs on all modern browsers that support HTML5 and Javascript on both desktop/laptop and mobile devices. It can display map tiles, vector data and markers loaded from any source on any web page.
The interactive graphs will be based on Chart.js which is a powerful data visualization library that supports basic animated and reactive charts. For more complex visualizations we will use D3.js which allows great control over the final visual result providing a multitude of Math, Array, Geometry, Scales, Time, Geography, Color and other functions which can be used to create interactive SVG graphics.

4.2.2 Interactive analytical features

The monitoring tool will also include indicators and visualization solutions for benchmarking countries, regions, cities, and typologies (relative position using sums, averages, growth rates, targets, and policy objectives). Additionally, the European module will be able to benchmark a set of indicators against EU neighbourhood and the world under selected topics.

The user will have the possibility to benchmark, explore spatial autocorrelation, gini coefficients and other methods of exploring spatial variations for evaluating changes in territorial inequalities over time. The monitoring tool will also support the analysis of cross-sectoral issues and challenges such as the interplay of spatial structures, demography, blue growth, digitalization, vulnerability to globalization impacts etc.

4.3 Develop and implement web services

This task aims at designing the web services to be implemented. The team will use a prototype implemented as a starting point to decide what and how web services should be developed on top of the database and other tools, to be made accessible through the user interface and support the regular update of data. This prototype will be built upon the experience of the ESPON DB webservices.

Next we present a first proposal of the common messages for the REST webservices to be implemented.

REST APIs use the status line part of an HTTP response message to inform clients of their query results. The status line syntax is defined by RFC 2616 and we propose to consider the following codes to help the clients in processing the response body correctly:

<table>
<thead>
<tr>
<th>Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td><strong>Successfull</strong> and includes response body</td>
</tr>
<tr>
<td>201</td>
<td><strong>Created</strong>. There may be times when a new resource is created as a result of some controller action, in which case 201 would also be an appropriate response. The newly created resource can be referenced by the URI(s) returned in the entity of the response, with the most specific URI for the resource given by a Location header field. The origin server MUST create the resource before returning the 201 status code. If the action cannot be carried out immediately, the server SHOULD respond with 202 (Accepted) response instead.</td>
</tr>
<tr>
<td>202</td>
<td><strong>Accepted</strong>. Its purpose is to allow a server to accept a request for some process (for instance a batch-oriented process that is only run once per day) without requiring that the user agent’s connection to the server persist until the process is completed.</td>
</tr>
</tbody>
</table>
For the web services, after a first analysis, we have already prepared a list and description of the main REST calls to be implemented.

**Title: Populate search form fields**

In the search options, as there are multiple fields and user may have difficulties in order to find available options, text fields will use the autocomplete format.

Likewise, fields of type select box will get data from database. This allows changing a number of options, text and language without recompiling the application.

The web service call will follow the same format in all cases:

**URL:** /select/publications
/select/source
/select/area
/select/territorially
/select/dates
/select/type

**Method:** GET
**URL Params:** None
**Data Params:** None
**Response Codes:** Success (200 OK)
**Response type:** json

Json structure common to all populated fields:
*default* [optional]: Default value to be selected

*options* [required]: array of objects with *value* and *text* attributes

```json
{
  "default": "",
  "options": [
    {value: "",
     text: ""},
    {value: "",
     text: ""},
    {value: "",
     text: ""},
    ...
  ]
}
```

**Title: Search for indicators**

From the basic or advanced search toolbar the user launches a search call to the server.

**URL:** /search  
**Method:** GET  
**URL Params:** Optional: offset=number&limit=number //To allow paginate  
**Data**     
**Params:** Required: 
{
&source=SOURCE&from=FROM&to=TO&terr_lv=TERRITORIAL_LEVEL&areas=AREA/AREA...
&type=type1/type2...}

**Response Codes:** Success (200 OK)

JSON answer with tree format.

- *id*: Required: internal counter to identify each indicator uniquely
- *name*: Required: name of the indicator
- *order*: Required: order of the indicator in the tree branch
- *children*: Required: array of children with the same structure, [] if empty
- *levels*: Required: array of children with the same structure, [] if empty
- *period*: Optional: available years
- *type*: Optional: available years

```json
{
  data: [
    {id: number, name: string, order: 1,
     children: [
       {id: number, name: string, order: 1,
        levels: ..., period string, type: string,
        children: [
          ...
        ]},
      ...
    ]},
  ...
}
```
4.4 Develop and implement an administrator component

The goal is to provide an efficient and user friendly management and administration system for of the Territorial Monitoring Tool database, tools and user interface.

The management of these various components must be unified in terms of access and presentation: unique entry point and login, authorisation level depending on the user type (e.g. administrator, data providers and other users). The administrative functionalities are separated into two distinct groups, those managing the website portal (CMS Drupal), and others that will aim at the management of the Database.

The following graphic shows an initial proposal of user roles and assigned tasks in order to be discussed in future.
The existence of a website administrative role could be considered as the tool interface will be embedded inside a Drupal CMS (Content Management System) in order to allow managing the Website independently from the database tool. The following administrative tools will be offered: installation, configuration of plugins and configuration of access to analytic tools. The design of the Drupal template theme will be adjusted to the ESPON visual identity.

The Data managers and administrators will use productive processes to import data, documents, to control its quality, and tools to maintain uploaded data and generate metadata information.

The **view data module** retrieves available indicators and data to public or registered users without administration privileges. Non registered users would access to a subset of published indicators and data.

The **manage data module** will allow to do insertion, deletion and modification of metadata, data and indicators depending on the users’ roles and their permissions.

This module will log any action that renders a state change of metadata or data, in order to allow users follow the data workflow. The log entry will store the following elements:

- tracking id (incremented sequentially)
- indicator
- action
  - add metadata
Email notifications will be configurable through roles and permissions. This means notification events will be triggered on the different states of the data and metadata workflow and will deliver a notification message to a specific users.

The administration module must allow the management of:

- User registration,
- User interface,
- Data tests and validations
- Workflow tools
- Other documents and material made available for users,
- Statistics on visits and downloads.

### 4.5 Monitoring database

The Data model used by the Monitoring Tool will be defined based on the ESPON DB model to make it possible to include different type of statistical data originated from different sources and attached to different geographical features. Database will store the raw data needed for the calculation of all monitoring indicators. In storing the data and not the indicators themselves, it will be possible to implement transition in the system between different types of NUTS structures (i.e. with data being available at NUTS3 level, it is possible to display indicators at NUTS3 level, but also at NUTS2 and NUTS0 levels. ESPON regional typologies will be considered in the Territorial Monitoring Tool database so that trends and policy development deriving from data and indicators can be investigated and displayed accordingly. The starting point will be official ESPON typologies (e.g. urban-rural, regions according to their geographical features -mountains, islands, SPA…) and other typologies already included in the ETMS project (e.g. regions by eligibility to structural funds; regions according to their EU2020S performance; typologies of scientific regions; regions belonging to a European transnational strategies). Metropolitan regions will be also be considered. NUTS data can be aggregated from NUTS3 level to Metro regional level, which are NUTS3 regions or a combination of NUTS3 regions which represent all agglomerations of at least 250,000 inhabitants. Macro-regions will be included as specific types of typological units, allowing for cross-comparison of macro-regions.

In doing so, it will be possible to monitor the evolution of trends, not only for European regions, but also for sets of regions according to their typology. It will be possible to compare a region to the average values of other regions, by different kinds of typologies, and to compare groups of regions in different typologies in relation to their average performance, as well as macro-regions between them.

The ESPON-EMTM database model has to meet the requirements of the client application. In this case, we contemplate 4 large blocks of functionalities:

- Indicators
- Data values
• Workflow for updated data
• Administrator tasks

Each of these blocks will package specific calls that will be programmed as REST services (web services) and will interact with the database.

Specific calls related to these 4 features:

• Indicators: Obtain the basic data to show users the available information
  ◦ Get the basic list of indicators to show on a list or tree structure
  ◦ Get all the data attached to an indicator (metadata)

• Data values: Get and upload data to the server
  ◦ Get the data of an indicator for all territorial levels filtered by date
  ◦ Get the data of an indicator for all available dates filtered by territorial level (in order to make temporal graphics for one region)
  ◦ Upload data to the server

• Workflow for updated data: Track the status of the data loaded
  ◦ List of the indicators that have data pending to validate (just uploaded)
  ◦ List of the indicators that have pending data to correct (failed to pass integrity tests)
  ◦ Change the status of an indicator's uploaded data: pending of validation, pending of correction, published

• Administrator tasks: Administrative tasks, for example create a new user with data administrator permission
  ◦ Manage users: create, delete, modify and query
  ◦ Manage roles: create, delete, modify and query

The last two blocks are yet to be defined. Users and roles could be sufficient to manage users, but for allowing an individual management of each available field, the database will need a field-roles table with information about if each field is visible and editable. If there are users with more than one role (excluding administrators) there will be a user-roles table, and if a user can manage a user group we will need a table indicating the “fathers” of each “children” user. The definitive structure will be defined in the coming months in accordance with EGTC.

The database schema that facilitates the first 2 task groups is presented next in a diagram:
This database structure will allow users to obtain the list of indicators and the published data according to different query conditions:

- **Source**: EUROSTAT, ESPON, World Bank...
• **Area:** Countries, transnational cooperation areas, specific macro-regions (Baltic, Danube, Alpine, Adriatic-Ionic)

• **Territorial Level:** NUTS0, NUTS2, NUTS3, MR

• **From (date/year) To (date/year)**

• **Type:** It can be included as a search field. It is similar to source, and will be used to find the indicators by origin: ESPON-DB, ESPON-EMTM, EUROSTAT, others

If the indicators are not integrated in the EMTM database, other fields could be necessary, at least a field named **webservice_call** that will include the url to be called to find external available indicators.

The blue framed tables: Sources, Area, Types, and Territorial_levels, would be used to populate the interface search fields.

