WHAT BUSINESS MODELS FOR SMART CITY ASSETS?

STUDENTS PROFILE

No specific requirement

PARTNER

European Investment Bank

PERSON IN CHARGE OF THE PROJECT

Louis-Philippe Carrier, Advisory Services – JASPERS, Independent Quality Review.

BRIEF DESCRIPTION OF THE INSTITUTION AND CONTEXT OF THE PROJECT

The EIB is the European Union's bank. We are the only bank owned by and representing the interests of the European Union Member States. We work closely with other EU institutions to implement EU policy.

As the largest multilateral borrower and lender by volume, we provide finance and expertise for sound and sustainable investment projects which contribute to furthering EU policy objectives. More than 90% of our activity is focused on Europe but we also support the EU's external and development policies.

This project is the continuation of a project from the 2017/2018 period. Building up on that previous work, the study should produce new information that can help a financial institution assess the quality of investment projects. The students will therefore need to understand what makes a project viable, sustainable or profitable, and how the various forms of funding impact operations down the line. The capstone project will therefore provide a good opportunity for the students to apply financial analysis techniques and indicators.

This empirical study will categorise the assets that are deployed as part of Smart-City investment strategies and clarify what business models are used to finance the provision of the various categories of assets. The aim is not to produce a theory of Smart Cities but to help project promoters and funding bodies identify common practices that could serve as benchmarks for reasonable investment plans in urban infrastructure.

EDUCATIONAL CONTENT

- **Definition and structuration of policy questions**: Urban development policies are often perceived as complex and difficult to assess with traditional business tools. But Smart City strategies are maturing and should not be addressed as a perpetual experiment.

- **Design and administration of surveys**: Collecting useful data is a crucial challenge in this policy area. The project constitutes a rare and precious opportunity to do so.

- **Data cleaning and formatting**: As the quality of the survey responses is expected to be somewhat variable, what will and will not be usable is difficult to foresee. The students will have to use their judgment and analytical skills to decide what information to retain and how to process it to maximise its value.

- **Quantitative policy analysis**: If the data quality allows, statistical analysis may provide useful insights into urban development trends and benchmarking information. At a basic level, this could encompass a description of unit costs and the frequency of certain investments. A more detailed analysis could isolate interesting distribution effects or correlate the occurrence of certain investments with the characteristics of the cities.

- **Qualitative policy analysis**: Some of the information collected via the survey will be difficult to address quantitatively and may conversely befit a qualitative analysis, possibly in relation to legal or technical issues.

- **Infrastructure economics**: Understanding the business models for different categories of urban infrastructure assets implies a reflection on their economic characteristics. Industrial economics is an important tool, likely to offer useful explanations via such concepts as: network effects, replicability, procurement and barriers to entry, two-sided markets static vs dynamic efficiency, etc.

- **Business strategy**: This capstone project defines business models in relatively precise terms and aims to clarify their pros and cons. It addresses a relatively broad range of business dimensions, from user needs through procurement to fee structures.

- **Team work:** Given the variety of the tasks to be accomplished, the capacity to plan the work and to execute the tasks in parallel will be essential. In addition, the team will start from a broad question and split it into its components, which will be studied in detail. The survey component requires responsiveness to address potential difficulties.

RESULTS AND DELIVERABLES INTENDED

Intermediate deliverables to achieve that aim would include:

- an updated survey of "smart" urban infrastructure assets already deployed and foreseen to be deployed across a sufficiently large number of cities around the world;

- cost estimates for these assets, in absolute value and per end-user, in the cities surveyed;

- an analysis of the cost and revenue structures for the "smart" assets and/or the services delivered thanks to those assets.

The final deliverables would be a data set, which, if sufficiently detailed, could potentially form the foundation for further studies (implying that it is maintained and expanded) and a report covering:

- a synthesis of the findings, from the survey and from its analysis;

- a taxonomy of the business models applicable to the different types of Smart City assets and services;

- a critical analysis involving, where possible, the reasonable identification of good or recommended practices.

METHODOLOGY

In 2017/2018 a team of Sciences Po students prepared a first version of this survey, collected responses and analysed them. The project generated useful information and confirmed the need for this kind of empirical approach. It also showed, however, that data at that level of granularity are difficult to collect. The purpose of this second project is to optimise the questionnaire and administer it in such a manner as to achieve a higher response rate and better data quality, and to analyse the data in depth.

The first step is for the students to familiarise themselves with the topic and with last year's project. The focus is not on defining what constitutes a Smart City or what makes a city "smart", but on studying the assets that typically characterise Smart City strategies. The team will update an existing list of cities around the world that are implementing a Smart City strategy and deploying relevant assets.

The second step is to update, test, and administer the survey, to identify what assets have been / are being deployed in a given city and how they have been / are expected to be funded:

- by public finances, and/or with some form of external subsidy and/or by some degree of usage fees (if so, how much and paid by whom?);

- paid from private funds, paid from the municipal budget, or via a Public-Private Partnership (if so, with what characteristics?);

- paid directly or using some form of loan or urban development fund;

- purchased independently or as part of a bundle (if so, with what?).

The final part of the work will be to organise the data and to analyse them. If relevant and feasible, some degree of quantitative analysis should be provided. In any case, the final report should offer clear visualisations of the key findings, using stylised facts, statistical indicators and/or graphs as appropriate. A more qualitative and normative section should conclude the report, if this is reasonable in light of the quality of the data.

SCHEDULE

The schedule will be defined at the beginning of the project

LOGISTICS

Contacts with EIB or JASPERS stakeholders will be facilitated where appropriate. This may be used, for example, to test the survey before circulating it to the wider list of cities. Much of the factual information about Smart City assets, however, needs to be collected by the students themselves. Guidance on key concepts will be provided, as well as relevant documents (including publicly available information from EIB Group) and other potential sources of information (e.g. interviews with EIB colleagues).

The students will have access to the team projects' room, equipped with a computer, a printer and a phone.