QGasSP
THE GHG QUANTIFICATION IN SPATIAL PLANNING

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QGasSP project objectives

A <u>methodology</u> and a <u>tool</u> for

- quantification of GHG emissions in spatial planning
- collection of comparable GHG baseline emissions data at national, regional and local levels
- cross-country, inter-regional and inter-municipality comparisons
- SEA process (Strategic Environmental Assessment)
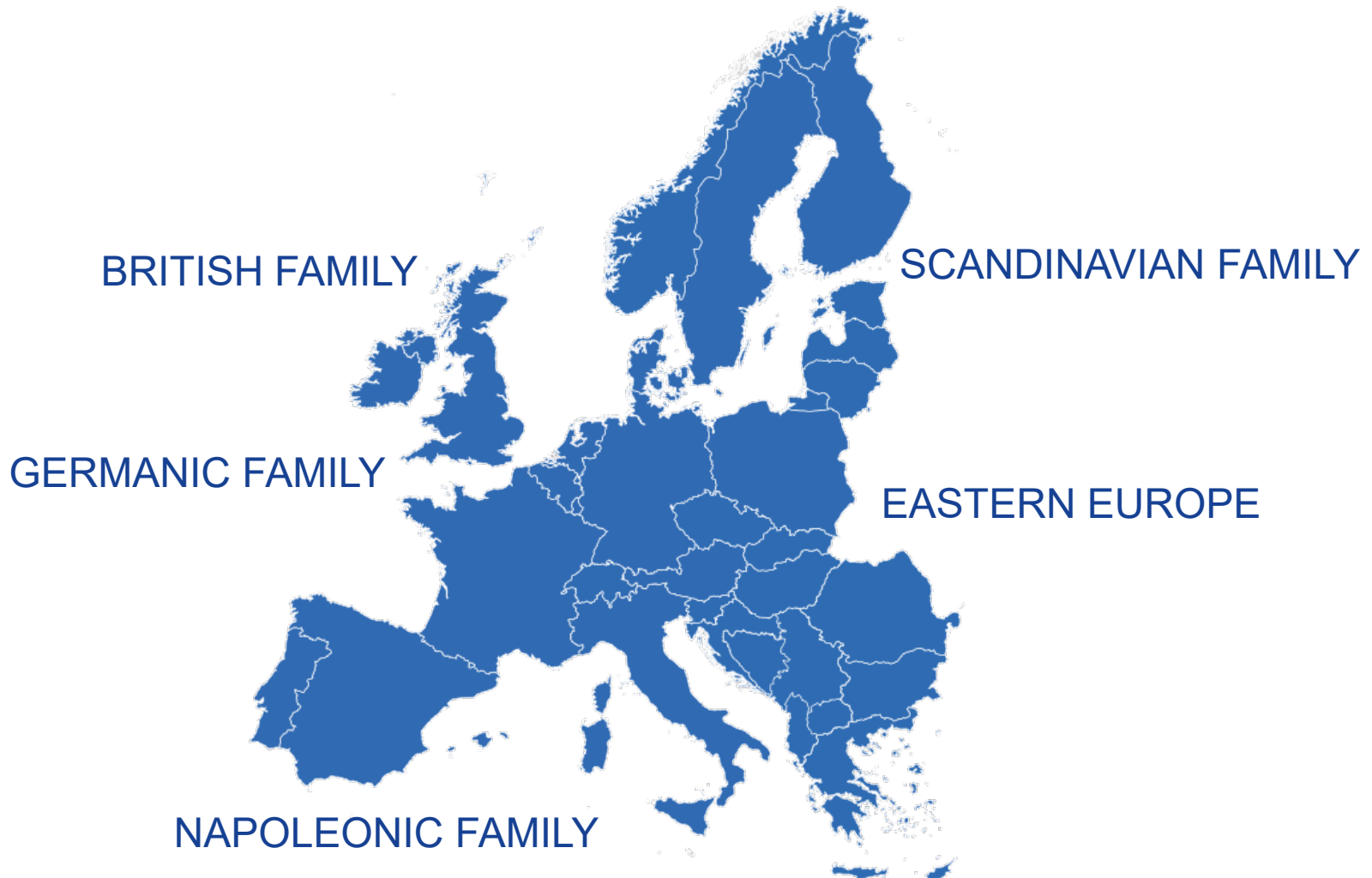
Four stakeholders