The Hierarchy table allows to define a parent indicator (or title), and all its children (indicators or titles of other child indicators). This is a requirement to show a structure of indicators as a tree under ‘Google Material Design’ language.

The database will contain a duplicate of the information contained in the ESPON database for the sake of better performance of the tool. An automatic process will periodically retrieve the data changes from the ESPONDB through web services, ensuring that EMTM is always up to date. This will be done with all data sources that offer web services for data retrieval, minimizing the amount of data that has to be manually updated.

### 4.6 Help and guidance documents

Due to the importance and strategic role of the Monitoring Tool, special effort will be devoted to creating appropriate supporting content for both visitors and administrators as well as initiating propagation activities to engage target audiences. In this regard and as already presented above, an attractive home page will be created providing access to introductory text, guidance manuals, navigation tutorials, instructive videos, wizards, animated presentations, and overview leaflets, which will illustrate the aims of the tool and introduce visitors to its main functionalities.

Moreover, a detailed manual will be produced to assist administrators and future developers. It will include guidelines on installation, maintenance and evolution of the tool, content management and update, user management etc. It will also include instructions on how to insert new nomenclatures (implement NUTS changes, smaller territorial units like LAU2), new data (through web services) or extend the timeline (add newest years).

The complete usage and administration capabilities of the tool will be presented at a dedicated training session that will be organized before the end of the contract.
5 Strategy for selecting indicators and collecting additional data

This chapter is explaining the strategy for the proposal for selecting indicators and collecting additional indicators for analysing trends, strategies and actions.

5.1 Monitoring framework: selection of indicators for macro-regions through a participatory process

5.1.1 Literature review of secondary analyses and data sources

We will carry on a systematic desktop literature review of secondary analyses and data sources. Synthesise existing and ongoing foresight studies in order to establish a structured approach to setting of an analytic baseline and identifying trends, drivers, enablers and cause-effect chains (diagnosis). The aim should be to categorise a suitable range of possible alternative scenarios for the future evolution of Europe’s territory (prognosis) focusing on the four macro-regions.

5.1.2 Monitoring framework: European scale module

The ESPON European and Macro-regional Territorial Monitoring System will cover the key policy themes and strategic objectives in Europe and in the four macro-regions, displaying information on territorial structures, trends, perspectives and policy impacts on a comparable basis. The monitoring requirements established by the ToR will remain central when designing the European and Macro-Regional Territorial Monitoring System (ERTMS), in terms of geographic coverage and of indicator nature. We will propose and select key indicators for each of the geographic modules in cooperation with the Steering Committee, based on existing data and maps coming from concluded and ongoing ESPON projects.

The objective is to provide in-depth contextual information and data related to each of the MRS, that make it possible to characterise each of the macro-regions with a common approach, still with the potential to consider the specificities of each strategy on a more detailed level (see task 3.1.2). Data will be compiled, whenever possible at the regional level (NUTS2 or NUTS3), in consistent time series with maps and figures showing patterns and trends. The main database will be structured to reflect different dimensions of information on macro-regions following the different pillars, priority areas and other classifications considered by the different MRS:

- The socio-economic background (using indicators on population, GDP, government finance, workforce and active population, employment by sectors etc.), and
- Sustainable development goals with Prosperity (including indicators of educational attainment, quality of life, social inclusion, competitiveness, broadband access and use of IT-services, tourism, security, health, culture and education) and Environment including sustainability (emissions, renewable energy, water quality, etc.) renewable energy and energy consumption, landscape and biodiversity (including green urban areas) and risks
- Connectivity including accessibility (of public transport, of SGI, ports etc.)
- Cross-cutting themes like governance1 and spatial planning.

The sources are data available at the ESPON DB, mostly the ESPON Core Indicators (approx. 40), but also incorporating other indicators generated by ESPON projects when relevant. In particular, indicators from EEA and Copernicus Land Service. The set of indicators to be included for European wide monitoring will be based as much as possible on the update the ETMS and the BSR-TeMO. New indicators will now be included making use of available data from the ESPON Data and Maps project,

---

1 World Bank, European Quality of Governance Index

European and Macro-regional Territorial Monitoring Tool

Inception report, ESPON 2018
allowing the tool to go well beyond the sets of indicators considered previously by ETMS and BSR-TEMO. In internalising the already consolidated monitoring experiences by ESPON since INTERCO until now it will be ensured quick advance in the European scale monitoring component. The selection of further indicators will be part of the interactive setting with the stakeholder in WP1, where relevant common information for all MRS are defined.

5.1.3 Monitoring framework: macro-regional modules

Each geographic module will follow a tailor made approach, to take into account the different policy contexts and provide evidence at a geographical level which makes the most sense in each case. The departing point will be the critical review of the existing indicators and targets included in the different strategies, but the final sets and their level of disaggregation and possible aggregations will be discussed with the regional stakeholders all along the process. The selection of the indicators will be aimed at informing judgements and decisions for steering possible interventions, will therefore need a clear targeted nature. The participatory framework for elucidating the needs for each of the territorial modules will be developed in WP1. The aspiration level for the level of detailedness will be specified by the appraisal tool, so that different stages in the development are reflected in an appropriate way.

The information available for each MRS will be organised according to the three main chapters established in the ToR:

a) Monitoring of territorial trends and structures over time: this will be done by showing indicators in maps and graphics allowing to evaluate the evolution of the trends. The list of indicators specified in task 3.1.1 (territorial structures, trends, perspectives and policy impacts) will be expanded for those cases where more detailed and more specific information is available at the level of individual MRS.

b) Monitoring the macro-regional strategy objectives: the tool will include information on the current objectives and target values with a linkage to the relevant indicators for measuring them. Indicators will be compiled from the MRS, which measure activities supported by the MRS. This should provide information on activities (flagships, networks, policy initiatives). This type of information is usually to be found in the reporting of implementing bodies and in the Action Plans. To the extent possible, a common framework will be developed, but the approach will be specific to each MRS and the respective phase of development.

c) Monitoring the activities of the EU Macro-regional Strategies and possible contributions to changes in the macro-region: This type of information requires a specific intervention logic and allocation of activities to a baseline and target indicator and some comparison over time. Such a type of information clearly exceeds the scope of this exercise. However, if we find information on this issue (e.g. in the DG REGIO study on MRS, which is not yet completed), the tool will show examples of such assessment. However, we expect such information to be mainly available as narratives and less at the level of indicators, and to be available only for the more advanced strategies. For each of these categories of indicators the specific data and indicators available for each MRS will be compared to the information available at the ESPON level and with other MRS and alignment of indicators will be sought to the extent possible. Again, this will be cross-checked in WP 1.
5.2 Data collection and processing

5.2.1 ESPON database

One of the main data sources for the tool will be the new ESPON database currently under development. It is foreseen that the EMTM database will be continuously populated with information from the ESPONDB through the use of web services and scripts that will ensure that the data is updated regularly. In this way we make use of the automation possibilities that the web services of ESPONDB offer. We propose to have a complete copy of the ESPONDB indicators because in this way we can have a much faster response providing a better experience for the user.

MCRIT is currently participating in the development of ESPONDB and is helping in the shaping of the web services, thus we can ensure an accurate technical knowledge of the matter and a seamless integration with the EMTM database.

Other data sources will be added as much as possible through web services whenever they are available in order to have automated processes for the updating of the data contained in the EMTM database.

5.2.2 Countries outside ESPON space

A special case of data is that of the countries outside the EU of which statistical data in EUROSTAT or the ESPONDB does not exist. For these countries (Belarus and Russia for the EUSBSR and the Balkans in the EUSDR/EUSAIR) we will try to establish contacts with the statistical offices through contacts identified during the stakeholder committees.

This data will likely be available only as downloadable documents in excel or pdf format, thus we foresee a need of processing it to conform to the EMTM database structure. If available, we will make use of web services to make automatic connections that allow for a continuous update of the data.

Given that territorial levels in these countries do not conform exactly to the NUTS classification, a correspondence between levels will be made so that when EMTM tool shows data at NUTS3 level, this will include NUTS3-like data for these non-EU countries. In this way we can show continuous maps without blank spaces.

5.2.3 Alternative data sources

On top of the indicators and data obtained from more traditional sources as well as the participatory process, **new indicators** will be produced from pan-European information from the Copernicus Land Service\(^2\) and the European Environment Agency (EEA).

The EEA and Copernicus, through the Land Service, are providing spatial datasets of **high resolution** and relevance at territorial level. Some of this products include time-series, which makes them very useful to assess territorial trends and monitor changes over time in the different European territories.

The different indicators will be calculated by different territorial or reporting units, whenever it is possible:

- ESPON Space
- Country level (NUTS 0)
- NUTS levels 1, 2, 3
- LAU levels 1, 2

- Macro-regional levels: Baltic, Danube, Adriatic and Ionian, Alpine.

Additionally, those indicators will be provided on the 100x100m and the 1x1km reference grids, so that they can eventually be used as data source in future developments of the ESPON OLAP Cube. Data referred to the grids are then easy to be integrated in a multidimensional database (OLAP Cube) in order to derive indicators by other reporting units integrated in the Cube (e.g. functional areas, river catchments, etc.).

This is the list of indicators proposed to be calculated and eventually integrated in the Territorial Monitoring Tool. This proposal can be adjusted with the feedback received from ESPON EGTC to this Inception Report.


**Data source**

<table>
<thead>
<tr>
<th>Corine Land Cover (CLC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spatial resolution:</strong> 100x100 m</td>
</tr>
<tr>
<td>MMU 25 ha</td>
</tr>
<tr>
<td><strong>Geographical extent:</strong> Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia (FYR), Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.</td>
</tr>
<tr>
<td><strong>Description:</strong> CLC is a high resolution European-wide land cover dataset. With the help of CLC data it is possible to provide support for protecting ecosystems, halting the loss of biological diversity, tracking the impacts of climate change, assessing developments in agriculture and implementing the EU Water Framework Directive.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corine Land Cover (CLC) changes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spatial resolution:</strong> 100x100 m</td>
</tr>
<tr>
<td>MMU 5 ha</td>
</tr>
</tbody>
</table>
**Geographical extent:** Same as CLC


**Description:** CLC is a high resolution European-wide land cover dataset. With the help of CLC data it is possible to provide support for protecting ecosystems, halting the loss of biological diversity, tracking the impacts of climate change, assessing developments in agriculture and implementing the EU Water Framework Directive.

