

## Policy Decision-Making Tool for Sustainable Mobility 2.0

## Methodological Note for the production of Prototype Action Plans

Prototype Action Plans are produced for all countries in the world on the basis of the Global Roadmap of Action's (GRA 2.0) catalogue of over 190 policy measures to achieve sustainable mobility. This is referred to in this document as the catalogue.

**Input Considerations.** The algorithmic production of prototype action plans considers:

- 4 policy goals (universal access, efficiency, safety, and green mobility), where universal access is subdivided into urban, rural, and gender sub-goals.
- Country relevance of a policy measure as a function of how meaningful if can be for countries in each of four groups organized by distance to the targets in each of the policy goals.<sup>1</sup>
- 2 areas where resilience is considered a desirable property for the transport system (extreme weather events and pandemics) and 2 resilience characteristics for each area (preservation of operationality and quick recovery).
- 6 market segments, as follows: 3 for Passenger Transport (Urban, Intercity, International) and 2 for Freight (Domestic and International). Because some measures are transversal to the whole sector, a segment called "All" was also included. This classification is fully independent of the transportation mode used in each segment.

**Objective.** The aim of the algorithm is to select the set of most impactful measures from the catalogue, and produce a Prototype Action Plan (i.e. a set of a reasonable number of policy measures) that attains the highest possible balanced achievement across all policy goals and resilience aspects, while ensuring adequate representation of every market segment.

Algorithmic Procedure. The steps for producing a prototype action plan are detailed below.

- 1. The input variables are defined as:
  - a) Initial Scores
    - i. Scores of "impact on policy goals" and of "country relevance" are defined for each measure and combined (by multiplication) in what we call "refined impact" scores.
    - ii. Scores on the 2 x 2 resilience aspects for each measure.

<sup>&</sup>lt;sup>1</sup> This consideration recognizes that a particular measure may be irrelevant for a country group because the problem it intends to address is no longer present there, or because the conditions for its successful application are not available in that group.



- iii. For the 6 market segments, a binary value was attributed to each of the measures in the catalogue, depending on whether that measure has an impact on that market segment or not.
- b) Thresholds:
  - i. A satisfaction threshold is defined at 60% of the maximum possible score value, representing the minimum desired level of achievement in the average score of the selected measures for the Action Plan for each of the policy goals and resilience aspects.
  - ii. Two acceptance thresholds are defined: one for the average score across policy goals and resilience aspects (it must be at least 40% of the maximum possible) and one for the minimum score in any of those dimensions (it must be 30% of the maximum possible)
- 2. In simple terms, the iterative procedure starts with an empty set of measures and successively picks up for the Action Plan the measures that provide the highest reduction of the average gap to the satisfaction threshold (as in 1 b) i.), while ensuring that the acceptance thresholds defined in 1 b) ii) are respected.
- 3. Once that procedure is completed, a check is made whether the satisfaction threshold has been achieved across all market segments and there are least 2 measures relevant for each market segment. If that is not the case, step 2 is repeated to 'boost' the action plan but considering only measures that are incident on the segments for which that level has not been reached.
- 4. An assessment of possible underperformance in one or more market segments of the country under analysis in comparison with its peers is useful, as it allows selective addition to its Action Plan of some measures providing 'positive discrimination' of those market segments. This assessment is made as follows:
  - a) A method for identification of peer countries has been developed taking in consideration their relative differences in each of 4 variables with strong impact on the capacity of a country to develop and operate a sustainable mobility system: income, population, latitude and geographical situation (coastal vs. landlocked). To keep all benchmark exercises easily understandable, the number of peer countries has been fixed as 8 for any country being analyzed.
  - b) Sixteen indicators have been selected from the <u>Data Module</u> based on their wide availability across all countries and their balanced coverage of all market segments and transport modes. The values of each of those indicators are standardized to the [0, 100] range.
  - c) Considering sequentially each of the market segments, the country under analysis is found to be "underperforming" in that market segment if it has an average of its standardized indicators related to that market segment below 75% of the average of the medians for its peer countries.



5. If the country for which the AP is being produced has been found in a situation of underperformance (as described in 4c) in one or more market segments, 2 previously unselected measures are added for each of these segments, considering highest possible balanced achievement across all policy goals and resilience aspects.