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Project Planning and Prioritization

Note from the secretariat

The present document is submitted as an informal document for information, prepared by the International Specialist Centre of Excellence on PPP Law, Policy and Institutions in France.

REPORT Deliverable No2

PROJECT PLANNING AND PRIORITIZATION

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1 Identifying the needs of public services by geographical areas, countries or regions

1.1 Global overview of general needs

The identification of the needs is at the basis of the Projects feasibility and development. It consists in determining which services are to be rendered to the population, aiming at addressing the lacks in various sectors as education, health, water, transports, traditional energy, renewable energy, etc.

Generally speaking, in order to cover the whole field of the needs, it is logical and consistent to start by making reference to the Sustainable Development Goals as presented by the United Nations for the Agenda 2030. Out of the 17 goals, we have selected the ones which are the most appropriate for the application of the Concessions and other PPP processes.

Global demand for public services infrastructures has powerful underlying drivers as by 2050, the global population could reach a total of more than 9 billion and the urban population will increase by 2.6 billion.

The industrialization and rising living standards in emerging economies will drive global economic growth at a rate of about 2% per year. As a result, it drives the needs for globally interconnected communication and transportation networks.

The immediate effects of the shortfall are well-known and regrettably dire. For example, a report of the International Bank for Reconstruction and Development released in 2010 underlies that in Africa some 40% of the food produces perishes on the way to market. In many rapidly developing countries, electricity shortages are a chronic feature of daily life. Reports from the World Economic Forum have highlighted that decision-makers and business leaders identify the infrastructure lack or deficiencies as the top constraint on doing business.

1.1.1 Goal 1. Poverty: End poverty in all its forms everywhere

-Using enhanced development cooperation, ensure significant mobilization of resources from a variety of sources to provide adequate and predictable means for developing countries.

-create a sound policy framework at the national, regional and international levels to support accelerated investment in poverty eradication actions.

1.1.2 Goal 2. Food: Achieve food security and improved nutrition and promote sustainable agriculture

- increase investment in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity.

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-develop irrigation network in relation with water management programme

1.1.3 Goal 3. Health: Ensure healthy lives and promote well-being for all at all ages

- Substantially increase health financing and the recruitment, development, training and retention of the health workforce.
- Construct the necessary buildings (Medical schools, hospitals, clinics, Medical universities)

1.1.4 Goal 4. Education: ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- Build and upgrade education facilities and provide safe and effective learning environments
- Increase the number of teachers and the corresponding capacity building
- by substantially expanding the number of scholarships available and develop e learning.

1.1.5 Goal 6. Water: ensure availability and sustainable management of water and sanitation for all

- Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, treating wastewater and substantially increasing recycling and safe reuse globally
- Substantially increase water-use efficiency across all sectors and ensure sustainable supply of freshwater
- Construct the necessary wells, pipes and plants
- Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- Construct and maintain equipment for water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies with the participation of local communities.

1.1.6 Goal 7. Energy: ensure access to affordable, reliable, sustainable and modern energy for all

- Develop access to clean energy technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology

Promote investment in energy infrastructure and clean energy technology.

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1.1.7 Goal 9. Infrastructure: build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

-Develop and upgrade infrastructure

-retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes.

1.1.8 Goal 11. Housing and Urbanism: make cities and human settlements inclusive, safe, resilient and sustainable

-Strengthen national and regional development planning for urban, peri-urban and rural areas

- Substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters

-Build sustainable and resilient buildings utilizing local materials.

1.1.9 Goal 14. Ocean protection: conserve and sustainably use the oceans, seas and marine resources for sustainable development

- Construct ports and harbours for providing access for small-scale artisanal fishers to marine resources and markets.

- Enhance the conservation and sustainable use of oceans and their resources by implementing the relevant international laws and treating waste water and solid waste before sending them into the ocean.

1.1.10 Goal 17. Economic cooperation: strengthen the means of implementation and revitalize the global partnership for sustainable development

-Develop local projects with local partners

-Identifying and cooperating with local investors as much as possible.

1.2 *Local specific needs in terms of functionality (services to be provided)*

Keeping in mind the global goals, the local needs have then to be identified

-by a detailed analysis of the society, the composition of the population (culture and religion, age structure, family structure, socio professional categories, household budget, etc.) and

- a careful review of the state of the existing infrastructures by collecting information on how present infrastructures, and services are used (traffic volume on the roads for instance, volume of water distribution, etc.)

This analysis needs to be completed by the use of key performance indicators (KPI) **adapted to the location and circumstances** by the governing authority. Setting KPI levels at too high a level should be avoided in recognition of the fact that public services have developed gradually in all

countries. The inherent gap between the scope and quality of existing public infrastructure services and the expectations of the potential users of the future services according to the KPI must be taken into consideration.

The priorities are not the same from one country to another and the level of quality must be adapted to the needs of the population and the capacity of the State or Region in which the infrastructure has to be implemented.

At the early planning stage, projects identification needs strong political and administrative support and involves a wide range of stakeholders (civil society, experienced technical experts, politicians...) A check list of the main fields to be checked is presented hereunder¹.

- Agriculture
- Food Security and Nutrition
- Education
- Health: maternal and child
- Energy
- Sanitation
- Transport
- Urban Development
- Information and Communication Technologies
- Irrigation and Drainage
- Water Resources Management
- Water Supply
- Environment and Disaster Risk Management
- Global Economy and Competitiveness,
- Inequality and Shared Prosperity
- Investment Climate and financial sector
- Labor Markets, jobs and development
- Macroeconomics & Fiscal Management

(Investment related to ensuring the security of the population are not included in our study.)

Each Department has his specific habits and benchmarks, but may need a specific technical analysis for defining the projects in terms of **functionality**. The role of the various Departments is to define the **services to be provided** and not to propose immediately the technical solution which ought to be chosen for its implementation.

1.3 Creation of a General Planning Programme

After the needs have been identified, public authorities shall prioritize those needs consistent with the **vision, goals and objectives of the country**. This may affect the identification of the needs and the KPIs.

- Early planning of projects is essential, and particularly for the success of PPP ventures.
 - The necessity of preliminary evaluations

¹Country specific Data on these topics can be easily found On the Multilateral development banks websites.

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The initial design and planning must take into account various inter related institutional, legal, socio-economic, financial and cultural factors which are important for a resilient contract during the lifetime of the Project.

For instance: analysis of the needs for an infrastructure service from various angles, a review of the existing services, their shortfall, their possible improvement, the overall planning at their future, the need to render new public services, etc., are only a few of the factors to be taken into account.

These analyses must be made at different levels: first local, then national and eventually regional.

An important element of success at the preliminary evaluation stage is to design a project which maximizes the net externalities compared to the traditional form of Public procurement and to include it in a broader planning at the state or local level. This inclusion shall facilitate the economic development and the satisfaction of the public users and will justify the participation of the Public Authority.

- Identification of good projects must follow a simple and clear methodology professionally implemented.
- A preliminary list of viable projects

When needs have been identified, the public authority shall prioritize those needs and consider situations where the public and end users may be able and willing to pay a price for the quality and usefulness of the service delivered. Situations where the public authority considers paying directly for such services to a private PPP service provider should be taken into account as well.

- At the early planning stage, projects' identification needs a strong political and administrative support and involves a wide range of stakeholders.
- Local, country or regional participation to the process organized in an integrated manner is the paramount.

Many countries have developed a General Planning Program proposed and supported by a technically competent and specialized administration. The General Planning Program (GPP) should be designed to harmonize the planning of the various public services, thus maximizing economic development and governance. Coordination and grouping of projects creates synergy and added value in a given area and provides scale economies. The main objectives of the GPP is to prioritize the main basic needs, which are usually water, food, energy, transportation and education. The GPP is usually supported by an administrative structure called "Commission for General Planning".

As these needs are concomitant and intertwined with the **corresponding** investments, scenarios need to be tested to ensure consistency. Out of these an "ardente obligation" as it was said by the French President 50 years ago will be selected.