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2. Degree of imperviousness 2006-2009-2012 and imperviousness changes

**Data source**

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial resolution: 20x20m, 100x100m</td>
</tr>
<tr>
<td>Geographical extent: Same as CLC</td>
</tr>
<tr>
<td>Reference date(s): 2006, 2009</td>
</tr>
</tbody>
</table>

**Description:** Built-up areas are characterized by the substitution of the original (semi-) natural land cover or water surface with an artificial, often impervious cover. These artificial surfaces are usually maintained over long periods of time. The imperviousness HRL captures the spatial distribution of artificially sealed areas, including the level of sealing of the soil per area unit. The level of sealed soil (imperviousness degree 1-100%) is produced using an automatic algorithm based on calibrated NDVI.

---

3. Land cover statistics in Functional Urban Areas (FUAs) 2006-2012

**Data source**

<table>
<thead>
<tr>
<th>Urban Atlas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial resolution: 1:10 000 (10x10m)</td>
</tr>
</tbody>
</table>
**Geographical extent:** Urban Audit FUAs

**Reference date(s):** 2006, 2012, Changes 2006-2012

**Description:** The Urban Atlas is providing pan-European comparable land use and land cover data for Functional Urban Areas with more than 50,000 inhabitants as defined by the Urban Audit. Urban Atlas' mission is to provide high-resolution hotspot mapping of changes in urban spaces and indicators for users such as city governments, the European Environment Agency (EEA) and European Commission departments.

This indicator will also be provided by FUAs. Urban Atlas 2006 contains 319 FUAs (those above 100,000 inhabitants), whereas Urban Atlas 2012 contains 693 FUAs (those above 50,000 inhabitants).

4. Land recycling and densification in Functional Urban Areas (FUAs) 2006-2012

This indicator looks at the land recycling in its broad sense, i.e. densification and total land recycling (‘grey’ plus ‘green’ recycling), in comparison to total land consumption.

Land densification can be defined as the land development that takes place within existing communities, making maximum use of the existing infrastructure instead of building on previously undeveloped land. Land recycling can be defined as the reuse of abandoned, vacant, or underused land for redevelopment.

This indicator is calculated from Urban Atlas, i.e. by FUAs, but it can then be summarised by aggregation to other territorial units (NUTS levels, macro-regional level).
5.3 Production of graphics and maps

The ESPON European and Macro-regional Territorial Monitoring Tool will include a wide variety of policy relevant indicators, maps, graphs and tables. Some of these will be predefined as an output of the stakeholder committees, such as representations of the objectives of the MRS, while others could be prepared by the user according to her/his specific needs. The maps showing the Macro-regions will make use of the new template prepared by ESPON, thus having the corporate identity of the ESPON map layouts. In this way it will be possible to harmonise and generate new maps based on existing data and maps coming from ESPON projects.
Maps will be accompanied by articles/legends presenting the main messages of the map and key policy observations of trends, presenting the main messages of the map and key policy observations of trends in relation to European territorial development and Cohesion Policy and strategies.

6 Detailed time planning of the various meetings and activities

During the Kick-off meeting several future meetings were identified. These have been used as possible Steering Committee meetings.

The Steering Committee will consist of the Consortium, key experts chairing the Committees, ESPON EGTC and policymakers at European and macro-regional levels but also officials from European (such as EUROSTAT and the JRC) and international institutions. At the Steering Committee meetings 10-15 stakeholders will be invited and at least one member of the Consortium will attend.

The Steering Committees will be organised in two rounds, each one comprising 5 meetings (one for each MRS and one for the whole EU). Two extra meetings will occur approximately one month after the delivery of the Alpha and Beta versions of the tool (D2 and D3 due in August 2018 and February 2019 respectively).

METIS will attend all of the Steering Committee meetings. The different experts from the strategic Macro-Regional Forum will attend the specific meetings of their Macro-Region. MCRIT will complement some of the meetings.

<table>
<thead>
<tr>
<th>Meeting/activities /events</th>
<th>Purpose/Location</th>
<th>Indicative deadline</th>
<th>Committee chairing</th>
<th>Consortium attendants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-off meeting</td>
<td>DGREGIO premises in Brussels</td>
<td>09/02/2018</td>
<td>MCRIT, METIS, HYPERTech, Jacek Szlachta</td>
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</tr>
<tr>
<td>Steering Committee meeting (first round)</td>
<td>EUSBR VASAB CSPD meeting in Liepaja, Latvia</td>
<td>5-6/09/2018</td>
<td>Jacek Schlachta</td>
<td>MCRIT, METIS</td>
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<tr>
<td>Steering Committee meeting (first round)</td>
<td>EUSAIR</td>
<td>Before end of 2018</td>
<td>Christine Hamza</td>
<td>METIS</td>
</tr>
<tr>
<td>Steering Committee meeting (first round)</td>
<td>EUSD 7th Annual Forum of the EU Strategy for the Danube Strategy and Meeting of the Ministers responsible for Tourism from the Danube Region in Sofia, Bulgaria</td>
<td>16-19/10/2018</td>
<td>Herta Tödtling-Schönhofer</td>
<td>METIS</td>
</tr>
<tr>
<td>Steering Committee meeting (first round)</td>
<td>EU module meeting Luxembourg/Brussels</td>
<td>Before end of 2018</td>
<td>MCRIT, METIS</td>
<td></td>
</tr>
<tr>
<td>Meeting/activities/events</td>
<td>Purpose/Location</td>
<td>Indicative deadline</td>
<td>Committee chairing</td>
<td>Consortium attendants</td>
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</tr>
<tr>
<td>Steering Committee meeting (first round)</td>
<td>EUSALP General Assembly of the EUSALP Innsbruck, Austria</td>
<td>20/11/2018</td>
<td>Wolfgang Pfefferkorn</td>
<td>METIS</td>
</tr>
<tr>
<td>Steering Committee meeting</td>
<td>Luxembourg/Brussels – Presentation of D2 (Alpha version of the tool)</td>
<td>September 2018</td>
<td></td>
<td>MCRIT, METIS, HYPERTECH</td>
</tr>
<tr>
<td>Steering Committee meeting (second round)</td>
<td>EUSAIR</td>
<td>October 2018</td>
<td>Christine Hamza</td>
<td>METIS</td>
</tr>
<tr>
<td>Steering Committee meeting (second round)</td>
<td>EUSDR</td>
<td>First half of 2019</td>
<td>Herta Tödtling-Schönhofer</td>
<td>METIS</td>
</tr>
<tr>
<td>Steering Committee meeting (second round)</td>
<td>EUSALP</td>
<td>First half of 2019</td>
<td>Wolfgang Pfefferkorn</td>
<td>METIS</td>
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<tr>
<td>Steering Committee meeting (second round)</td>
<td>EU module meeting Luxembourg/Brussels</td>
<td>First half of 2019</td>
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<tr>
<td>Steering Committee meeting</td>
<td>Luxembourg/Brussels – Presentation of D3 (Beta version of the tool)</td>
<td>March 2019</td>
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<td>MCRIT, METIS, HYPERTECH</td>
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<td>Steering Committee meeting (second round)</td>
<td>EUSBR 10th Annual Forum of the EU Strategy for the Baltic Sea Region Gdansk, Poland</td>
<td>12-13/06/2019</td>
<td>Jacek Szlachta</td>
<td>METIS</td>
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<tr>
<td>Outreach activities and ESPON events (6)</td>
<td>ESPON Seminar in Sofia – Presentation of the project and mock-up of the interface if available</td>
<td>30-31/05/2018</td>
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<td>MCRIT</td>
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<tr>
<td></td>
<td>EUSBR presentation of the project at the 9th annual forum of the EU strategy for the Baltic sea Region</td>
<td>4-5/06/2018</td>
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<td>MCRIT</td>
</tr>
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<td></td>
<td>EUSDR information meeting, Brussels</td>
<td>26/06/2018</td>
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<td>MCRIT</td>
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<td>Meeting/activities /events</td>
<td>Purpose/Location</td>
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<td>Committee chairing</td>
<td>Consortium attendants</td>
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<tr>
<td></td>
<td>ESPON Seminar in Austria</td>
<td>December 2018</td>
<td></td>
<td>METIS</td>
</tr>
<tr>
<td></td>
<td>Presentation of the project and Alpha version of the interface</td>
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<tr>
<td></td>
<td>ESPON Seminar in Romania</td>
<td>May-June 2019</td>
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<td>MCRIT</td>
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<td>Presentation of the project and Beta version of the interface</td>
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<td>ESPON Seminar in Finland</td>
<td>December 2019</td>
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<td>METIS</td>
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<tr>
<td></td>
<td>Presentation of the project and draft final version of the interface</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training session on how to use and administer the tool</td>
<td>Luxembourg/Brussels or in another place to be decided</td>
<td>December 2019 / January 2020</td>
<td></td>
<td>MCRIT, HYPERTECH</td>
</tr>
</tbody>
</table>

With regards to expected deliveries, these are as follows:

<table>
<thead>
<tr>
<th>Delivery</th>
<th>Delivery description</th>
<th>Indicative deadline(^3)</th>
<th>Indicative deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Inception delivery</td>
<td>T + 2 months</td>
<td>09/04/2018</td>
</tr>
<tr>
<td>D2</td>
<td>Interim delivery (Alpha version of the tool)</td>
<td>T + 6 months</td>
<td>09/08/2018</td>
</tr>
<tr>
<td>D3</td>
<td>Second interim delivery (Beta version of the tool)</td>
<td>T + 12 months</td>
<td>08/02/2019</td>
</tr>
<tr>
<td>D4</td>
<td>Draft final delivery (Draft final version of the tool)</td>
<td>T + 18 months</td>
<td>09/08/2019</td>
</tr>
<tr>
<td>D5</td>
<td>Final delivery (Final version of the tool)</td>
<td>T + 24 months</td>
<td>10/02/2020</td>
</tr>
</tbody>
</table>