- Eastern and Midlands Regional Authority (IE)
- Scottish Government – Planning & Architecture Division (UK)
- of Infrastructure, Northern Ireland (UK)
- Regional Council of Kymenlaakso (FI)

Challenges

- **The methods for quantifying the GHG emissions of territories, regions, cities, municipalities are not harmonized.**
- **The results cannot be compared because:**
  - **There is <u>variation</u> in both calculation methods and datasets.**
  - **The methods are typically based on the <u>territorial approach</u>.**
- **Existing models:**
  - **IPCC guidelines for national GHG inventories**
  - **Greenhouse Gas Protocoll**
  - **C40 model**
- **The quantification should use local datasets, which are not uniform in neither structure nor content.**

EUROPEAN SYSTEMS FOR SPATIAL PLANNING

as in Newman, P & Thornley A (1996), *Urban Planning in Europe.*
International competition, national systems and planning projects.

ESPON
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Inspire Policy Making with Territorial Evidence

espon.eu

BRITISH FAMILY

SCANDINAVIAN FAMILY

GERMANIC FAMILY

EASTERN EUROPE

NAPOLEONIC FAMILY

SEA

Strategic Environmental Assessment

"In Europe, land use, residential and commercial development and the development of the transportation infrastructure are as a rule controlled by means of spatial planning instruments, for which Strategic Environmental Assessments (SEA) must generally be carried out under the terms of a European Union Directive European Parliament and Council of the European Union, 2001" (Wende *et al.*, 2012).

- SEA is a systematic process for evaluating the likely environmental implications of a proposed policy, plan or programme
- SEA provides means for looking at cumulative effects and appropriately addressing them, at the earliest stage of decision making, along with economic and social considerations
- SEA is recognised as the vehicle for the implementation of climate protection within spatial planning

GHG quantification and SEA

Screening

Responsible authority assesses the likely environmental impacts of a plan
a decision <u>not to conduct SEA</u> could be briefly assessed by the tool

Scoping report

The range of environmental issues to be covered by SEA is defined
assessing reasonable alternatives

Preparation of environmental report

According to the scoping report, including the assessment alternatives and measures to mitigate drawbacks
assessing the relative GHG contributions of different reasonable alternative scenarios

The New Tool

- **A free browser-based application published as open-source**
- **Designed to quantify GHG emissions in all scales of spatial planning in any European territory.**
- **Can be applied in SEA to evaluate the climate impact by estimating the change in absolute greenhouse gas emissions in comparison with the baseline.**

Modes for GHG quantification

TERRITORIAL APPROACH

- Quintifying the direct CO_2 emissions caused within the boundaries of the target area
- Extending the scope outside the target area when necessary (scope 1 / scope 2 / scope 3)
- Results cannot be compared

CONSUMPTION-BASED APPROACH

- Quantifying the CO_2 emissions caused by the residents of the target area
- Results can be compared
- The QGasSP model applies the *tiered hybrid LCA method*

**TERRITORIAL
APPROACH**

NATIONAL GHG INVENTORIES

TERRITORIAL MODE
IN THE QGasSP TOOL

**CONSUMPTION-BASED
APPROACH**

CONSUMPTION-BASED MODE
IN THE QGasSP TOOL

**PERSONAL
CARBON FOOTPRINT**

TERRITORIAL APPROACH

CONSUMPTION-BASED APPROACH

TRAFFIC

ENERGY USE IN BUILDINGS

LAND-USE CHANGE

TRAFFIC

ENERGY USE IN BUILDINGS

EXIOBASE
EIO
MATRIX

Functionalities

Baseline of GHG emissions
- Future projection until 2050
- Carbon offset required for carbon neutrality