The administrative structure has to report to the Prime Minister or, when it is specifically devoted to infrastructure investments "General Commission for Investment as now in France. In

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that specific case, the CGI is responsible for the implementation of the future investment program.

At his head there is a General Commissioner, who coordinates interdepartmental work under the authority of the Prime Minister. He is responsible for ensuring the consistency of the State investment policy. To do this, he prepares government decisions concerning contracts between the State and the various agencies responsible for the management of funds, coordinates the preparation of the specifications accompanying the call for projects and oversees project proposals, investment and implementation.

To assist, a small team bringing together high-level skills from the public and private sectors is recruited after a rigorous selection process involving a recruitment firm and an independent nominating committee, chaired by a high level experienced person, comprised of individuals from diverse backgrounds .

The General Commission for Investment ensures the transparency and quality of selection procedures, the proper use of resources in relation to the expected benefits and **coordinates coherent action between the different Departments.**

Project selection is made according to strict criteria to retain only those with high growth potential.

A specific discount rate is used to compare the Costs and Benefits of the various projects in accordance with tested cost-benefit analysis models. This public economic discount rate² is chosen by high level economists of the Government and should be revised every 5 years. We shall see later in more detail the use of the public economic discount rate.

It is recommended that governments should prepare a national **Economic Infrastructure Plan** to optimize their portfolio of infrastructure investments. This will allow governments to identify interrelationships between sectors, decide which “quick wins” should be prioritized, and see more clearly where the opportunities to increase the provision of infrastructure funded from users lie. These quick wins production need an effective communication and coordination between government departments and Ministers.

The benefits of preparing and Economic Infrastructure Plan are multiple, for example it provides a greater certainty by giving confidence to construction companies and as a result it encourages a focus on the whole infrastructure and construction sector and cooperation between governments and stakeholders.

Moreover, one of the main benefit which is particularly significant in the emerging economies and developing countries which can be politically unstable is that a greater certainty reduces the chances of changes to plan when the government administrations change.

² All countries have an official economic discount rate to compare the Net Present Value of the cost-benefit analysis of various projects in order to decide the priorities. France, for examples uses the Quinet report (“l’Evaluation socio-économique des investissements publics” 26/06/2013 while Australia the study “Valuing the future: the social discount rate in cost-benefit analysis” Mark Harrison April 2010)

2 From the needed functionalities to their expression in terms of physical facilities

The global methodology is the following³:

1. Establish the need for a service, a facility or a set of facilities; ‘bundling’ a number of smaller projects may be used to secure economies of scale in some cases.
2. Identify a likely location or locations for the service or facilities (this is occasionally not required for a PPP project delivering only a service, not a facility)
3. Establish whether there is general budgetary cover for any associated government expenditures, both capital and recurrent. Many projects will not be entirely self-financing
4. Consider affordability and value for money issues.

The conventional approach starts with the main focus on acquiring a facility. But a PPP focuses on the procurement of a service, even though commonly associated with the construction of a facility to deliver the service.

To correctly transform the needed services into definition of physical projects to be built and/or institutions to be developed, it is indispensable to create working groups with public authorities, engineering offices and appropriate experienced and independent people who are working in the specific country.

For instance, in the Health Department, the evaluation of the number of people to be cared for by region and the diseases to be eradicated, in which cities to install the equipment is under the responsibility of the Minister. But defining the number of hospital beds, technical equipment to be bought and number of square meters to be build should be done by specialized technical staff. The definition of the programs should be separated from the definition of the technical solutions to promote creativity from the engineering offices and contractor.

After the functions and the main physical characteristics of the projects have been defined, project development may be concentrated into a single Unit under the remit of several government departments. Investing the time and resources at an early stage to ensure that the Unit is appropriately staffed and that projects create the maximum impact will be money well spent. The Unit should include economic, financial, and engineering experts possessing leadership skills and employees who look at “bigger picture” and see opportunities for greater inter-linkages between infrastructure networks.

The staff needs to be familiar and implement their internal procedures on scheduling, the division of roles and responsibilities and internal quality assurance and approvals. Experience has shown that it is advisable to appoint a special council in order to plan Concessions/PPP projects in infrastructure at this point of time. Indeed, developing a project is not a time linear process. After starting with an ideal solution and looking at its costs

³ See publications of Hong Kong government Efficiency Unit “An introductory guide to PPP’s” March 2008.

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(investment, operation and maintenance), the project is often downsized and a new scenario/solution adopted. Specialist advice on Concession/PPP cost optimization procedures is therefore most important to render this process efficient.

The cost of the project is linked to the quality of service demanded at any given moment (KPI), as well as the scheduling for implementation. So the size of the projects and the possible practical schedule are critical for attaining the goal of implementing a pipeline of projects. While large challenging projects tend to arise initial excitement they need to be postponed or canceled when they are too expensive for the country. Developing realistic projects from the outset is therefore crucial.

In addition to long term international projects requiring large scale financing, it is possible to develop a great number of services with limited local investment. To do so requires efficient decision making and upstream tendering procedures (Evaluation of socio-economic benefits, externalities, and trade revenues) that do not impose prohibitive burdens and elevated transactional costs.

Governments should prepare a national economic **infrastructure plan** to optimize their portfolio of infrastructure investments. This will allow governments to identify interrelationships between sectors, decide which “quick wins” should be prioritized, and see more clearly where the opportunities to increase the provision of infrastructure funded from users lie.

3 Evaluation of corresponding costs, in order of size (construction, operation, maintenance)

Cost evaluation is critical to success. While international companies produce excellent technical solutions they often come with high maintenance costs. Local, easy to **implement solutions, drawn from local culture and proposed by local business often exist** and should be promoted to the maximum extent possible. Great care needs to be exercised so that standards and norms designed to ensure high quality are adapted to local conditions. Failure to properly analyse the particular needs and resources of a country may jeopardize the financial equilibrium of the project hindering its implementation.

Using local knowledge, implementing tests adapted appropriately to the investment plans and the intended quality of service, allow for the costs to be lowered and the operation to become feasible.

Comparing existing projects made in the same region with the same technology is especially useful. Such benchmarking minimises errors. Experts with local experience project development and construction should be used. Cost evaluation should take into consideration operating, repair, maintenance and retrofit costs prior to hand back to the authority in order to avoid further expenses for the public budget.

Due attention is to be paid to the VAT, its reimbursement, inflation and other taxes.

The PPP Unit, if any, should have a data base of the projects already realized, be they PPP projects or traditional procurement projects, in order to have a proper information on the unit prices and their relation to the costs of the utilities and salaries. For this reason, the EIC⁴ and other organisations (CICA⁵, SIF⁶, World Bank related organisms...) are currently developing a systematic process for improving the quality of project preparation (the Well Prepared Project process).

In establishing his tender, the Contractor will assume the time schedule for completion will be met. Public Authorities therefore need to assume responsibility for completion on time to avoid surprise. Land acquisition, land lease, resettlement of people, ecological constraints, deviation of public utilities and other events may delay the works constituting a source of cost overruns and then of financing difficulties. Establishing a realistic schedule and doing what is necessary to reduce delay is fundamental to avoiding these problems.

⁴ European International Contractors (EIC)

⁵ Confederation of International Contractors' Associations (CICA)

⁶ Sustainable Infrastructure Foundation

4 Evaluation of commercial revenues which could be generated.

This issue is the most important to the country's development. In the long term, countries are developing through their natural resources and work forces. States derive revenue from essentially three sources: royalties coming from natural resources, individual taxes and corporate taxes. **The question is then to decide what is the optimum solution for providing the essential services to the Nation: to provide services free of charge and use the State revenues to pay for them, or to organize a private market with private companies selling the services to the population who can and will pay for it.**

In practice, a mix between these extreme solutions provides the best results.

For some products and services, the population can pay. The example of the cell phone is well known: the "utility" (in the economic meaning) of the mobile phone service is so high that the households have decided to allocate a part of their monthly budget for buying that service.