\(^3\) The letter "T" in this table stands for the date of the kick-off meeting.
7 Annex 1: detailed analysis of existing tools

7.1 Tools related to the Macro-Regions

For the Macro-Regions object of the tool to be developed there is a number of Territorial Monitoring tools implemented or in development. In particular:

**Figure 6 Alpine and Danube web tools (FRC, 2017)**

Baltic Strategy Geographical Information System – BSR-TeMO (ESPON)  
BSR-TeMo - Territorial Monitoring for the Baltic Sea Region was integrated in a portal with a web-site like solution, without “mapping tool” for interactive data exploration. The portal is well organized and provided easy access to indicators via thematic “entry points”. After indicator selection all outputs concerning the particular indicator were listed together, sorted by output type (report, news, documentation, etc.). This solution provided the user really effective way how to derive all information needed as fast and easy as possible. This tool is an example of simple and complex monitoring system. Therefore, similar solution of aggregating different types of outputs based on relevant topic/territory type which they belong to, should be considered also for EMTM purposes.
**Baltic Region** - Baltic Sea Region Territorial Monitoring System

**29 socioeconomic and territorial indicators implemented**

- Macroeconomic development (GDP per capita, GDP per person employed)
- Labour market (Unemployment rate, total, Employment rate (20 - 64 years))
- Demography (Net migration rate, Total population change, Economic dependency ratio)
- Potential accessibility (Accessibility potential by road, rail, air, multimodal accessibility potential)
- Spatial structure (Functional areas: access to cities, Population potential within 50 km, Border crossings)
- Internet (Households with internet access at home)
- Human capital (Population with tertiary education (25 - 64 years), Employment in technology & knowledge sectors)
- Financing and institutions (Gross-domestic expenditures on R&D, business, Gross-domestic expenditures on R&D, total)
- Social inclusion (At-risk-of-poverty rate, Severe material deprivation rate, Youth unemployment rate (15-24 years), Gender imbalances)
- Health (Life expectancy at birth, in years, Self-assessed general health status)
- Consumption and production (New soil sealing per capita, Air pollution (PM10), Eutrophication)
- Natural recourses (Fragmentation index)

**Alpine Strategy Geographical Information System - WebGIS ALPINE**
([http://webgis.alpconv.org/](http://webgis.alpconv.org/)) The Web Geographical Information System for the Observation and information on the Alps incorporates the indicators from specific policy fields for which the state of the art reports have been prepared, namely for transport, sustainable tourism, rural development, water, demography, green economy. Data is displayed at municipal level (LAU2) for the region, including parts of France, Italy, Switzerland, Austria, Slovenia and Liechtenstein.

**Alpine Region** (WebGIS ALPINE [http://webgis.alpconv.org/](http://webgis.alpconv.org/))

**42 socioeconomic and territorial indicators implemented**

- Demographic indicators (birth rate, death rate, migrations, natural change, density, ageing, gender imbalances…)
- Metropolises and their agglomerations (Inhabitants)
- Migration balance in Alpine municipalities (1990-1999)
- Labour market trends, by ages, by sectors (primary, secondary, tertiary private, public)
- Gross domestic product (GDP) per capita
- Demo-economic clusters
- Inactivity rate
- Employment rate / Unemployment rate, young unemployment rate…
- Agricultural land area, land area changes (%)
- Farms in the Alpine Convention area between 1990 - 2000 (NUTS-3)
- Education attainment (secondary, tertiary)
- Accessibility to services of general interest (distance to hospital, to regional capital…)
- Traffic Census Points Austria
- Area based Tourism Function Index (overnights)
- Tourism demand (Average length of stay, total arrivals,)
- Tourism intensity in Alpine municipalities
- Population based Tourism Function Index
- Hydro Power
- Water Nitrate Concentration
- Surface Water Quality Monitoring Site
- Trophic Status Lakes
- Surface water quantity network

**Danube Strategy** The Danube Reference Data and Services Infrastructure (DRDSI)
The Open Data catalogue is a useful DRDSI product itself, covering over 9,000 datasets originating from research projects, JRC Nexi supporting the EUSDR, accessing the official records created under Open Data and INSPIRE initiatives and data sources from the EC and other international initiatives. It covers economy, infrastructure, transport, energy, environmental indicators, cultural heritage, agriculture and other.

### Danube Region - European Union Strategy for the Danube Region (EUSDR) target indicators

- Cargo transport
- Railway passenger
- Air connectivity
- Climate change
- Primary energy production
- TEN-E
- Solve obstacles to navigability and implement harmonised River Information Services
- Tourism activity (arrivals, stay, beds...)
- Green tourist infrastructure and products
- Water Nitrate Concentration
- Water Quality
- Soil
- Patent applications
- Education attainment (secondary, tertiary)
- Innovations and new technologies
- Cluster network
- Environment (Solid waste, sewage, biodiversity, flood risk...)
- Employment rate / Unemployment rate, young unemployment rate...
- Labour market trends

### Adriatic and Ionian Region

From the strategy of the region, the following indicators can already be identified:

### Adriatic and Ionian Region - European Union Strategy for the Adriatic and Ionian Region (EUSAIR) target indicators

- Fisheries and aquaculture (seafood production and consumption...)
- Marine and coastal environment (ecosystem)
- Marine and terrestrial biodiversity
- Inland, coastal and maritime tourism demand
- Tourism offer (products and services)
- Tourism activity (arrivals, stay, beds...)

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*European and Macro-regional Territorial Monitoring Tool*

*Inception report, ESPON 2018*
7.2 Benchmark of existing ESPON Tools. Potential added value for EMTM

**ESPON Database** ([http://database.espon.eu/db2/](http://database.espon.eu/db2/)) is currently being developed under the M4D project. A web platform has been developed allowing users both upload and query/download data. This Query and Download interface should be used to get indicators to feed the EMTM. This interface includes an advanced search functionality which facilitates the finding of data, either by topic, by project or by different advanced search options available.

It is obvious, that **ESPON database** provides the most comprehensive source of territorial indicators over ESPON space, which will be the thematic content of the EMTM. From the beginning of the EMTM project, the ESPON database has been regarded as the main source for EMTM indicators. Although the direct access to the ESPON database has been also considered, the final solution for EMTM will be based on autonomous EMTM database. The main reason is that not only indicators contained in ESPON database, but also indicators from other relevant sources will be used for the EMTM. Therefore, it would not be profitable to connect EMTM directly to ESPON database.

Beside it, the experiences with the structure and organization of ESPON database provides a valuable source of information about how the EMTM database should be structured, filled in and maintained. Data availability, considering all spatial coverage, coverage of different levels of analytical units and completeness of time series has to be assured for selected indicators to avoid incomplete data series.

It is also very important to avoid the existence of similar or identical indicators in the database (which could differ e.g. only in original data source or in calculation algorithm).

**OLAP Cube** ([http://158.109.174.100/webbi/](http://158.109.174.100/webbi/)) is a tool based on the OLAP technology, prepared in the frame of the ESPON 2013 Database and ESPON M4D. It has been developed in order to be able to combine and query statistical data together with environmental or other types of territorial datasets in an easy way. The tool is being maintained regularly updated by the ESPON M4D project. It is using the European Reference 1 km² grid as ancillary data in order to aggregate and disaggregate data and make them comparable.

Moreover, the OLAP Cube will be updated with new data proposed by ESPON projects and an Urban OLAP Cube is also foreseen, which could eventually facilitate the calculation of new indicators to be part of the EMTM.

**OLAP Cube** provides framework for flexible grid-based aggregations of spatial data for target analytical units. It enables to combine different data types like NUTS units, LC/LU layers, population density grids etc. Clear advantage of OLAP Cube approach is its flexibility to support user defined analytical units on-fly and without need for GIS systems. On the other hand, it has to be considered that the preparation of the database requires extra effort and might be time consuming for large datasets.

OLAP Cube also enables the population disaggregation based on population density grid, which could be beneficial especially for regions with non-available population data. The tool is non-public – for researchers use only. Currently it disposes with Microsoft Excel based interface. However, the more user-friendly graphical interface is already under development and one of the main priorities of OLAP Cube developing group.

As the indicators used for EMTM will be mostly derived in form of values already calculated for spatial analytical units, the OLAP Cube could be only used in case of necessity to re-calculate selected indicators for different or newly added analytical units, for which indicators values are not available in ESPON database or other standard data sources.
Hyperatlas ([http://hyercarte.espon.eu/HyperCarte/initLicense.action](http://hyercarte.espon.eu/HyperCarte/initLicense.action)) is the web analysis tool which is already available and its functionality and features can be examined. It is an analytical tool based on the multi-scalar territorial analysis concept. This web application allows the visualization, customization and advanced analysis of selected ESPON indicators. It is an example of user friendly interface, source of indicators for selection and inspiration for advanced analysis.

Hyperatlas (currently v2) is a web application prepared for viewing and analysing of selected indicators. It works as JAVA based platform. It is intended for the visualization of predefined set of indicators and is not directly connected to the ESPON database – which is one of the main disadvantages of the Hyperatlas. The tool is designed for multi-scalar territorial analysis – indicator values are available at the NUTS0-NUTS2 levels for four different spatial coverage’s: ESPON area, Central and Eastern European countries, EU15 and EU27.

Although both expert and basic modes are available for more or less experienced users, even the basic one is reported to be too difficult for common users. The argument is, that too much advanced functions and features is incorporated in the application and especially several types of analytical maps and or charts seems quite difficult to understand. Beside it, not much textual explanation is included in frame of the tool. On the other hand, possibility to visualize both map and chart in the same time is missing in Hyperatlas.