Quantification impact of the policies and local developments on the GHG emissions
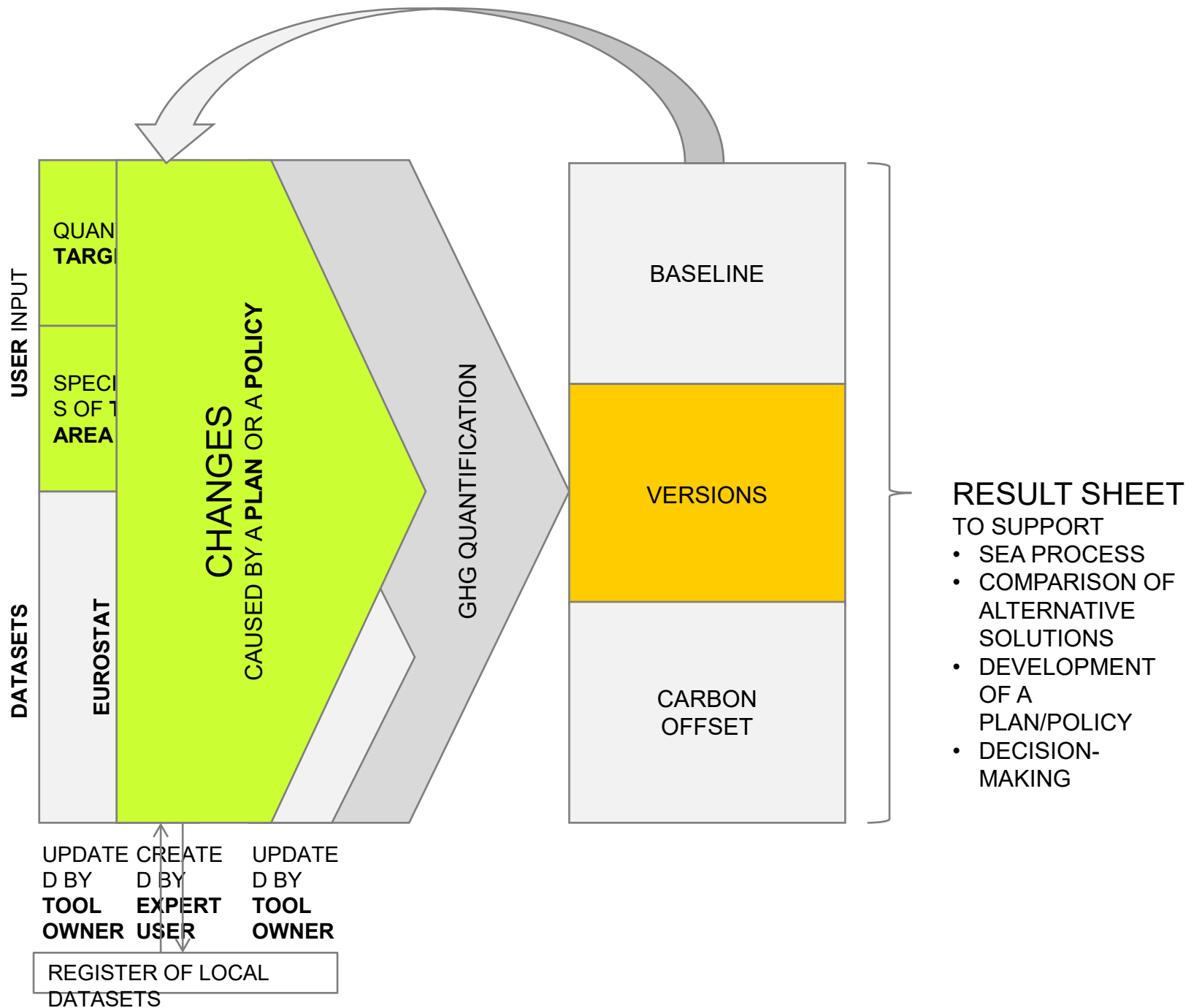- *„from numbers to numbers"*
- Comparing alternative plans
- Comparing territories / cities
- Comparing policies

„Traffic light indication" for evaluation of results
- Can results be compared?
- Are results accurate?
- Is the data up-to-date?