The transport, the energy, the water services are also commercial services.

It should be noted that in the past recent years the payment capacity and the willingness to pay are regularly increasing in many developing countries, according to the standard of living and income by inhabitant⁷. For some sectors -particularly in telecommunications-it is even possible to reach a point where no public subsidy is any more requested.

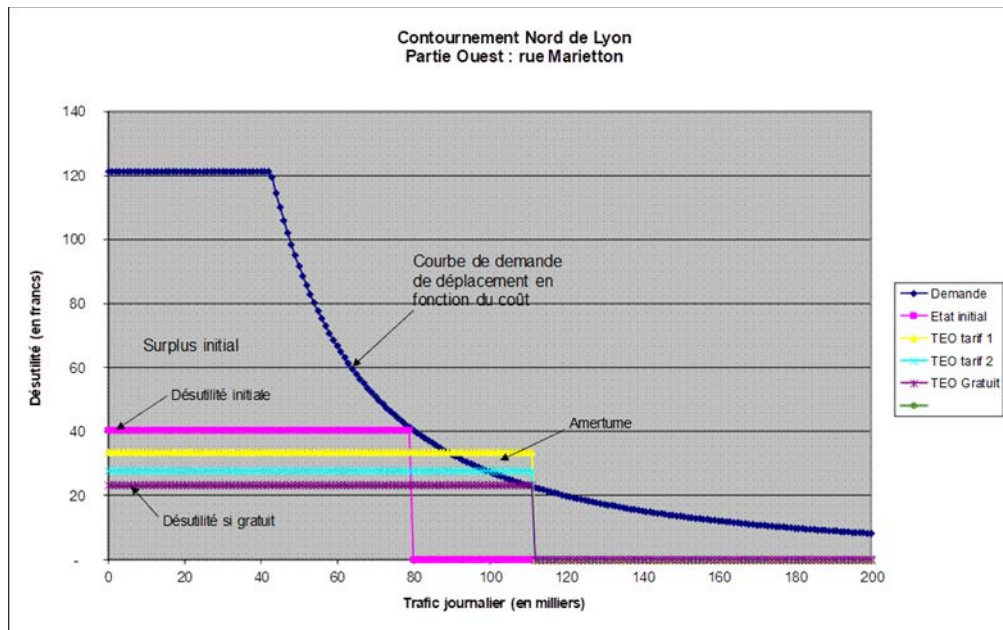
For some other services, the population cannot pay directly. The classical example is the security and safety services provided by the Army, Police and Justice. Health is also very often in this case. Then the funds have to come from the public budget.

For the first kind of services, which we shall call "commercial services", it is relatively easy to estimate what are the benefits procured by the services. Indeed, there is an amount of money which will be paid by households and the companies to the operator which can be realistically estimates by experts. Since centuries the concession contracts and other forms of long term contracts like operation and maintenance contracts or "affermages" have been used in France and thanks to this experience the revenue forecasts are now much better appreciated when they are done by an experiences and independent engineering office. The revenues are paid to the operator in cash, credit card or any other payment tool, and may be used for operating costs, equity remuneration and debt reimbursement.

The socio-economic benefits coming from commercial services are higher than the price paid for them. This logically followed because if they were equal, then nothing would be left to the households and companies in terms of economic surplus. What we have observed since many

⁷ Numerous studies done under the authority of the World Bank and other Multilateral Development Banks are providing information about the affordability of public services. For instance, "The concept of affordability of urban public transport services for low-income passengers" published by the World Bank

years for the road transport sector is that the economic surplus created by a tolled infrastructure is of the same order of magnitude than the total revenues⁸⁹. This means that the total consumer surplus if the road were not tolled is split in 2 parts, one for the actual payment by the consumer and one, similar, as a true surplus for the consumer. If other sectors were similar, it would be possible for estimating the total socio-economic benefits corresponding to the service without tolling, it would be reasonable to multiply by 2 the values estimated for the monetary revenues¹⁰¹¹¹².



But this assumption remains to be further analyzed and full cost benefits studies have to be done for each project.

In the case of non-commercial services, the situation is more complicated. On the one hand, the estimation of the economic surplus is more difficult, and the participation of the population should be an indirect one, through taxes.

How does one evaluate of benefits of education? One method is to focus on the duration of studies. It is possible to compare the average income of graduated students with a certain number of years in school to the average income of graduated students with a different number of years at school or at the University. The revenues are higher when the studies are better and the socio-economic benefits are at least equal to the NPV of the difference of salaries received by the students during their working years. It is a way to estimate the “utility” of the school and the return for the county in educational investment.

⁸ PIRON V. “L’acceptabilité politique du péage » [2000], Revue « *Transport* » No 385

⁹ PIRON V. “Application pratique du concept d’amertume » [2003], Revue « *Transport* » No 408

¹⁰ QUINET E. [2000], « Evaluation methodologies of transportation projects in France », *Transport Policy*, 7 (1).

¹¹ DUPUIT J. [1849], « De l’influence des péages sur l’utilité des voies de communication », *Annales des Ponts et Chaussées*, 2^e série.

¹² LAFFONT J.-J. TIROLE J. [1993], *A Theory of Incentives in Procurement and Regulation*, MIT Press.

But for other services like the Army or the Health, calculations are more difficult; and in most of the cases, impossible. So the decisions concerning the projects will be taken based on the costs only and not on the socio-economic return on investment.

The main choice of the Government should be to decide whether the funding shall come from public funds or if the end users of the service may be able and willing to pay a price for this service.

In general, an economy develops itself through people working within the country. The service provided, if it is of commercial nature, must be priced in relation to household purchasing power. For an investment for which the socio economic IRR is higher than the country discount rate and then should be implemented, when the investment cost is too high to be completely covered by commercial revenues, public subsidies are required. This equilibrium between the quality of proposed services, the investment cost to produce them and the household purchasing power is the key to concession and PPP development.

This point will determine the funding of the projects, therefore, who ultimately pays the infrastructure producing the services: is it the taxpayer through taxes and increase of debt of the state, or is it the client who buys a service adapted to his needs and financial means? What is the level of revenues on which it is possible to believe in order to raise money for an SPV in charge of the project construction, operation and maintenance? Therein lies the basis for the development of concessions and other PPP.

It is extremely important not to mix the notion of “funding” and the one of “financing”.

The “funding” describes who is the ultimate payer (the Public Authority, which means in the end the tax payer) or the final client paying for his commercial service or a mix of the 2 possibilities. According to IMF vocabulary, the projects are considered as either tax funded or user funded, with a possibility of mixing the two funding when there are grant or subsidies.

In PPPs where users pay directly for the service (“revenue- based PPPs” like concessions), the Authority and its advisers need to examine the capacity and willingness of users to pay, especially if tariffs need to be increased from current levels. In many PPPs, the public sector will need to subsidise the service in order to make it affordable. The use of public subsidies can impact the value for money of a PPP arrangement, requiring that the efficiency savings from the PPP option be large enough to compensate for the use of public funds¹³.

