

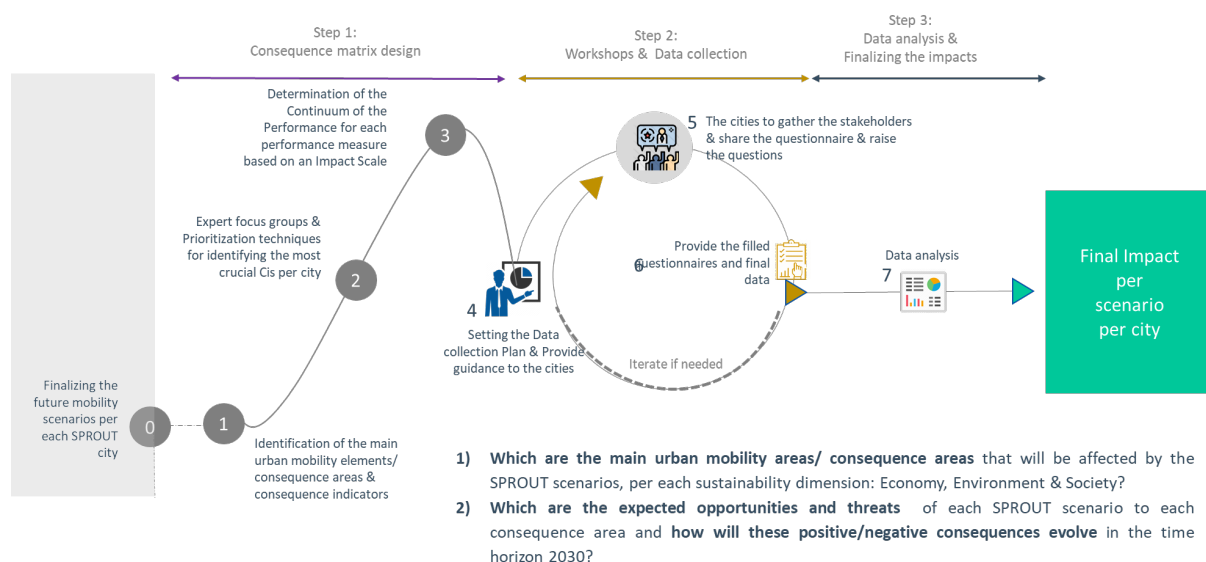
Sustainability impact analysis of city-specific scenarios

The creation and analysis of scenarios supports public authorities in understanding possible directions and impacts of the mobility transition taking place in their cities. Scenario processes are also a means to engage stakeholders. The following text explains the SPROUT approach to the impact analysis on the three sustainability dimensions and how the results were used. For more detailed information on the individual steps, the document provides links to relevant SPROUT deliverables along with the reference to a paper based on the methodology that was followed.

In 5 SPROUT cities (Valencia, Padua, Kalisz, Budapest and Tel Aviv) a qualitative scenario-building process was followed and implemented to understand the potential impacts of different scenarios on the mobility system. The main drivers that will affect the environment's state have been identified from a pre-defined long list of drivers. The list of drivers can be found in the SPROUT deliverable D2.3 on Urban Mobility Transition Drivers.

For the selected drivers, general projections on how these are expected to evolve within the next years have been implemented. Based on the outcomes of the scenario-building process, a framework for estimating their impacts on the three main sustainability dimensions: Economy, Environment and Society, was developed. Three methodological steps were followed in this approach:

1. The first step consists of designing the consequence analysis framework.
2. The second step indicates the use of the framework for collecting the required data from the cities.
3. The third and final step is the analysis of the results and identification of the impacts of each scenario in the three sustainability dimensions.