Hyperatlas presents each of selected indicators on an analytical and synthetic approach, as it enables the user to explore all indicator’s numerator, denominator and ratio. Maps with different deviations could be selected – large, medium or small and it also provides synthetic approach, with two synthesis maps for each indicator included in expert mode.

It provides the user a possibility to customize indicators via numerator and denominator selection, which could be considered as one of the strengths of the tool. On the other hand, it also leads to the fact, that there is no control over indicator meaningfulness / suitability for the particular purpose of the analysis. Moreover, all indicators are put together, with no thematic break-down available – which could also be a bit confusing for less experienced user.

Although the version 2 of Hyperatlas is already available online, the tool is still under development and some features which are not included yet are planned to be added into the next version. The most significant of them are listed below:

- visualization of indicators development, trends and flows
- animations and projections for the future
- finding extreme values, filtering by interval and displaying in map
- easier integration of user`s data

Graphical user interface is not very attractive and it may seem bit archaic, compared to other contemporary applications with similar objective. Also the solution for exporting of reports is not very good – with separated PNG with “printscreen” like maps exported into one folder instead of one complete report.

Online Mapping tool (RIMAP) is currently under development by AIDICO, Spain. It should allow the production, visualisation, analysis and download of maps and diagrams directly linked with the data, indicators and information included in the ESPON Database.

RIMAP – is the official ESPON database mapping tool. Evaluating the tool, it is important to consider, that it is still under development and some functionalities can be added or improved in the final version.
RIMAP is adequate for viewing and exporting simple thematic maps of ESPON indicators. Both basic and expert modes are prepared for the users at different levels of knowledge or experience. RIMAP will be also available for the mobile/laptop use.

The tool is rather static, providing only limited possibilities for user’s interactivity, in sense of selecting units of interest and customizing the information which will be shown in map and charts or exported graphics. Possibility of multi-selection of analytical units is missing, as well as hierarchical tree of analytical units – as a result, units can be selected only in map or in chart.

Displaying many units in the same time, on e.g. lower administrative level, still remains an unsolved problem. GUI of the application is rather conservative and based on users’ reactions it is not very appealing for users.

Indicator values are loaded directly from the ESPON database. Shape files of analytical units are stored separately, as they are not included in the ESPON database. The tool provides the users by the indicators grouping based on: Theme, Policy and Project. Indicators are specific for each theme, policy or project, which significantly limits the possibility of inappropriate use of particular indicator. On the other hand, possibility of indicators normalization (e.g. by area or population) is missing.

Analytical units in both map and chart are “mouse-sensitive” - information about the unit can be displayed and unit can be selected or extended to lower level. RIMAP provides the animation with changing values of selected indicators in the time series.

In the same time, only one map and one chart can be displayed in the tool and only one indicator can be visualized in map and chart in the same time. RIMAP enables the user to customize the map and chart symbology or even chart type before exporting them, although some of these features or possibilities could be limited by ESPON regulations. However, it is not possible to customize the layout in general (e.g. hide chart or map). It affects especially the map window, which is rather small in comparison with the chart and also the solution for map navigation and zooming/pan etc. is slow and not very user friendly so far. Possibility of adding external layers (incl. WMS maps or google-like satellite maps) into map window is missing.

Map Finder is currently under development. This web application should be used to store, search, find, display, zoom-in and out, print and download maps resulting from ESPON projects and reports. The tool should have a very user-friendly interface which should allow users to find a specific map in easy and fast way.

Map Finder could be used as a tool for searching relevant maps, which have been already generated in frame of miscellaneous ESPON projects. For each indicator selected for EMTM, relevant maps should be queried for and displayed via Map Finder application from the map library. As a large amount of static maps has been produced so far in ESPON and their replication will not be the objective of the EMTM analytic tool, Map Finder represents optimal solution how to find appropriate map for the indicator of user’s interest without time consuming searching under particular ESPON project outputs.

ESPON Urban Benchmark Webtool (CITY BENCH) is a new ESPON project in the same Call for Tenders as the EMTM. The Urban Benchmark is aimed at creating a “quick-scan” friendly webtool in order to benchmark and monitor European cities by means of a selected set of indicators.

ESPON Urban Benchmark Webtool - CITY BENCH - enables comparing and benchmarking cities between each other or alternatively finding cities with similar properties indicated by similar values of relevant indicators. The main aim of the tool is to target territorial investments based on city

European and Macro-regional Territorial Monitoring Tool
Inception report, ESPON 2018
performance. The tool disposes with interactive map, which enables the user to derive information about selected unit. Also selection of units via setting interval of attribute values directly in chart is a very interesting feature. The other interesting element of the City Bench is 4D chart which provides the information about proximity of the cities in 4D indicators’ space, when each axis represents value of different indicator.

**ESPON Atlas** is a tool intended for visualization of static maps. The digital ESPON Atlas application is only side-product of printed atlas. For incorporated maps creation, INFOGRAPHICS tools have been used. All maps are prepared according to ESPON mapping/charting rules, which could be valuable source for EMTM maps design as it should also respect these ESPON rules. Also some interesting unconventional features/elements of cartographic representation which occur in ESPON Atlas maps, like e.g. quartal cartograms, can be used for reports produced by EMTM. For easy orientation and searching in thematic hierarchy of indicators, which are visualized in maps, hierarchical tree of indicators is provided.

### 7.3 Monitoring platforms

The following monitoring platforms have been identified as the ones having potential to act as a source of interesting features and approaches for the design of the EMTM. They have been analysed and evaluated with results of the analysis present in the following fiches:

<table>
<thead>
<tr>
<th><strong>Statistical Atlas.</strong> The Statistical Atlas is an interactive map viewer for statistical and topographical maps. Users can combine geographical layers of information from various ‘base maps’, such as the borders of NUTS regions or Urban Audit cities, with statistical maps.</th>
</tr>
</thead>
</table>

**Evaluation:**

The Statistical Atlas provides visualisation of the statistical data. It contains the statistical data covered by the most recent Eurostat Regional Yearbooks and LUCAS land cover / land use surveys and also for the Census 2011.

To view the details of the map display, various functionalities are offered:

- Zooming in and out on Europe and outermost regions
- Changing the transparency settings of the map layers
- Retrieving the code, geographical label and statistical value of a specific NUTS region or city.

The Statistical Atlas contains all the maps from the Eurostat regional yearbook sorted by publication themes and chapters.
Urban Data Platform. Urban Data Platform is a joint initiative of the DG JRC and DG REGIO. It visualizes data via maps at three different geographical units including EU-wide Cities/Greater Cities, Functional Urban Areas and Metropolitan Regions. It also includes time series graphs for selected cities, for Metropolitan Regions, and by degree of urbanisation.

http://urban.jrc.ec.europa.eu/

Evaluation:
Urban Data Platform provides an access point to exchange information on the status and trends of European cities and regions. It also aims to aid decision-makers, policy analysts and other stakeholders: I) in monitoring/analysing cities and urban areas in certain thematic fields, II) in achieving robust analyses with quick tables, graphs and maps, and III) in reaching/acquiring data for a large set of cities.

The Urban Data Platform provides access to numerous spatial indicators covering the following topics:

- Demography
- Economic Development
- Social Issues
- Urban Development
- Transport and Accessibility
- Resource Efficiency
- Environment and Climate

Territorial Dashboard (Pre-Release 2018). The territorial dashboard offers a full overview of the EU's 276 regions and 1342 sub-regions, with information on 13 domains, from economy to education, from employment to health, from energy to transport. Data is visualised in a user-friendly way to enable evaluation and comparison of regional performances, and to offer forecasts based on various scenarios.


Evaluation:
The Territorial Dashboard provides a selected set of indicators, covering several domains, derived by a Reference Scenario based on the LUISA Modelling Platform. The reference scenario is used to build time projections (both future projections and past estimates, when historical data are not available and
need to be reconstructed) and place-based projections at different territorial granularity (country, region, sub-region, urban).

The current reference scenario is based on the following reference European trends and policies:

- Ageing report 2015 – long-term projections for GDP, employment and productivity. Source: ECFIN
- EU Agricultural Outlook: Medium-term prospects for EU agricultural markets and income 2016-2026. Source: DG AGRI
- Energy-Climate Package
- TEN-T

**Regions and Cities Illustrated.** Regions and Cities Illustrated is hosted by Eurostat and covering cities and other typologies included in the TERCET as well as some complementary typologies.


**Evaluation:**

This interactive tool contains data on European regions, cities and other territorial typologies, grouped into different statistical domains. Using the interactive map, individual territories can quickly be selected while different visualisation options allow comparison and analysis in a user-friendly way. An animated timeline shows how different territories perform over time.

Regions and Cities Illustrated contains different dashboards, which always feature a choropleth map on the left pane. On the right pane, the user can select four different views:

- Distribution plot
- Scatter plot
- Bar chart
- Data table
**Urban Atlas.** The Urban Atlas is an operational service offering highly detailed urban land use maps for the 305 most populated towns in Europe (EU 27). Change layers were produced in 2012 and only for all FUAs covered both in 2006 and 2012 reference years.


**Evaluation:**

The Urban Atlas is providing pan-European comparable land use and land cover data for Large Urban Zones with more than 100,000 inhabitants as defined by the Urban Audit.

The Urban Atlas maps can also provide a pan-European classification of city zones, allowing for easily comparison of information on density of residential areas, commercial and industrial zones, extent of green areas, exposure to flood risks and monitoring of urban sprawl which is important for public transport planning in suburban areas.

The GIS data can be downloaded together with a map for each urban area covered and a report with the metadata.

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**Cross Sector Economic Monitor** (World Bank). The World Bank is a partnership to reduce poverty and support development. It comprises two institutions managed by 188 member countries (IBRD and IDA). The IBRD aims to reduce poverty in middle-income and creditworthy poorer countries, while IDA focuses exclusively on the world’s poorest countries. The Cross Sector Economic Monitor provides a great range of indicators for agriculture and rural development, health, infrastructure, aid effectiveness, climate change, labour and social protection, poverty, economic policy and external debt, education, private sector, public sector, energy, environment, technology, financial sector, social development, habitat development, gender.