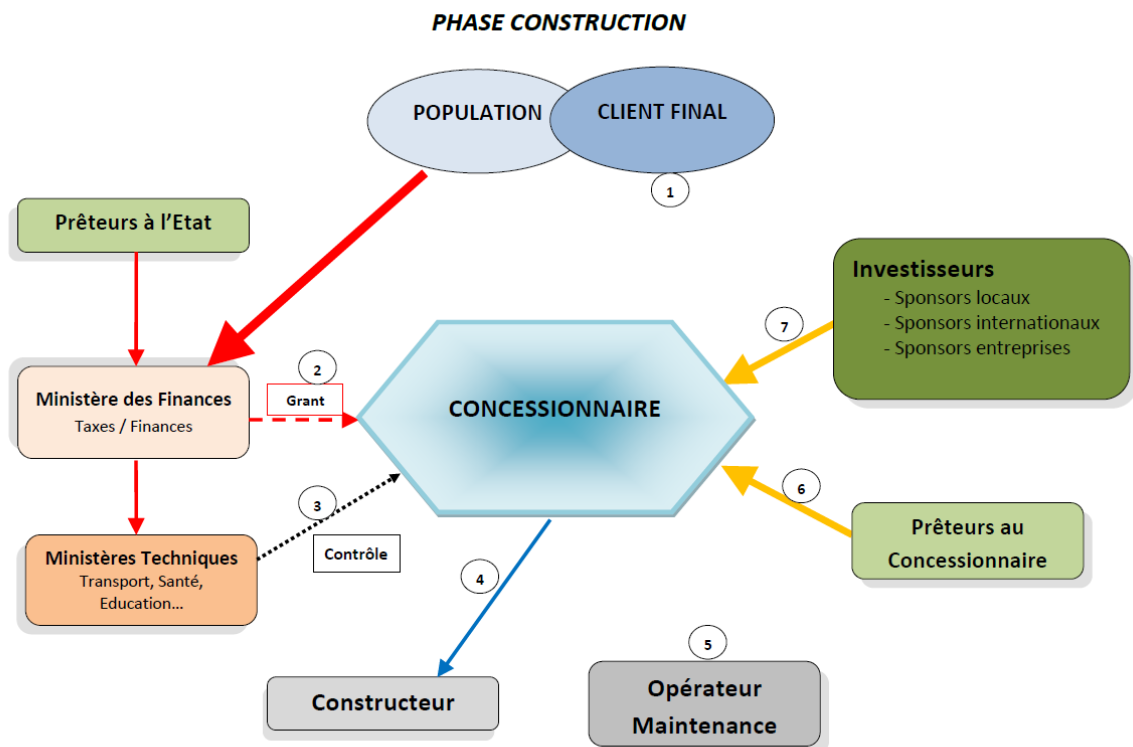
In PPPs where the Authority makes the payments (“availability-based PPPs”), the assessment of affordability is a key consideration in the design of the transaction. The Authority will enter into payment obligations over the life of the PPP contract (the so-called “service fee”), which represent long-term commitments and can influence the design of the transaction and its value for money proposition.

The “financing” describes the practical process for raising money for construction of the investment (road, bridge, hospital, prison, school, etc.), describes who are the equity providers, the lenders and how and when they will be reimbursed and remunerated.

¹³ See EPEC « Guide for Guidance” available on the site EIB/EPEC

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The schemes presented hereunder show the contractual links and money flows during the construction phase, and during the operation phase, with two possibilities corresponding to a Concession project (commercial service paid for by the final user) and PFI (State repay the debt raised by the SPV (SPV for Special Purpose Vehicle, which is either an industrial company implementing the contract) or just a financial structure bearing the loans and the payments by the grantor in the case of a PFI) for the construction period.



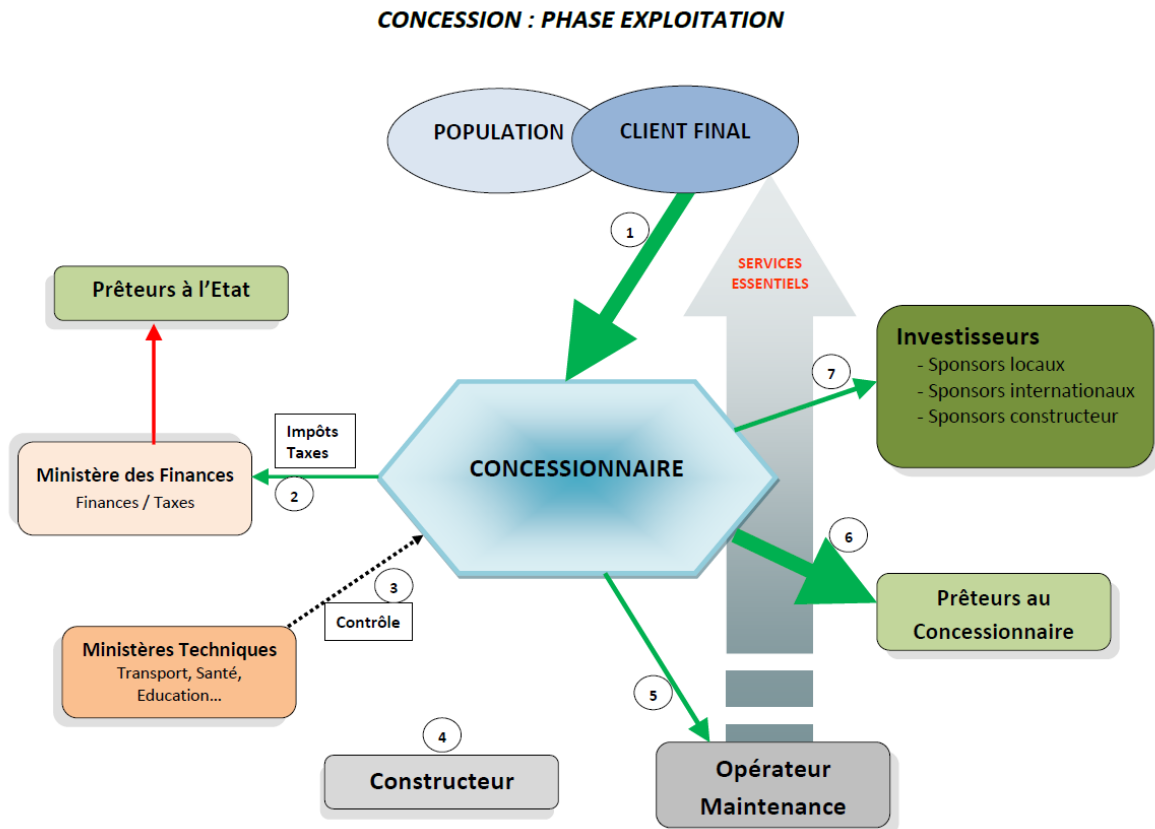
In this phase, the SPV/Concessionnaire receives money from the Minister of Finances (grant), under the control of the Technical Department in charge of the project or of the specific Unit set up by the Government. The SPV/Concessionnaire also receives money from the lenders and from the sponsors/investors (local investors, international investors and contractors/sponsors). The money is used for paying mainly the construction costs, the advisors and preparation of the operation period.

We have not represented the VAT paid by the contractor to the Minister of Finances, but usually it exists and reduces the financial effort made by the public authority.

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During the operation phase, there are 2 possibilities: repayment by the final client or repayment by the State (Grantor).

Hereunder is the Concession situation, where the money for repayment comes from the final client.