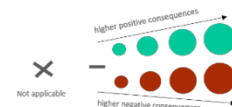
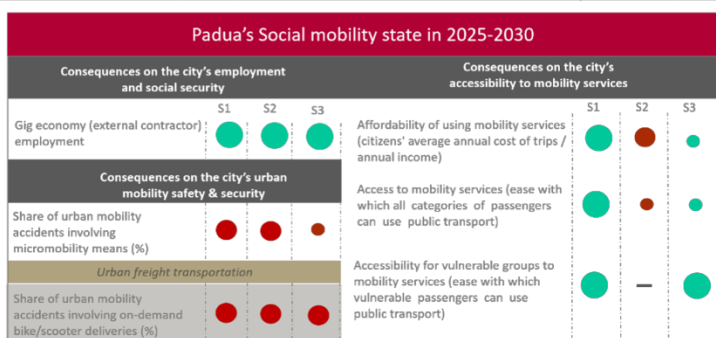
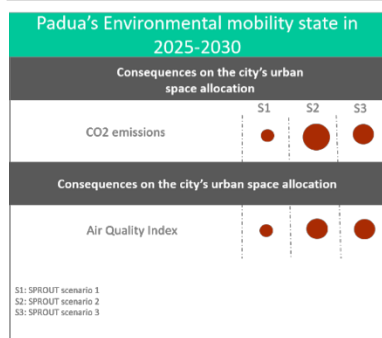
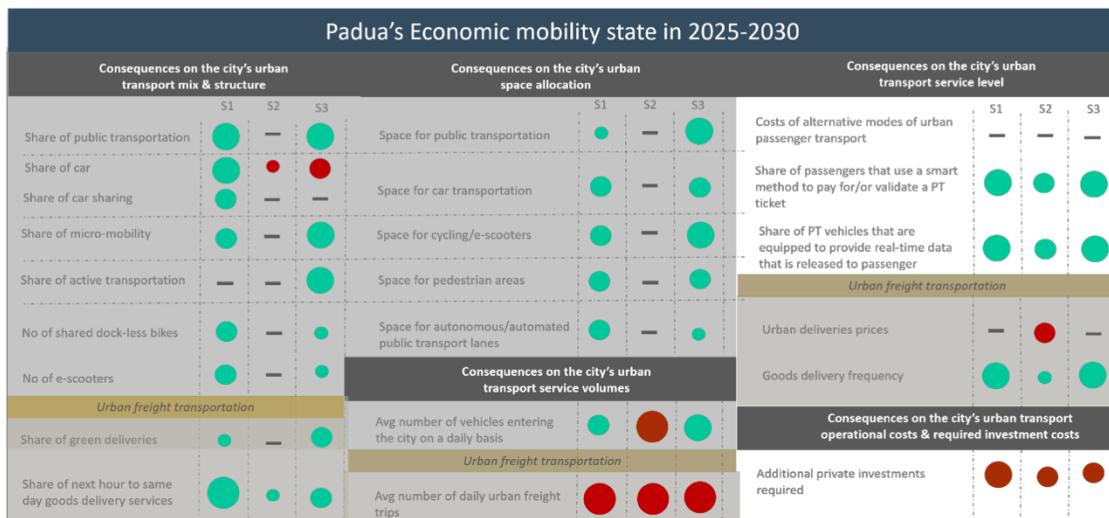
A description of the scenario-building process and a compilation of draft city-specific scenarios based on a set of city-specific drivers can be found in the SPROUT deliverable D3.1: City-specific urban mobility scenarios.

Based on the results of the scenarios' sustainability assessment, as well as their policy-related assessment, the final city-specific narrative scenarios were created, putting together all the previous elements and adding visualizations. The scenarios served as a basis for the pilots' implementation and the development of alternative policy responses for all the cities.

For more information on the assessment of economic, environmental and social sustainability of the scenarios, please revisit D3.2 "Sustainability impacts of city-specific scenarios". Further details on the potential impact of each scenario on urban mobility policy can be found in D3.3 "Policy impacts of city-specific scenarios", while more information on the final scenarios and their expected impacts in the form of storytelling together with a visual representation may be found in D3.4 "SPROUT narrative scenarios".

The consequence analysis framework was designed and implemented in the SPOUT's 5 pilot cities, but the methodology can be applied to the various large and small cities from different countries that participate in the project. The scenarios provide a baseline for developing future strategies, but also for creating a knowledge platform in which cities can learn from each other.

For example, presented as follows, the case of Padua revealed some interesting insights: For 2030, the city of Padua developed three different future mobility scenarios, where each of the selected urban mobility transition drivers evolves differently over time. In general, Padua's future state shows on the one hand a shift towards more environmentally friendly modes of transport; more space allocated to active transportation, public transportation and micro-mobility; smarter public transportation services; greener last mile deliveries. On the other hand, it also showed higher demand for next-hour deliveries, more congested streets, higher CO2 emissions and air pollution, and a less safe mobility environment. These results seemed to contradict each other, however, there are possible explanations for that. It was observed that the on-demand deliveries increased, and consequently the CO2 levels. This means that even though there was a distinct increase in micro-mobility, this did not seem to be enough for the improvement of the air quality. Additionally, since micro-mobility increased, accidents including micro-mobility means increased as well, therefore rendering the mobility environment less safe. The following figures illustrate the level of positive and negative consequences foreseen for Padua's mobility state in each mobility scenario and per each sustainability dimension.



A descriptive presentation of the framework and the case of Padua' city can be also found in the following paper:

Xenou, E., Ayfantopoulou, G., Royo, B., Tori, S., & Mazzarino, M. (2022). *Methodology for Consequence Analysis of Future Mobility Scenarios: The SPROUT Framework*. *Future Transportation*, 2(2), 453–466. <https://doi.org/10.3390/futuretransp2020025>