Public-private leverage for funding smart mobility

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Abstract:
"Smart mobility", which lies at the core of the energy transition in urban areas, has to improve energy efficiency while satisfying needs. Such a policy requires investments, infrastructures, an adapted, computerized system, the creation of new uses, and so forth. To finance smart mobility, relations between local authorities and the private sector have to be activated. Three major levers can be used: contracts for public investments, incentives for private investments, and regulations in view of a public-private synergy.

The pursuit and acceleration of the digital transformation and of the efforts for making cities carbon-free require allocating considerable financial resources to programs consistent with the energy transition, whence a twofold challenge for public and private actors in "green finance".[1] In its panorama of climate-related funding, the Institute for Climate Economics has pointed both to the increasing slack in finances (€10-30 billion) compared with the needs for moving toward national climate goals (I4CE 2018). It has also pointed to the still very high level of investments in fossil fuels, which are considered to be negative for the climate.[2] Although climate investments reached a record €41.2 billion in 2018 (+17% over the preceding three years), they are nearly twice as low as the level of investments in fossil fuels.[3]

The sector of mobility and transportation is a priority for a successful energy transition. It is the principal source of greenhouse gas emissions — nearly 30% of emissions nationwide — ranking ahead of farming and the construction industry. This trend is not becoming any better given that road traffic is still the principal mode of transportation and that it is difficult to make both freight and passengers switch modes.

[1] This article, has been translated from French by Noal Mellott (Omaha Beach, France). The translation into English has, with the editor's approval, completed a few bibliographical references. All websites have been consulted in October 2019.

[2] I4CE has estimated the annual need for investments on the basis of the quantified goals set in the "Stratégie nationale Bas Carbone" and "Programmation pluriannuelle de l'énergie". For the 2018 edition, the figures used come from the SNCB 2015 and the PPE 2016.

[3] According to I4CE (2018), the €41.2 billion in climate investments in 2017 were made in: energy efficiency (€19.8 billion), the building of sustainable transportation infrastructures and networks (€10 billion), the rollout of energy from renewable sources (€6.6 billion), forests and industrial processes unrelated to energy (€2 billion), and making the fleet of nuclear reactors last longer (€2.8 billion).

To cope with this situation, public and private organizations must make mobility smarter, environmentally friendlier and more economic. This would respond to the needs of city-dwellers and, more broadly, of all the territory under conditions consistent with the fight against climate change and protection of the environment (STAROPOLI & THIRION 2018, 2019). As in the housing sector, the solution in transportation implies improving energy efficiency so as to reduce greenhouse gas emissions and air pollution (RÉSEAU ACTION… 2015).

What are the sources of energy efficiency in mobility?

To develop smart mobility, several sources of energy efficiency can be tapped. The first is to lower the consumption of motor fuels and move toward engines that pollute less. Achieving these objectives implies adapting the installations and equipment related to mobility and implementing an industrial policy. New installations for distribution (*e.g.*, stations for reloading electric or hydrogen-fueled vehicles) must be built; and electricity grids, reinforced and modernized in consequence. In December 2018, negotiators of the EU member states and of the EU parliament agreed on reducing by 2030 CO_2 emissions from new cars and light commercial vehicles by 37.5%. Accordingly, about a third of new vehicles of these sorts will be running on electricity or hydrogen.

Practices related to mobility must evolve by motivating users and offering them new services (BANQUE DES TERRITOIRES 2019). Beyond reducing the number of trips, distances and speeds, it is necessary to boost "intermodal" mobility, to shift from the mode of the private car toward public transit and active (walking, cycling) or shared (car-sharing between businesses or private persons with fixed or free-floating drop-off and pick-up points) modes of transportation.

Sustainable infrastructures and the digitization of mobility will make it easier for new uses to be adopted. This means organizing poles of multimodal exchanges, reserving part of the infrastructure for public transit or facilitating journeys for active modes of transportation (bicycle paths, garages and parking installations for two-wheeled vehicles, carpool parking lots, more parking places at railroad stations, etc.). Like other services in a smart city, mobility will become smart when it relies on information and communications technology (ICT) and digital technology. Smart transportation systems will use technological devices (displays, radar, GPS, RFID) and wireless networks to collect, record and process data from sensors or cameras. The scope of applications is vast: highway safety, traffic management, multimodal information, electronic payment systems, assisted driving, and so forth. Since we are unable to build new transportation networks for reasons that are economic, environmental and spatial, smart transportation systems will help us optimize existing networks in space and time, and reduce congestion. Thanks to effective multimodal information tools and the new connected services in the sector of mobility, users can be moved more efficiently in terms of transportation time, comfort and predictability with a lower environmental impact.

Which public/private levers can be used to raise funds?

As transit authorities and the leading partners in local strategies for the energy transition, local authorities evidently have a part in financing the investments to be made in the infrastructure and equipment necessary for the environmental and digital transitions in the sector of mobility (BARAUD-SERFATY *et al*. 2018). Their interventions take several forms depending on how much localities are involved in organizing transportation services and on how they perform their duties as regulators and facilitators.