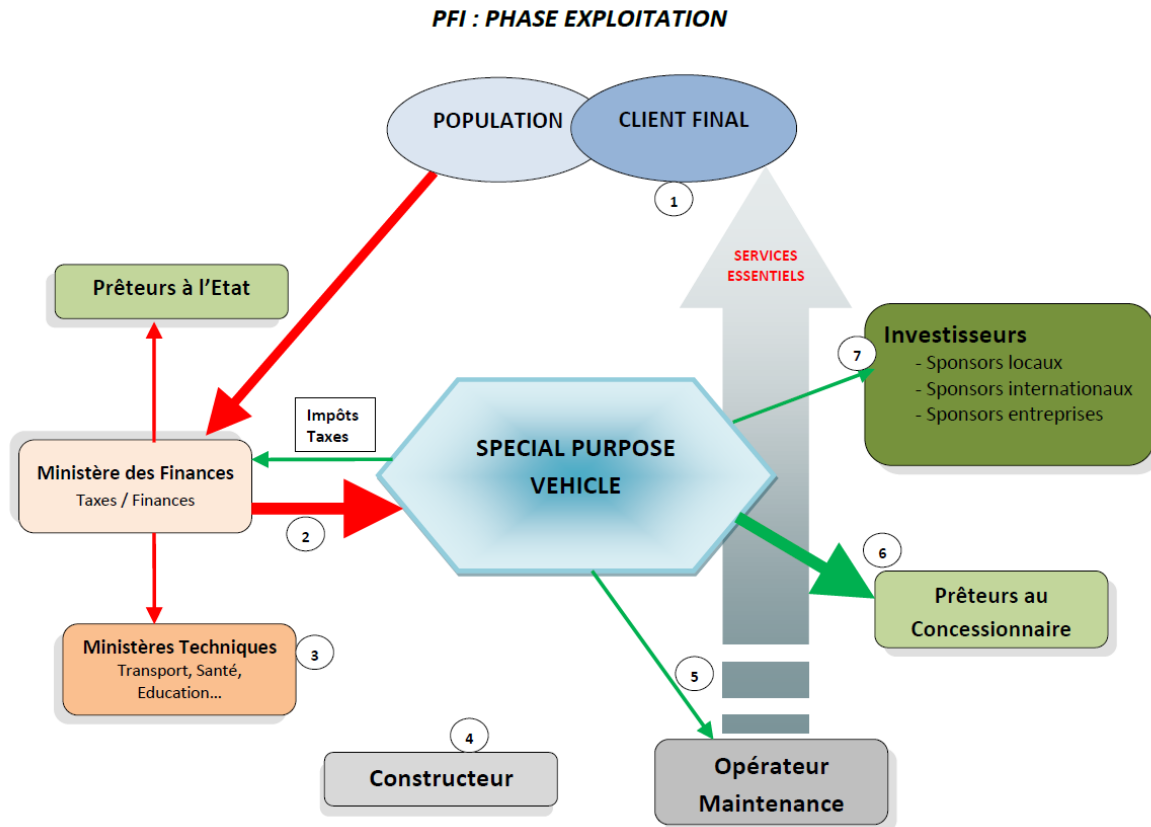


The money flow is very clear for this phase: the money comes from the final client as a remuneration for the essential services he receives and goes

- to the operator for operation and maintenance
- to the government for paying taxes
- to the lenders for debt reimbursement
- to the investors in order to repay the investment and pay dividends

The market decides the toll policy to be optimized by the concessionaire for maximizing the revenues. So the government does not provide payments but on the contrary obtains revenues from the Concessionaire in the form of taxes. **This solution does not increase the public debt of the State and rather reduces it.**

Hereunder is the PPP/PFI situation, where the money for repayment comes from the Minister of Finances.



The major part of the revenues is used for reimbursing the lenders. A small part is allocated to the reimbursement of the investors and remuneration of the equity. The money is paid by the State from public funds or borrowings if the public budget is not at the equilibrium. **This solution increases the public debt of the States.**

In this scheme, the final client is part of the population (except in some airports). The population is a beneficiary of the scheme but indirectly only (reduction of road congestion and increase of the global economic activity)¹⁴.

1. ¹⁴ Documentation can be found in the EPEC library (European PPP expertise Centre) about the way these topics are treated in Europe. www.eib.org/epec For instance, the booklet "PPP_motivations_and_challenges"

5 Evaluation of financial requirements for the group of projects and comparison with the budget capacity of the country.

Programming and pre-feasibility studies for essential services (health, education, transport, energy, food) give an evaluation of the necessary financial costs to make the corresponding investments. The evaluation of all possible commercial revenues gives an idea of what is the amount of money which could be raised yearly in average by loans secured through commercial revenues. The difference between these two elements give the amount which can only be financed by the country with three processes

- Governmental normal borrowings (= debt i.e. future taxes),
- Soft loans made to the State by multilaterals, by bilateral aid agencies or by other governments
- External philanthropic donations.

Funding by the private sector is possible if the spread proposed by the lenders to the private sector is not too high (to limit extra financial costs compared to funding by the State) and on condition that the investment could be reimbursed by commercial services (paid for by the final client like Concessions). This solution has been used in France, Italy and Spain for a long time for transport and water distribution and treatment, and has proved to be extremely efficient provided that there exists an established appropriate legal framework and revenue forecasts are realistic.

If the project is profitable from the socio-economic point of view and if the commercial revenues are not important enough for compensating operation costs and repaying the debt raised for the investment, then the State or any Public Authority have to fund the remaining part.

6 Priorities of the country and choices for allocation of State financial effort

After having taken the decision about the services which could be considered as commercial services and which not the Public Authorities will choose their priorities according to their own vision of the development of the country. There is no standard economic way for making evaluation of the governmental choices, but independent experienced experts can support the States in their analysis of the consequences of different political and institutional choices.

Often the Region will be the right level to ensure consistency of investment and distribution of services when two or more States are involved. Appropriate laws and international agreements which allow for cross border projects should be used in this situation.

The priorities should be determined after analysing technical, educational and political considerations.

6.1 Technical analysis

Technical analysis process is aimed at accurately evaluating the technical situation and possibilities of the country, in terms of equipment for essential services and natural resources. It is the basis for having a proper view on the sequences of development. To give examples, it is impossible to develop software industry if there is not enough electricity supply, or if the IT networks are not reliable. In the mining industry, the transport network should be matching the needs of the ore production, etc.

For each project, the technical conditions for its implementation have to be checked and looked at in relation with the overall schedule of the project.

6.2 Cultural and Educative analysis

Cultural and educative level is taken here in its wider meaning. It covers the level of education of people, the level of organisation of the country and the way the rules are practically implemented in the country.

Once the technical conditions are evaluated, it is necessary to consider if the work force properly matches the needs. This should be considered both in terms of institutional organisation and in terms of training and capacity building.

6.3 Global political considerations

The political process is related to the decisions that the government has to take. There are non-measurable parameters such as the Defence, the quality of the social laws for protecting lower income individuals and regional balance. It is up to the government to decide the importance of allocating such or such budget to such or such activity.

6.4 Development of comprehensive plans at the country level by type of services.

As public private partnership contracts are contracts of long duration, their environment will change during the preparation of the contract, project execution and the operation and maintenance period. The risk of changes inherent in long-term projects can be limited by taking a

long term view of the services to be provided, the nature of the projects needed to provide these services and a clear and disciplined time frame for the implementation of these projects.

This long term approach is best facilitated by integrating a concession/PPP projects in a long term master development Plan for each field.

In the transportation field, the overall road, rail, sea and air transport plans are relatively simple to develop and implement because public authorities have considerable experience in their development as is also the case in water projects.

For health and education projects, the Ministers in charge need to establish an overall coherent framework –for primary, secondary and university education - in order to prepare their budget effort for the years to come. Fortunately, the investment cost is often small in comparison with current costs (salaries of teachers and administrative costs) and thus investment costs (repayment to the contractor in PFI projects) can be secured, which is indispensable for raising the funds. Commitment at the Prime Minister level or legislative level is often required by lenders.

National security (police stations, military buildings) projects can be found in annual budgets which illustrate the feasibility of the operations.

The profitability of a project and its financing costs (directly linked to corresponding risks) depends on the coherence of projects as a whole. “Paysage” clauses for each project ought to be used to strengthen this coherence. The institutional aspect for the application of the Plan is thus the fundamental point of this profitability.

6.5 Analysis of the sequence of project implementation:

Since the efficiency of a project depends on its physical and institutional environment, the comprehensive plan must be established in order to ensure a successful execution and the consistence of each project within the overall framework laid out in the plan.

Efficient selection of projects from amongst many is critical to overall success. Each project is expected to make use of input and output resources under a number of headings. A subset of selected viable projects and the resources needed to implement them must be established. There is no a priori agreement amongst all concerned about how inputs and outputs should be weighted and combined to facilitate the evaluation and selection of the projects. So each subset of the projects that could feasibly be selected within the resource constraints should be considered as a single, composite project.

The evaluation is usually done with a cost-benefit analysis, as presented in section 9.