Designed for 3 types of users

Planner user   *„plug and play"*
no specific knowledge on GHG quantification required

Expert user   creates and updates the local set-up
needs to have understanding of GHG quantification
principles and an access to local datasets

Developer user development of additional or improved calculation
modules

USER INPUT

QUAN
TARG

SPECI
S OF T
AREA

DATASETS

EUROSTAT

CHANGES
CAUSED BY A PLAN OR A POLICY

GHG QUANTIFICATION

BASELINE

VERSIONS

CARBON
OFFSET

RESULT SHEET
TO SUPPORT
- SEA PROCESS
- COMPARISON OF
  ALTERNATIVE
  SOLUTIONS
- DEVELOPMENT
  OF A
  PLAN/POLICY
- DECISION-
  MAKING

UPDATE
D BY
**TOOL
OWNER**

CREATE
D BY
**EXPERT
USER**

UPDATE
D BY
**TOOL
OWNER**

REGISTER OF LOCAL
DATASETS

Solutions

CONSUMPTION-BASED APPROACH
- **enables cross-country, inter-regional and inter-municipality <u>comparisons</u>**
- **enables collection of comparable GHG baseline emissions data at <u>national, regional and local levels</u>**

TIERED-HYBRID LCA METHOD
- **enables a <u>holistic consumption-based GHG quantification</u>**

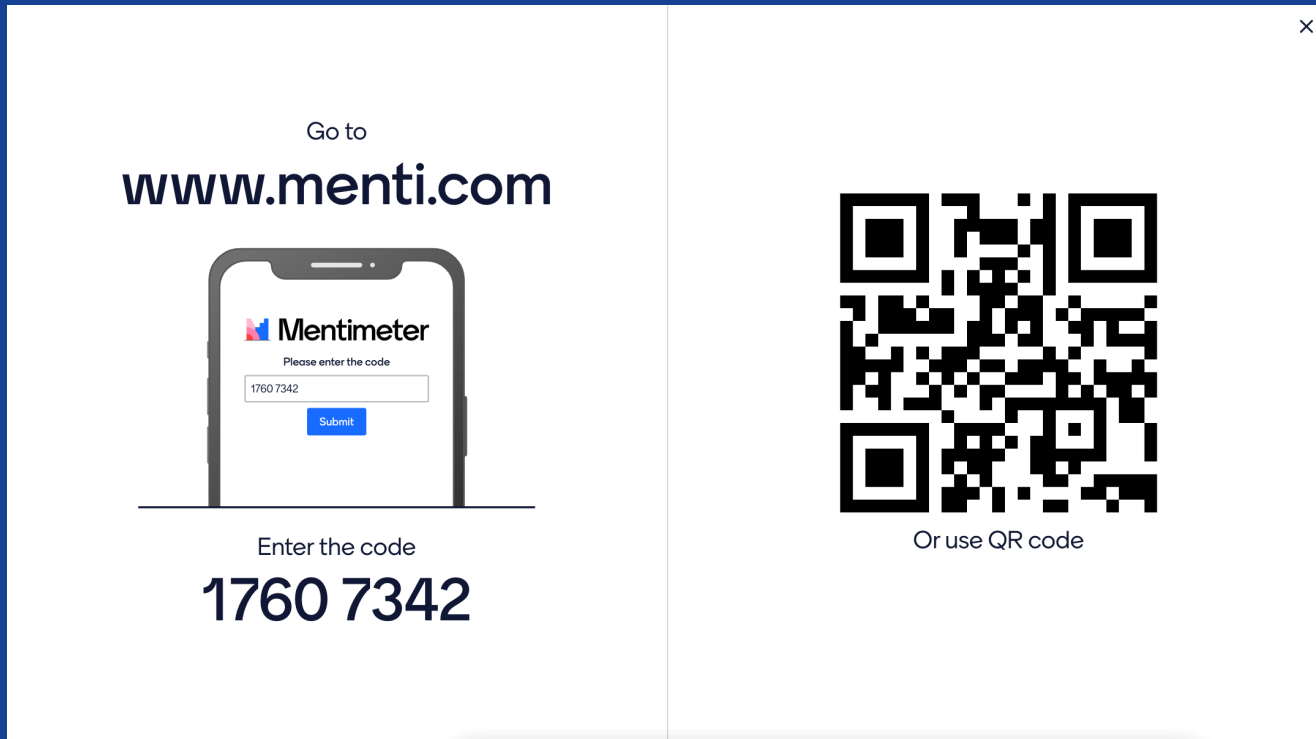**MODULAR & OPEN SOURCE TOOL**
- **makes the tool <u>future-proof</u>**

LOCAL DATASET FROM THE USER
- **enables the GHG quantification of <u>any target area</u>**
- **generates an expanding register of free <u>local set-ups</u>**

Questions

Please open the Mentimeter application in the link from the chatbox and give Your feedback by answering the questions. RESULTS

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Thank You for Your attention