**Evaluation:**

The site provides access to indicators completed in Cross Sector Economic Monitor. It is typical site with multi-entry point approach to the stored data. The user can access the data sorted by:

- Country
- Topic
- Indicator

This approach should be implemented also in EMTM, because it seems to be the most appropriate way how to structure the data – by topic and by type of territorial unit (in this case represented by countries themselves).
Indicator values are set into thematic context – their meaning is explained directly on click from each chart, which presents particular indicator.

The portal provides the user really wide range of information. Which is definitely positive, however, the information content and especially the approach to it has to be structured carefully in such case:

- The approach used in entry-approach “by country” is very good organised, which could be a template for EMTM portal organisation:
  - for each country, a summary size is prepared, sorted into several main topics
  - each of these topics is described by several “key” indicators in charts or maps
  - clicking on each topic, the user can father explore it in detail within other dedicated site

This approach of combination of the quick access to the most important (or most interesting) information, which is crucial for most of the common users with the possibility of detailed analysis for expert users would be very efficient also for EMTM concept

- In contrast, the approach “by topic (or theme)” is a bit more difficult to navigate. The first site provides only simple list of topics without any graphics. After selection of particular topic, next site appears which is a bit overloaded with information, which, once again, is not clearly structured. From this experience it is clear that overloading with unstructured information should be definitely avoided in EMTM.

The graphical solution for charts, tables and maps is quite simple but practical and provides a lot of interesting features, most of them concerning the interactive behaviour of charts and maps, which should be valuable inspiration for EMTM Data Analysis Tool. The most interesting of them are listed bellow:

- interactivity of all incorporated elements (querying and displaying info on selected unit in chart or map)
- possibility of interactive customization of charts (by adding arbitrary unit or category)
- interconnection of all particular elements (e.g. selection of any unit in chart induces response in map, etc.)
- interactive switching between graph, table or map visualisation of same indicator (though it is not possible to see more of these elements at once)
- possibility to enlarge the map window to full-screen mode
- possibility to detach single element and get its url
- visualisation of trends in tables
- selection of country/unit for analysis by typing the name

However, the portal still shows some elements that do not work so well and serve as lessons to better develop the new EMTM:

- list of indicators is not further sorted into sub-categories on the summary site for each topic
- some indicators are empty – which is not indicated at indicator selection dialog
- very slow response in case of switching between graph, table or chart or selecting indicators
- no interconnection between particular components
- possibility of multiple unit selection is missing
- **charts description is not sufficient** (eg. which region is described, missing axis description)
- the **effective graphic** solutions could sometimes be **at the expense of readability** (eg. dot diagrams in map - cartograms would serve better for visualisation of percentual indicators....)
- dialog for adding unit/category into chart – it is not possible to select from the list – you have know the name (at least its beginning of the unit/category and write it into the text box)

**Conclusion:**
This portal is very interesting as an inspiration for EMTM with a lot of strengths and interesting features and it also provides wide range of information.

**IMF Surveillance.** (International Monetary Fund). The IMF is mandated to oversee the international monetary system and monitor the economic and financial policies of its 188 member countries. This activity is known as surveillance. As part of this process, which takes place both at the global level and in individual countries, the IMF highlights possible risks to stability and advises on needed policy adjustments. In this way, it helps the international monetary system serve its essential purpose of facilitating the exchange of goods, services, and capital among countries, thereby sustaining sound economic growth.


**Evaluation:**
- The IMF portal provides many kind of information like fast news, actual press releases, highlights and links to reports. There is a link to Data Mapper directly incorporated into the portal, however, the picture with the link does not outstands from other main links, therefore it may be kind of “hidden” for an unexperienced user (see picture below).
- the IMF Data Mapper serves as the IMF data visualisation tool. However, it still has the similar design as the IMF portal site, therefore it is clear, that it belongs to IMF. This property should be considered also in case of EMTM and it should be clear from the graphics used for EMTM Data Analysis Tool, that it belongs to EMTM/ESPON activities

- the Data Mapper includes links to datasets, metadata and reports. Also the access to the user’s forum, which provides important users feedback, is available via direct link incorporated into Data Mapper site. Also this approach should be complied in case of EMTM Data Analysis Tool

- there are separated sites with datasets, metadata or detailed description of indicators, with direct access links interconnected in the Data Mapper. This solution avoid overloading with information.

The tool itself provides an example of a very nice and effective GUI for exploring geo-based data, with lot of interesting and effective features and functionalities, which could improve the overall impression of the tool and user interest into information which is being explored. This fact means that this tool could give a lot of inspiration for EMTM.

The main properties or functionalities, which should be followed and their incorporation for EMTM Data Analysis Tool should be considered are as follows:

- the tool is very well organised, graphically appealing and easy to use
- map and charts, which can be visualised in the same time, are interactive and interconnected between each other, with impressively rapid response
- It provides two different modes “map chart” and “bubble chart” which gives the user possibility to prefer map view or the view on spatial distribution of indicator values in 2D space. For the “map chart” mode, switching between different view types (map/chart) is included, easily accessible and with rapid response
- also a possibility of switching to full-screen mode is available
- selection of the units, which should be added into chart has a very well organized structure of region hierarchy. It is connected with map via zooming (zoom to last selected region), which is very interesting functionality
- unit to be added into chart could be chosen also by clicking in the map
- switching between analysis levels (countries/regions) is enabled with rapid response, realized by both buttons and double clicking on parent unit in chart
- possibility to download data values for selected indicator or graphic elements in png format directly from the tool is included
- bar size is automatically modified depending on number of displayed units
- bubble chart is effective and easy to use, the same can be said about the solution for indicators switching for both x and y axis
- possibility to “PLAY” development, scenarios etc. is incorporated
- possibility to save current settings
- on hand legend and info is available
- information about “no data” is provided for each indicator

**OECD Statistics** (OECD). The Statistics Portal provides free access to some OECD databases as well as extracts from all other databases, classified by topic (development, economy, environment, society, governance). Both historical data and forecasts are presented, depending on the topics.


**Evaluation:**

The OECD portal provides wide list of statistics based on extensive database, however, the website is more oriented to classical statistics, without maps or appealing graphics.

The complete list of key indicators is available for download directly on OECD statistics portal. Beside it there is also provided link to OECD data lab, which uses the same system for indicators grouping as the list of key indicators for download. Visual representation of each statistic/indicator is solved in a completely different way, which can be a bit confusing for the user.
Particular types of charts could give some inspiration, which could be used in EMTM. However, only separated features of them could be called “inspiring” for EMTM, not the portal as a whole.

Regional Innovation Monitor Plus In the context of the growth and investment package set out in the Investment Plan of the European Commission, the Regional Innovation Monitor Plus (RIM Plus) provides a unique platform for sharing knowledge and know-how on major innovation and industrial policy trends in the EU regions.


Evaluation:
The portal provides access to different types of detailed information on regional innovation in 20 European countries. As a simple entry point, list of countries is provided and after selection of one country, an interactive map of selected country appears for the selection of region.

All incorporated information is sorted according to the country or region which they belong to. After selection of the region of interest, short summary regional profile with basic information is prepared, together with links to all relevant information for selected region, including e.g. support measures, policy documents, reports or link to regional organisations for selected country.

Also a simple benchmarking tool for registered users is included into the portal, which enables to compare different regions or years of interest based on user selection.

Comparing with other portals, this one has not much to serve as inspiration for EMTM portal or tool.

Europe 2020 Indicators (Eurostat). In its role of a leading provider of official statistics on the European Union (EU) and in response to the growing interest in data on the Europe 2020 strategy, Eurostat produces and disseminates statistical data to support the strategy. Progress towards the strategy targets is monitored by means of eight headline indicators and three sub-indicators.

http://ec.europa.eu/eurostat/web/europe-2020-indicators

Evaluation:
The portal provides possibility to explore or download headline indicators which are currently used for measuring of five EU headline targets of Europe 2020 strategy at EU27 or country level for different years.

**Complete metadata are available** for each statistic value or indicator. Also the possibility to explore each statistic value or indicator for all European countries in a table, chart or map is included. The user can choose from nine types of charts and can customize countries and years, which should be displayed. Also the chart symbology can be customized by the user. Possibilities of customization are quite limited for table and map, compared to chart. All elements can be downloaded, including user’s customization.

The possibility to view more than one type of indicator visualisation (map, chart or table) together in the same time is not included. There is also no interactivity in sense of unit selection or values displaying in map or chart.

The only inspiration for EMTM which could be given by this portal is the important **possibility to compare indicators/statistical values for more spatial units and more years.**

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**Europe 2020 Monitoring Platform** (Committee of the Regions). The Europe 2020 Monitoring Platform is a network of 178 cities and regions coordinated by the European Committee of the Regions. It monitors the involvement of EU's local and regional authorities in the European Semester and in the Europe 2020 Strategy.

[https://portal.cor.europa.eu/europe2020/Pages/welcome.aspx](https://portal.cor.europa.eu/europe2020/Pages/welcome.aspx)

**Evaluation:**

The portal provides complete information and materials related to Europe2020 strategy, including News and events, Information on Members and stakeholders, Multi-level cooperation or Networks. All incorporated information could be accessed via summary portal, but it is also sorted by country of user’s interest, using “Europe in my region” approach.

Design of the page is simple and provides the user easy and fast orientation in the portal, which could be inspiration for EMTM tool. The portal does not include any interactive web tool for visualisation of incorporated information.
Sustainable Development Goal Indicators – SDG (Eurostat). The indicator set comprises 100 indicators that are structured along the 17 SDGs. Each goal has 6 indicators primarily attributed to it, except for goals 14 and 17 which only have 5. 41 of the 100 indicators are multipurpose, i.e. are used to monitor more than one SDG. All indicators are grouped in sub-themes to underline interlinkages and highlight different aspects of each SDG.

http://ec.europa.eu/eurostat/web/sdi/indicators

Evaluation:
This portal allows you to choose a goal from the list to find information and data on the relevant sub-indicators. A time graph allows you to see the development of each sub-indicator at one glance as well as to compare your country to the EU average and other EU Member States. In addition, access to the data for each indicator is provided.