But in some specific cases, it is also possible to use a need-based methodology to prioritize and select projects for implementation or improvement. This approach is based on developing a multi-attribute need function that quantifies the concerns of the Departments and the needs of the population about various physical and operational deficiencies of existing services. It is an effective alternative to the traditional cost-benefit analysis. While the cost-benefit analysis may be useful in

evaluating a small number of project alternatives at a fixed location (e.g., alternative alignments for a single corridor), it has major limitations when applied to a large-scale construction program.

The institution (Unit) in charge of the programming and approval processes should consider three important points.

- The technical consistence in the order in the project implementation, as we have seen earlier
- Possible phasing of the projects

6.6 Technical consistence

The first point is relatively simple to verify: for transport, water, and telecommunications, the relative importance of the catchment area suggests priority of realization. But regional balance and specific planning can add further parameters and modify the simple process of looking at the population in the catchment area. For instance, specific planning may particularly involve energy supply, where the production zone is already accurately located for technical reasons and may be far from the main populated area (main consumption zone).

Consistency of network development is also easy to check, and it has to be done. Particularly in the mining projects, the transport, water, waste treatment and energy networks should be consistent with the mining development.

6.7 Possibility of phasing the projects

This aspect is crucial because it is the easiest way to match the amount of investment with the possibilities of funding by the local population and investors. Very often, decision makers are unrealistically attracted to huge projects or those requiring sophisticated technical process or which promise very high service levels. Ignoring the high costs and technical difficulties which render these projects unattainable.

In the case of concessions, for many infrastructures, there is a possibility of phasing a global project into stages, and then to develop the project according to the observed traffic for transport investments and revenues for other. Obviously this is not possible everywhere, for instance for a tunnel or a bridge construction. But in many circumstances it is possible to adjust the service provided in a way that a first step is possible with only a small amount of public money.

For the PFI process, it is much more difficult because of the general rigidity of the whole process.

It is therefore necessary that the institution in charge of determining the phasing finds the best possible technical dossiers, by choosing consultants experienced in the relative field and then co-ordinating with other governmental institutions so that each ministry is kept informed and coordinates its work within the comprehensive framework established for the country. Finally, an approval by the Unit at the highest level is compulsory, both politically and institutionally.

7 Evaluation of the socio-economic profitability of each physical project

7.1 Cost-benefits analysis

This point discusses the socio-economic profitability in a broader sense and needs proper evaluation of construction costs, operating costs, maintenance costs, socio-economic benefits and direct and indirect impacts.

Beyond the standard cost benefit analysis used in all feasibility studies, the Public Authority need to have a complete socio-economic analysis.

Cost benefit analysis

The standard cost benefit analysis brings together an evaluation of all of the costs of the project (studies of all natures, transactional costs, construction costs, operational and maintenance costs, contractor costs during the studies and during the execution of the contract) and all benefits coming from the investment. There are direct benefits like time saved for transport operations or improved safety, better agricultural development for irrigation operations. There are also indirect benefits, like the possibility of industrial development when a power plant is build and energy distribution network erected. Each sector (transport, energy, housing, health, etc) has developed methodologies for benefit evaluation.

The cost benefit analysis will take into account all factors called 'externalities'. An externality or an 'external effect' is the consequence, for populations and economies, of the creation of new infrastructures. Certain externalities can be negative, such as pollution, territory losses, etc. Therefore, the projects should aim at minimising these problems.

Running costs like operation costs, maintenance and heavy maintenance should be evaluated and added to the investment costs, discounted with the socio(economic discount rate of the Public Authority.

Specific attention should be devoted to the social and environmental consequences of the project, in the sense of the COP 21 meaning. Negative effects should be mitigated and corresponding costs included in the overall evaluation of the project. There are specialised process or Agencies to help the government for making this kind of evaluation¹⁵.

The opportunity costs for the public funds of the corresponding country, amounting in many cases to 30% of project costs must be factored into the analysis.

These values, spread out over many years, must be reduced to the year where the decision was made through the application of a social discount rate, corresponding to the economic and political situation of the country. In Africa it will commonly be between 6% and 15%, in accordance with the type pf infrastructure. This rate is the fundamental factor for the calculation of the TRI of projects and the establishment of optimal phasing.

¹⁵ For instance there are the process SURE@ from the Global Infrastructure Basel and the process developed by ISCA in Australia. All studies about the whole life cycle of construction/demolition of buildings are also useful.

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The problem of maintenance is particularly important because if the corresponding tasks are not properly fulfilled the utility of the project decreases and all initial calculation about IRR and prioritization are becoming useless.

The introduction into Concession and other PPP contracts which are shifting the responsibility for the operation and maintenance to the Private Sector, in a contractual framework earmarking funding for maintenance and operation better guaranty that will be kept the overall 'utility' of the project, in a socio-economic sense which is of a calculable size permitting project comparisons

As a part of the 2004 ordinance on the Partnership contracts and its revision in 2008, the cost benefit calculation principals had been exhibited before the decision was made on how to implement a project. (See the IGD documents produced in 2004 and Evaluation Guide produced by MAPPP¹⁶).

At this stage it is important to test if there is sufficient support for the project among important stakeholders (political parties, unions, private sector, users, media, think tanks, "green" groups, civil society organizations). Indeed, each project has his supporters and his opponents and looking carefully at the situation always help to find solution for mitigating the drawbacks of the project for the people who may suffer from them.

Although the externalities are very dependent of each project and of the country where it is developed, it is possible to organize the items under 4 main chapters :

Economic effects, called 'economic amenities' and notably:

1. Public revenues, which benefit from the project through increased fiscal benefits
2. The general economic development of the country and its increased fiscal benefits.
3. The progress of its commercial balance
4. etc

Effects on the population, called 'social externalities', and notably:

1. Indirect and direct jobs, taking into account that increasing the number of jobs reduces the unemployment and related costs
2. The effects on the health and education of the population
3. The reduction of poverty, of accidents, and better communication and transport
4. Etc.
5. The Sustainable Development goals of United Nations should be identified here

Qualitative effects, called 'qualitative amenities' and notably:

1. The progress of the international credit rating of the country, which ultimately facilitates public borrowings (availability, duration, margins, etc.)
2. Quality of life of the population
3. Environmental improvement

¹⁶ MAPPP is the « Mission d'appui pour les partenariats publics privés », part of the Minister of Finances

4. Etc

Negative effects, called 'negative externalities', and notably:

1. Greenhouse gas emissions
2. Used space
3. The effects of lost land due to the construction of roads or railways
4. Population displacements
5. Etc

As a part of this analysis, it is necessary to examine who are the social partners benefiting from the project and who are those who could suffer from it and if there is a possibility of compensation at the required level.

A very important and difficult aspect of these analysis is the evaluation of the fiscal effects of the benefits. When a project provides economic surplus measured by an increase of GDP, this increase yields a monetary income for the State due to the taxes on the economic surplus and on the salaries. According to IMF observations, an infrastructure project may even have a positive long-term effect on the country budget.

Although this approach is of crucial importance because it affects the debt evaluation, the analysis remains delicate and unfortunately not often implemented.

7.2 The principles of calculation in economics: utility and resources

7.2.1 Utility can be calculated

If a local government decides to invest money it has collected through taxes in any kind of construction, it is because that construction has a certain utility for the community. A hospital, a road, a swimming pool, a police station, all have a utility for the community. And “utility” is a quantity that can be measured, and is also known as “socio-economic benefit”, or “surplus” according to Jules Dupuit¹⁷. Although measurable in principle, and despite the fact that the concept has been formally established for nearly two hundred years, the economic utility generated by a construction is generally difficult to quantify and is often replaced by an “intuitive and political” assessment of the necessity of investing, which is combined with the constraint imposed by the limited availability of public funds.

We shall define “utility” as the net balance of socio-economic benefits (sometimes called “positive externalities”) after deduction of negative externalities such as pollution, noise, etc. In the area of transport, the largest component of utility is currently considered to derive from the time saved by users, the value of which is determined by the value of time. Thanks to the construction of infrastructures for which a toll is charged and to the new information technologies, this can now be more effectively defined.