As public transit authorities, local and regional authorities face the "make-or-buy" alternative: they can take charge or else turn toward the private sector (via public bids or private-public partnerships). In some cases, contracts provide for shareholding in the company in charge of the service (in the form of mixed economy companies or local public companies). Broadly speaking, public-private partnerships (PPPs) are contracts whereby a public authority transfers to the private sector an investment traditionally made or financed by the public sector, along with the management and operation of public works or equipment. A significant share of risks is thus shifted onto the private partner. Some PPPs provide for a transfer of risks on the demand side (concessions); and others, on the supply side.[4]

In general, public contracts have to be adapted to the digital transition (AUBY 2017). They have to become more innovative and more integrated, both vertically (from the phase of design to the phases of operating the infrastructure and using data) and horizontally (by including a variety of services). They must do more to involve citizens-users-consumers, and be more oriented toward uses and satisfaction. New forms of risk-sharing also have to be imagined in a fast evolving economy. Tight budgetary restrictions on local and regional authorities are an argument if favor of turning toward private sources of financing. The public-private partnerships that provide for prefinancing from private sources can provide leverage for smart programs (owing to the structure of the financing and, too, the global, multisectoral nature of these programs).

A special use of these tools would be to propose mobility as a service (MaaS) under the responsibility of public transit authorities. MaaS would offer to users multimodal services, information in real time and a single ticketing service. The Dijon metropolitan area has signed with Keolis a global "public service delegation" contract on mobility for 2017-2022. This contract covers the management of public transit, self-service bicycles, car parks, and the pound for seized vehicles, while integrating the advantages drawn from digital technology (applications, open payment initiative), all for a total of €435 million.

Apart from their responsibility for organizing public services, local authorities can also encourage private investments in the infrastructures and services related to transportation and mobility. Interventions of this sort used to take the form of subsidies. Several arrangements have been set up in the sector of transportation and for the energy transition under regional, national or European (Feder) programs or from agencies such as ADEME. Public subsidies can support innovative services, such as the sharing of commercial vehicles or carpooling. For example, Île-de-France Mobilités decided in April 2019 to finance ride-sharing up to €3/passenger till the end of the year.[5]

[4] Some global public markets are similar to public-private partnerships (SAUSSIER & DE BRUX 2018, CRUZ & SARMENTO 2017).

[5] Some of these services are directly run by public authorities (through mixed economy companies or local public companies) or under their responsibility (*e.g.*, a public car-sharing service or a ride-sharing platform).

Besides subsidies, new public-private financial instruments (guarantees, subsidized loans, equity full or partial) for risk-sharing are being designed in businesses with low profitability or high risks. These instruments enter into the capital or guarantee loans at a lower cost than private sources. Their objective is to maximize the pull on the private sector. At the EU level, such instruments are foreseen in the Juncker plan adopted in November 2014. For instance, the European Fund for Strategic Investments (EFSI) offers guarantees. Following its extension in December 2017, it has been, for the period 2014-2020, attributed €30.4 billion with the objective of leveraging at least €500 billion by 2020. The InvestEU program (€38 billion), scheduled to follow up on the Juncker plan for the period 2021-2027, aims at leveraging €650 billion.

France also uses these tools but in a scattershot way, with neither consistency nor a clearly shared doctrine. The Canfin-Zaouati (2018) report has recommended a funding envelop of €1 billion for the energy and environmental transitions so as to leverage €10 billion in private investments over three years. Along with the Caisse des Dépôts et Consignations, Bpifrance, ADEME and Agence Française de Développement, France Transition is to manage financial instruments for risk-sharing. On 23 May 2019, the government announced implementation of these proposals, which should benefit the sector of transportation and mobility. The Canfin-Zaouati report (2018) has proposed setting up a system of public guarantees for covering risks during the period when loading stations for electric vehicles increasingly come to be used. At present, these risks are a major drawback for manufacturers and local authorities. Compared with 2017, the additional yearly investment needed up to 2028 is estimated to range between €260 million and €1.4 billion. The emergence of a green finance, the introduction of incentives and the orientation of banking and financial regulations toward the environmental transition would make it easier to raise funds from private sources.

A final point: although, strictly speaking, they do not provide financial leverage, regulations for orienting the behaviors of private persons and organizations could be adjusted to bring the free play of the market in line with public policy objectives. This is a major lever for smart mobility.

For local authorities, this means adopting the right incentives so that private services and programs emerge that are innovative and in line with the general interest. These incentives can be financial, for instance: urban tolls or pricing systems for parking that push people to switch their mode of transit. They might also include, for example, the licenses granted for processing open data. Since 2012 in the Lyon metropolitan area, Optimod Lyon has set an example to be followed of public-private cooperation. Thanks to a warehouse of data from public and private sources, this program has spurred the invention of innovative services consistent with public policies (*e.g.*, the first multimodal, real-time GPS developed by the firm Cityway). The Rennes metropolitan area has set up a public data service with mobility as one of its major point. This service should boost the uses and sharing of data of general interest. It intends to provide a contractual framework for public and private parties to exchange and open certain sources of data.

Besides raising funds for public programs, these initiatives will contribute to a public-private synergy and thus help us advance toward the smart city. By using all the tools (contractual, financial, regulatory, partnerships, etc.) available to local and regional authorities, solutions can be deployed to rise to the challenges of urban mobility.

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