International Human Development Indicators. (UNDP - United Nations Development Programme). The human development data utilized in the preparation of the Human Development Index (HDI) and other composite indices featured in the Human Development Report are provided by a variety of public international sources and represent the best and most current statistics available for those indicators at the time of the preparation of this annual report.


Evaluation:
The portal provides access to eight different tools for data visualisation and analysis. This approach itself is not very good, because it is not obvious, which tool is the most important and which is crucial for analysis. The user should be informed, which mapping tool is the one dedicated for particular portal.

The tool with most interesting solution in relation to EMTM and its Data Analysis Tool purposes - Stat Planet World Map - provides very nice GUI with interconnected map and chart. The layout is customizable – the user can view both map and chart or only one of these elements. Beside it, also the full screen mode is enabled. The tool provides the user a lot of interesting functionalities:
- interactive changing of values in all components (chart etc.) on mouse hover over the relevant unit in map
- displaying of all or selected only units in chart
The portal provides also country profiles – which include the values and development of the most important indicators completed by basic charts together with short description of the situation in particular country. For more detailed analysis, a link to PDF with detailed description of the situation in each country is provided and also the possibility to download indicators from database in XLS file is incorporated. 

**Direct links with indicators’ explanations** are provided with key worlds in texts on portal sites, which is very on-hand and valuable feature.

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**OECD Better Life Index (OECD).** The Better Life Index is designed to visualise and compare some of the key factors – like education, housing, environment, and so on – that contribute to well-being in OECD countries. This tool allows the monitoring of the Better Life index, as well as of all indicators used to compute it.

http://www.oecdbetterlifeindex.org/#/13111311311

**Evaluation:**

This portal provides an example of highly specific visualisation method designed for specific type of “multi-dimensional” indicator (in this case “better life index”), which is combined from more compounds (which are also indicators itself). It offers an effective way how to visualise and compare values of multi-dimensional indicator for more analytical units. Also a possibility to compare selected unit with other units selected from menu is provided.

This type of visualisation is very interesting, however, it can be used only for this specific type of indicators.

For each compound, textual explanation is provided, which is crucial for correct understanding of the indicator meaning. For each country, short comprehensive “report” is prepared, including values, charts and description of most important indicators and their development.
**Transport Explorer** (OECD Transport Forum). The International Transport Forum Transport Explorer is an interactive tool that allows users to analyse transport data using an animated graphical or spatial interface. Users can view how indicators evolve over time and examine interrelations between indicators. Users can select colours for indicators in map and scatter plot view and create their own "stories" with animated graphs.

https://www.itf-oecd.org/search/statistics-and-data?f%5B0%5D=field_publication_type%3A648&f%5B0%5D=field_publication_type%3A648

**Evaluation:**
The portal provides an interesting mapping/charting tool for exploring indicators related with transport. On the other hand, there is a possibility to add user’s indicators, which is valuable, however, this functionality is not being planned for EMTM Data Analysis Tool. Also selection of indicators for both axes in the scatter chart is effectively and user-friendly solved.

The most unique feature of this tool is the possibility to **write/add texts directly into the tool interface**, in a dedicated frame for texts. These texts can also be exported and saved. Similar functionality could be considered for EMTM reports generation.

**Shell Environmental Data** (Shell). Shell records in this platform the company performance against a range of environmental indicators to assess how it is doing over time and identify areas for improvement.


**Evaluation:**
The Shell Environmental Data portal incorporates only very simple tool for environmental indicators visualization, which, however, is still enough to provide the information, which should be presented to the user. It also provides possibility of direct export of customized chart (selection of indicator and year) or tabular values.

For the EMTM purposes, the tool has not much potential for inspiration.
HELCOM Map and Data Service. Helcom Map and Data service contains spatial data collected within HELCOM data collection framework and related projects as outlined in HELCOM Monitoring and Assessment Strategy.

[Helcom Map and Data Service graphic]

http://maps.helcom.fi/website/mapservice/index.html

Evaluation:
HELCOM Map and Data service is a graphical user interface containing a table of contents of all spatial datasets made available by HELCOM and relevant to HELCOM work. The datasets are grouped to following services, which contain a number of map layers grouped in to categories (group layers):

- Status assessments: Integrated assessment results, core indicator result maps and underlying datasets
- Monitoring: Assessment units according to HELCOM Monitoring and Assessment Strategy and monitoring stations used in HELCOM Monitoring manual
- Pressures and human activities: Land-based pollution as well as various human activities datasets and aggregated pressure layers used in Baltic Sea Impact and Pressure Index (BSPI and BSII).
- Biodiversity: Biodiversity related datasets such as Ecosystem component maps used in Baltic Sea Impact and Pressure Index (BSPI and BSII), HELCOM RED LIST species/biotope distribution maps as well as other biota related datasets.
- Shipping: Maritime activities related datasets, including data from HELCOM Maritime assessment such as AIS density maps by ship type.
- Background: Background datasets such as rivers, lakes, EEZ as well as Maritime Spatial Planning areas.

The service contains many functionalities that could be used when viewing the datasets, e.g. identify and attribute table functionalities. Navigation tool is simple containing zoom in, zoom out, option to choose the basemap and button to clear map selections. Tool is linked to Metadata catalogue where you have all information about data coverage and resources.
European Atlas Of The Seas. The European Atlas of the Seas is an innovative application which has been designed for anyone wanting to learn more about Europe’s seas and coastal regions and about the people who live and work along Europe’s coasts.

http://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;p=w;bgd=5;theme=2:0.75

Evaluation:
The European Atlas of the Seas offers an up-to-date and diverse range of information about Europe's seas, such as sea depth, underwater features, coastal regions geography and statistics, blue energies, maritime resources, tide amplitude, coastal erosion, fishing stocks, quotas and catches, European fishing fleet, aquaculture, maritime transport and traffic, ports’ statistics, maritime protected areas, tourism, maritime policies and initiatives, outermost regions, etc.

The Atlas viewer consists of four main components:
- A top banner, with links and buttons allowing to change the language, send a feedback, show help, and show some information about the Atlas itself
- A map layers pane allowing to choose the projection of map, choose the content of the map (Thematic Map & DIY), manage the layers order and get info about them, select the year of the data with the time-slider, measure area and distance through polygon and polyline, print map in different formats and sizes with or without legend, choose a background (base-map)
- Navigation tools for navigating and zooming on the maps
- A legend pane

MDI-DE / Federal Maritime and Hydrographic Agency. The MDI-DE helps coastal zone authorities meet their reporting requirements for EU framework directives such as MSRL and INSPIRE. In 2010-2013, the BMBF funded the development of the Maritime Data Infrastructure for Germany (MDI-DE), in which a total of 11 federal and state authorities from the aforementioned areas of responsibility were involved. Since April 2014, the MDI-DE has been permanently managed and developed as a VKoopUIS project.

https://www mdi-de.org mdi-portal/ui

Evaluation:
The platform provides data and information from coastal engineering, coastal water protection, marine environment protection and marine conservation through a common internet portal. Metadata and web services help you find and use data.

**Targets and indicators**

A comprehensive system for the design, the monitoring and the follow-up of indicators and targets will be set up under the responsibility of the policy area coordinators. The still missing baselines and statistics/data sources related to the below indicators will be defined.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Indicator</th>
<th>Baseline</th>
<th>Target/deadline</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of Baltic Sea region cultural and creative industries (CCI).</td>
<td>Percentage of CCI sectors of Baltic Sea region countries’ GDP and employment rate.</td>
<td>To be aggregated from national and Eurostat figures.</td>
<td>Positive influence on the GDP percentage and employment rate of the Baltic Sea region CCI sectors.</td>
<td>National statistics and Eurostat.</td>
</tr>
<tr>
<td>Promoting creative entrepreneurship within the Baltic Sea region.</td>
<td>Number of enterprises in the Baltic Sea region cultural and creative sectors.</td>
<td>To be aggregated from national figures.</td>
<td>Positive influence on the number of enterprises in the Baltic Sea region cultural and creative sectors.</td>
<td>National statistics.</td>
</tr>
<tr>
<td>Preserving the Baltic Sea region cultural heritage across borders.</td>
<td>Cooperation projects aiming at a coordinated management of the Baltic Sea region cultural heritage.</td>
<td>n/a</td>
<td>Running cooperation projects.</td>
<td>Compilation by PACs.</td>
</tr>
<tr>
<td>Efficient framework of Baltic Sea region cultural cooperation.</td>
<td>Better coherence and cooperation between the Baltic Sea region cultural policy bodies, cultural networks and institutions.</td>
<td>Status 2012 (by then only one joint meeting of 4 of the Baltic Sea region cultural policy bodies 2012 in Greifswald).</td>
<td>Regular Steering Group Meetings of policy area ‘Culture’; regular back-to-back meetings of Baltic Sea region cultural policy bodies; public Baltic Sea region Cultural Dialogue events (MLG approach).</td>
<td>Compilation by PACs.</td>
</tr>
</tbody>
</table>

Further important objectives of the policy area are difficult to measure: strengthening the cultural identity of the Baltic Sea region is an important factor for the cohesion of the region but intangible. Raising awareness for the Baltic Sea region as an innovative, culturally diverse and attractive place to live contributes to highlighting the Baltic Sea region as business location and tourist destination but it is hard to prove positive trends.
**Targets and indicators**

Policy area ‘Nutri’ contributes to the first main objective of the EUSBSR, ‘Save the Sea’. More specifically, policy area ‘Nutri’ is connected to two sub-objectives of the Strategy: ‘Clear water in the sea’ and ‘Rich and healthy wildlife’. The success in meeting these sub-objectives can be assessed by the targets. Targets and indicators have been developed in line with existing and developing targets and indicators in the HELCOM BSAP (reviewed in 2013) and the MSFD. The monitoring and the follow up of indicators and targets will be followed in the annual Work Plan (WP) of policy area ‘Nutri’.