In sectors other than transport – health, education or justice, for example – the quantification of utility is more problematic, public decision-makers do not always have the right tools to hand, and budgetary constraints are all too often used as the sole criterion for screening decisions. There are a few socio-economic studies made by the World Bank and OECD at the world level on teaching and health. We are also beginning in Europe to have the benefit of a few quantified experiments in schools in the United Kingdom.

7.2.2 The discounted value of resources deployed and socio-economic benefits generated

Construction resources are mobilised for periods of a few months, but socio-economic benefits are generated year after year throughout the lifetime of the infrastructure. In order to express values that are spread over a long period in terms of the current year in which the decision is taken, a discount rate ‘ τ ’ is applied, which involves dividing each value for resources or utility by a factor equal to $(1+\tau)^t$ (t being the time), as it is done when calculating IRR. The resulting figure is called the “net present value” (NPV) which is the sum of all the values expressed in value of the initial year.

$$\text{NPV of mobilised resources} = \sum_t C_t * 1 / (1+\tau)^t$$

$$\text{NPV of utility} = \sum_t U_t * 1 / (1+\tau)^t$$

In the model, in order to compare the various solutions from the economic standpoint, we shall make use of the NPV of the various quantities considered. For the purposes of clarity, we have used the quantified example of a government authority wishing to carry out a construction at an overall

¹⁷ Jules Dupuit was one of the founders of modern economics. His key concepts date from 1844 and 1849.

cost of €30m, to be spread over three years, and whose annual operating costs will be equal to 2% of the investment.

The computation is done by balancing the NPV of the mobilised resources with the NPV of the project's utility. For example, at a rate of 8%, a minimum annual utility of €3.25m is needed to justify the overall investment of €30m¹⁸.

But what discount rate should be applied in order to define the construction projects to be carried out and what about the funding indispensable to their execution?

The discount rate has been stable at 8% in France during decades, up to 2001. Then the Charpin-Dessus-Pellat report¹⁹ opted for a rate of 6%. Lower interest rates and a growing awareness of the need to preserve the environment for future generations are the main factors put forward to explain the use of discount rates lower than those recommended in the past. Conversely, the observation that higher rates are applied by private enterprise argues in favour of raising the public discount rate in order to avoid introducing a gap between the private and public sectors. Economic theory may provide a framework for the assessment of the worth of these arguments, as well as an order of magnitude for a satisfactory rate"²⁰.

In January 2005, the D. Lebegue report about updating of the State discount rate modified this approach, introducing a further reduced discount rate for France (around 4%) and the concept of socio-economic benefit by invested euro. The discount rate was fixed for the first 30 years and decreasing afterwards.

In September 2013, a report²¹ published by the « Commissariat Général à la stratégie et à la prospective » modified the previous approach by providing a general preference for the present (2%) and add a risk evaluation by sector. This means that there is no more a unique discount rate by country but that the discount rate varies by sector and according to the specific project risk.

In average, the sum of the 2 elements is comprised between 3,5 and 5%. The discount rate for the very long-term effects is decreasing after 30 years and the number of years to estimate the project impact is required to be more than 100 years. The environmental effects will then be taken into account according to their true importance.

This report represents the up to date process for socio-economic cost benefits evaluation.

Countries with comfortable public finances which pay attention to the long-term future will work with discount rates in the region of 4% to 5% in real terms. At the other end of the spectrum, developing countries frequently use a rate of 10%, in accordance with the practices recommended by the World Bank in its economic analyses.

7.2.3 Socio-Economic Internal Rate of Return and Discount Rate

Internal Rate of Return is defined as the rate at which the discounted sum of the costs balances the discounted sum of the socio-economic benefits over the lifetime of the construction. It is calculated using values C and U as follows:

¹⁸ IRR and NPV calculations are easily carried out using the financial functions of spreadsheets.

¹⁹ Prospective economic analysis of the nuclear energy production sector, dated Feb. 2001.

²⁰ Internal Forecasting Directorate memorandum on discount rates (MM XXX).

²¹ E. Quinet report

$$\sum_t C_t * 1/(1+r)^t = \sum_t U_t * 1/(1+r)^t$$

Where:

C is the annual amount of the investment up to the entry into service of the construction.

U is net utility (gross utility less negative externalities, maintenance costs and operating expenses).

t varies from 1 at the end of the period of use of the construction (55 years in our model).

r is the internal rate of return for the construction: IRR(SE).

Economic theory indicates that it will be advantageous for a government to implement a construction project if the IRR(SE) for the resulting infrastructure is greater than the government's discount rate, a consideration that holds true but calculations depend of the arrangements whereby the project is funded, as we shall see further down in the present document and particularly the next paragraph.

7.2.4 Opportunity costs (or marginal costs) of public funds

On this fundamental and thorny subject, we shall quote Alain Bernard²², a member of the *Conseil Général des Ponts et Chaussées*:

"The true cost of taxation, its economic cost, is that which derives from the distortions it entails. Economists are now well aware that the neutral taxation they had imagined – lump-sum transfers – was no more than an artefact. Every real-world fiscal system generates distortion – and it is obviously desirable that those systems should be optimised in order to generate – at a given level of tax revenue and for given redistribution objectives – the lowest possible distortion cost. This is the aim of the optimum tax theory, the nature of which is identical to optimum toll theory (in which Marcel Boiteux was the true pioneer).

"The practical upshot of all the above is as follows: if one extra euro (from a given initial base) is raised in tax, the loss of well-being of consumers will be equivalent not to one euro of consumption but to (1+x) euros. The quantity (1+x) expresses the marginal cost of public funds. It represents the fact that the use of public money is less efficient than the use of private money from the economic point of view.

"It would, given this, be unreasonable to spend one euro of public funds to produce goods whose value to consumers was not at least equal to (1+x). It is therefore necessary, in economic calculations, to apply this adjustment factor to every item of expenditure funded from taxation. Conversely, every item of extra tax revenue generated by investment, for example by the domestic tax on petroleum products [TIPP] where investment in road systems is concerned, must be incremented by application of this same adjustment factor."

In 1984, the French national planning commission recommended that an adjustment factor of 1.5 should be adopted. Following some discussion with experts, and given the current constraints and high level of tax rates, this adjustment factor, which will be called the opportunity cost factor, will be set at a current value of 1.3 (rapport Lebegue January 2005).

In practical terms, this means that an investment of €100m must be entered as a cost of €130m in economic calculations, although that investment will still only be €100m in terms of budget calculations. The extra cost of €30m will be termed the "opportunity cost" in the pages which follow.

²² Cf. Alain Bernard and Marc Vielle, 2002. "Measuring the Welfare Cost of Climate Change Policy" and the report "Calcul économique et planification" [Economic computation and planning] published by Documentation Française in 1972

It does however seem to us to be both important and urgent for economists (public authorities and private sector) to look more closely at this subject since it has a direct and essential impact on the effectiveness of public decisions.

For the time being, the E. Quinet report provides the best information and has selected a value of 1.2.

Shadow price of scarcity of public funds

Practice shows that it is often not feasible to carry out all projects which would deserve to be carried out in a given period of time (for example because they reach their optimum date of commissioning) as a result of budgetary restrictions.

In such a situation, it is appropriate to take the measure of the deficiency in question, that is to say to identify all the projects which it is desired to carry out during the period in question and to find out that the available envelope of public credits for the aforementioned period is insufficient.

From this it is possible to adopt two procedures: - A simple and approximate procedure and a more satisfactory one.

The simple one consists in classifying all the desired projects according to one of the general criteria mentioned above: ranking by NPV per public Euro invested, or by socio-economic IRR- This procedure is rather easy to implement and constitutes a good approximation when the number of projects is rather small. .

A more satisfactory procedure from the methodological point of view is to introduce coefficients, called shadow price for public funds scarcity, which are determined by the procedures described in Quinet (2013). Once these coefficients are available, the criteria and selection procedures described above are applied, but the public part of the investment costs is multiplied by these coefficients.