<table>
<thead>
<tr>
<th>Sub-objective</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear water in the sea; rich and healthy wildlife.</td>
<td>Share ((\text{km}^2, %) of the sea area in good environmental status as defined by criteria of MSFD descriptor 5 Eutrophication and jointly assessed using HELCOM core indicators.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial joint regional assessments as required by MSFD and HELCOM.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total nutrient reduction by putting in place the necessary measures by 2016 or jointly by 2020 at the latest as agreed in BSAP 2007 and revised by HELCOM in 2013.</td>
</tr>
<tr>
<td>Whole Baltic Sea is in a path to a full recovery to good environmental status by 2020 due to fully implemented measures and further decreased loads achieved.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELCOM data (PLC-water, PLC-air/EMEP).</td>
</tr>
<tr>
<td>HELCOM eutrophication core indicators.</td>
</tr>
</tbody>
</table>

**N.B. All Member States have to comply with the objectives under relevant EU legislation (WFD, NiD, UWWT, IED, MSFD). However, the cooperation process under this policy area will facilitate the achievement of the targets above.**
4. Improve nutrient load data

Support efforts to improve the completeness and reliability of nutrient load data as a basis for monitoring success in reducing nutrient loads in joint coordination efforts. Data collection processes are currently insufficient, which precludes a full understanding of the eutrophication situation in the Baltic Sea. HELCOM works to ensure that nutrient pollution assessments are harmonised across the region.

<table>
<thead>
<tr>
<th>Sub-objectives</th>
<th>Indicator</th>
<th>Baseline</th>
<th>Target/Deadline</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear water in the sea</td>
<td>Environmental status, incl. level of inputs of nutrients – in line with indicators being developed in HELCOM by 2013 and under the MSFD.</td>
<td>Situation in 2010</td>
<td>Indicators agreed in 2013 within HELCOM.</td>
<td>HELCOM, MSFD.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Good environmental status (GES) by 2020.</td>
<td></td>
</tr>
<tr>
<td>Rich and healthy wildlife</td>
<td>Biodiversity status and ecosystem health (incl. fish stocks) and amounts of hazardous substances – in line with indicators being developed in HELCOM by 2013 and under the MSFD.</td>
<td>GES integrated indicators</td>
<td>Indicators agreed in 2013.</td>
<td>MSFD, HELCOM.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Good environmental status (GES) by 2020.</td>
<td></td>
</tr>
<tr>
<td>Clean and safe shipping</td>
<td>Number of shipping accidents. Annual average of shipping accidents* 2008-2010: 3.017 per 10,000 vessels.</td>
<td>Annual average of shipping accidents* 2008-2010: 3.017 per 10,000 vessels.</td>
<td>Decreasing trend.</td>
<td>HELCOM.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* shipping accidents are defined according to the HELCOM convention: all accidents (including but not limited to grounding, collision with other vessel or contact with fixed structures, or absorptions into a vessel, wreck, or casualty), including also vessels (e.g. machinery and/or structural failure), fire, explosions, etc., which took place in territorial seas or EEZ of the Contracting Party and involved tankers over 500 GT and/or other ships over 400 GT irrespective of whether there was pollution or not are reported.</td>
</tr>
</tbody>
</table>
## Targets and indicators for the objective ‘Connect the Region’

<table>
<thead>
<tr>
<th>Sub-objectives</th>
<th>Indicator</th>
<th>Baseline</th>
<th>Target/deadline</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good transport conditions</td>
<td>Internal and external connectivity of the region, including travel time.</td>
<td>The amount of the TEN-T core and comprehensive network elements meeting the criteria as set out in the TEN-T Regulation.</td>
<td>Completion of the TEN-T core and comprehensive network in the Baltic Sea region according to CEF and TEN-T timetables and their links to Russia and Belarus as defined under the framework of NDPTL and involving EaP regional transport network.</td>
<td>TEN-T implementation reports. TENTec portal.</td>
</tr>
<tr>
<td>Reliable energy markets</td>
<td>State of Market Conditions and Interconnection of Baltic States’ energy markets with the rest of the EU.</td>
<td>Baltic Energy Interconnection Plan and its schedule.</td>
<td>Full and environmentally sustainable interconnection of the gas and electricity markets according to BEMP schedule.</td>
<td>BEMP. National ministries.</td>
</tr>
<tr>
<td>Connecting people in the region</td>
<td>Number of organisations and people participating in programmes of cultural, educational, scientific exchange and cooperation.</td>
<td>Number of organisations participating in Framework Programme, Youth in Action and Marie Curie Action Programmes in 2009 = 43,452.</td>
<td>Influencing a 20% increase in the number of participants (people or organisations) in such programmes, by 2020 = 229,000.</td>
<td>COM data. European territorial cooperation programmes’ reports where relevant.</td>
</tr>
</tbody>
</table>
## Targets and indicators for the objective ‘Increase Prosperity’

<table>
<thead>
<tr>
<th>Sub-objectives</th>
<th>Indicator</th>
<th>Baseline</th>
<th>Target/deadline</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUSBSR as front-runner for deepening and fulfilling the Single Market</td>
<td>Volume of intra-regional trade in goods.</td>
<td>3 year average for the BSS region in 2006 = 416.9 billion Euros.</td>
<td>Influencing an increase in the intra-regional trade in goods in the BSS region of 1.5% by 2026.</td>
<td>Eurostat annual data available with 2 year time lag (NUTS3). (Trade in goods figures are based on imports + exports of goods between BSS countries only, the baseline is the average of the 2007-2009 totals).</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>Volume of cross-border services.</td>
<td>3 year average for the BSS region in 2009 = 45,373.1 Billion Euros.</td>
<td>Influencing an increase in the intra-regional trade in services in the BSS region of 1.5% by 2026.</td>
<td>Eurostat annual data available with 2 year time lag (NUTS3). (Trade in services figures are based on imports + exports of services between BSS countries only).</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>Employment Rate (people aged 20-64) as a % of the total BSS region population.</td>
<td>Average for the BSS region in 2008 = 73.0% of the people aged 20-64.</td>
<td>Influencing a higher average for the BSS region by 2020 = 75% of the people aged 20-64.</td>
<td>Eurostat annual data available with 2 year time lag (NUTS2).</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>Employment Rate (people aged 20-64) as a % of the total BSS region population.</td>
<td>Average for the best performing 10% of the total population of the BSS region in 2010 = 79.53%.</td>
<td>Positive influence on diminishing the difference in average Employment Rate between the best and worst BSS region population.</td>
<td>Eurostat annual data available with 2 year time lag (NUTS2). The Index is based on millions EUR/person employed. The average Index for the BSS region can be compared with the EU27 average Index = 100).</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>Average for the worst performing 10% of the total population of the BSS region in 2010 = 61.12%.</td>
<td>Perfor ming 10% of the total population of the BSS region by 2020.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>General Expenditure on R&amp;D.</td>
<td>Average for the BSS region in 2008 = 2.14% of GDP.</td>
<td>Influencing a higher average for the BSS region by 2020 = 2.3% of GDP.</td>
<td>Eurostat annual data available with 2 year time lag (NUTS3).</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>General Expenditure on R&amp;D.</td>
<td>Average for the worst performing 10% of the total population of the BSS region in 2008 = 4.55%. Average for the worst performing 10% of the total population of the BSS region in 2008 = 0.2%.</td>
<td>Influencing a higher average for the BSS region by 2020 = 2.3% of GDP.</td>
<td>Eurostat annual data available with 2 year time lag (NUTS3).</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>Improved global competitiveness of the Baltic Sea Region</td>
<td>Average GDP growth for the BSS region in 2007-2008 = 1.4%. Average GDP growth for the EU in 2007-2008 = 1.75%.</td>
<td>Influencing a higher average GDP growth across the BSS region by 2020.</td>
<td>Eurostat annual data available with 2 year time lag.</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>GDP (in PPS)</td>
<td>4 Member States with highest GDP average growth 120.1% of EU average (2007-2010), remaining constant.</td>
<td>Positive influence on diminishing the difference in an average GDP between the Member States of the BSS region with the highest and lowest GDP by 2020.</td>
<td>Eurostat annual data available with 2 year time lag.</td>
</tr>
<tr>
<td>EUSBSR contributing to the implementation of Europe 2020 Strategy</td>
<td>GDP (in PPS)</td>
<td>4 Member States with lowest GDP average growth 59.2% of EU average (2007-2010), in decline.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Development Index</td>
<td>Average for the BSS region in 2008 = 44.8.</td>
<td>Influencing an increase of the Human Development Index of 25% for the BSS region by 2020.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
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<td>---------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Development Index</td>
<td>Average for the best performing 10% of the total population of the BSS region in 2008 = 86.41% average for the worst performing 10% of the total population of the BSS region in 2008 = 21.65%.</td>
<td>Positive influence on diminishing the difference in the Human Development Index between the best and worst performing 10% of the total population of the BSS region by 2020.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour Productivity Index</td>
<td>Average for the BSS region in 2008 = 77.8%.</td>
<td>Influencing an increase of the Labour Productivity Index by 20% across the BSS region by 2020.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour Productivity Index</td>
<td>Average for the best performing 10% of the total population of the BSS region in 2008 = 150.1% Average for the worst performing 10% of the total population of the BSS region in 2008 =</td>
<td>Positive influence on diminishing the difference in the Labour Productivity Index between the best and worst performing 10% of the total population of the BSS region by 2020.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eurostat annual data available with 2 year time lag (NUTS3) (The Index is based on ‘million EUR/person employed’. The EU27 average index = 100).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The ESPON EGTC is the Single Beneficiary of the ESPON 2020 Cooperation Programme. The Single Operation within the programme is implemented by the ESPON EGTC and co-financed by the European Regional Development Fund, the EU Member States and the Partner States, Iceland, Liechtenstein, Norway and Switzerland.