The shadow price of public funds scarcity is a coefficient for selecting projects when the budget constraint fails to carry out all socio-economically viable projects for the community. The report of the E. Quinet gives details of the different methods for allocating a budget envelope (Lagrange multipliers, the simplex algorithm). It is set by default in France at 0.05

One of the recommendations is to add the shadow price for public funds scarcity to the Cost of Opportunity of Public Funds. The criteria mentioned above must all be calculated by including both the opportunity cost of public funds and the shadow price for public funds scarcity if the inclusion of the only cost of public funds would lead to a list of cost-effective projects that would jointly mobilize budgetary funds in excess of the available budgetary envelope.

In the case of concession contracts (with user paid fees), the economic profitability is better than in contracts paid entirely by the public for three major reasons:

1. The opportunity cost of public funds to the part paid directly by the user.
2. The shadow price for public funds scarcity
3. The private partner is strongly incentivised to reduce the construction costs and to optimise running costs but with a view to keep the project with maximum availability to maximise his revenues.

7.2.5 Taking uncertainties into consideration

Uncertainties and correlated risks should be taken into consideration and there are practical tools for that. We must fight against the optimism bias, this scourge that plagues project evaluations and drive

many investors on the verge of bankruptcy. There are several ways to do it, based on the expertise and lessons from past experiences²³.

It is crucial also to better understand the current risks, those resulting from the imperfection of forecasting methods, poor data quality, and uncertainty about exogenous variables (e.g. economic growth forecasts or developments some guiding prices such as oil prices). Methods scenarios used widely by private operators in their financial education must be transposed to the case of the Socio-Economic Assessment.

Finally, systemic risk, which results from the more or less strong ties between the benefits of investment and economic growth, should be carefully considered because it does not vanish from one project to another: projects whose advantages are positively correlated with growth amplify fluctuations, while the other have a stabilizing effect and should be favored.

The Quinet report proposes to calculate the NPV referring to the year of programming, with the public discount rate increased by the risk premium and the recommended beta, including the opportunity cost of public funds and the shadow price for scarcity of public funds.

It is always necessary to test the results of sensitivity analyses (NPV) to various parameters including the beta and the risk rate for the project.

7.2.6 Governance of economic calculations

The governance of the socio-economic calculation usually needs to be improved in many countries. This could be done:

1. By setting up a committee of independent experts to examine the quality of corresponding evaluations and coordinate research in the field of socio-economic assessment;
2. By committing in the country for a research program in the medium and long term to improve the methods of socio-economic evaluation of public investments.
3. By setting up clear decision processes from the inception of a project to the decision of financing and implementing it.

While the economic crisis and the debt level call for increased use of socio-economic calculation, its practical use remains limited today. It is systematic in the transport sector and energy sector. Health uses it only for some special cases and further studies are needed for using it in other sectors.

The socio-economic calculation is admittedly imperfect: it does not reflect the full value of biodiversity; it does not give sufficient weight to innovation. Its use for all public investments (state, local authorities, public institutions) is, however, necessary and urgent. For example, in France, there are two main bodies, France Strategy for the prospective and CGI for the practical decisions concerning the investments to be done.

France Strategy, public laboratory of ideas, is a body of dialogue and reflection.

Its role is to propose a strategic vision for France, by evaluating the wide selections which offer themselves to the country.

²³ L'évaluation socioéconomique des investissements publics. Commissariat Général à la Stratégie et à la prospective. Rapport Quinet Baumstark. Septembre 2013

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Its action is based on four main activities:

- To estimate the public policies in a independent and exemplary way.
- To anticipate the evolutions of the French society, whatever they are: economy, social, sustainable development or the technologies and to analyze the questions which they put in the medium term, to prepare the conditions of the political decision.
- To discuss these topics. France Strategy has authority to be an open house, having a dialogue with labor and management, civil society, companies, community of the specialists and university world.
- To propose politics/reforms/orientations to the government, by highlighting the possible arbitrations, the foreign experiences and the positions of the actors.

France Strategy opts for the cross-cutting approach, by livening up a network of seven bodies in the specialized skills: the Economic Analysis Council, the Pensions Advisory Council, the Employment Advisory Council, the High Council of the family, childhood and the age, the High Council for the future of the health insurance, the High Council of the financing of the social welfare, and the Center of forward-looking studies and international information.

The CGI (Commissariat Général à l'Investissement, or High Council for investment) is in charge of watching, under the authority of the Prime Minister, the consistency of the investment policy of the State. As such, it exercises in particular the following responsibilities:

- To prepare the decisions of the Government relative to contracts concluded between the State and the bodies in charge of the management of funds(collections) dedicated to the investments of future
- To coordinate the preparation of specifications accompanying calls for projects and verifies their coherence with the action of the Government regarding investment of future and reform of the public policies
- To coordinate the instruction of the projects of investment and formula of the notices and the proposals
- To watch the evaluation, a priori and a posteriori, over investments, in particular over their profitability and to draw up the annual assessment of the execution of the program.

7.2.7 Independent third party advisor

The difficulty of doing economic studies is further complicated by the fact that the engineering office and/or department in charge of doing the studies is often under pressure of his client or administration to demonstrate the alleged profitability of a project, which is usually detrimental to the scientific examination of the true and exact situation. It is understandable but greatly disturb the quality of the results. For instance, in the case of real toll concessions, there are numerous examples where the revenue forecasts have been over estimated and even adjusted to match the increasing cost of the project. It is interesting to observe that even now the lenders are very often requesting the contractor or SPV to pay for the crosschecking of the revenue studies done precisely under the request of the SPV or contractor. This evidently illogic at least but also very dangerous and it is the very reason of many optimistic bias in revenue projections.

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This is why the Connex group lead by German companies is currently working on the definition of a better process to select independent third-party advisors.

The standard process of planning and prioritization should have a mandatory step whereby the independent advisor is asked to provide a report to the line ministry in charge of the project.

8 Project prioritization according to the economic efficiency

8.1 Prioritization of projects

This involves two different types of considerations

- Choice of objective criteria for ranking the projects and make the comparison between them.
- Scarcity of public funds
- Instant local political constraints that can modify the pure economic logic of the plan.

The constraints due to local political pressures have already caused numerous cases of delays in the realisation of projects, and lead to projects being declared 'in distress', which ultimately poses major issues for companies who want to move on with long-term contracts.

The choice of criteria for ranking the project is something well known and largely discussed in the economic circles. Usually, it is considered that the projects should be implemented by order of decreasing socio-economic profitability. But there are two additional parameters to be considered:

8.2 Prioritization according to the economic IRR

In many developed countries, the first criterium to be looked at when developing a project prioritization is the economic IRR. This is what the economic science tells and it is often used as such. In theory, all public investments should be analyzed and sorted by decreasing IRR, the selection being first to build the projects with the highest IRR and then by descending order.

This ideal process assumes that it is possible to compare the socio-economic IRR of different services, like comparing a school with an hospital, a prison, a road and a metro. For the time being, it is not clear if the evaluations proposed by the various methodologies for such evaluations are accurate enough to develop a true sorting of the projects.

But in most of the countries, it is possible to compare within line ministry budgets various investments because the methodology, even not perfect in absolute, is more reliable in comparative figures. For instance, it is possible to compare between them the IRR of a set of different roads, or motorways, or mass transit systems in the same country. It is also possible to compare the efficiency of health investments between themselves, or education investments.

Then the process is relatively easy; having a list of projects sorted by IRR, the idea is to try to implement them according to descending IRR, and taking into account the fiscal constraints.

Unfortunately, this theoretical and scientific approach is often in conflict with some political views of the decision makers who often don't consider the socio-economic IRR of projects but more short term, local politics and local vision. It should also be said that if a project is not implemented quickly enough (10 to 15 years) after the studies and the ranking is done, it is wise to review it carefully. Some projects may have completely lost their initial benefits.

Obviously, the socio-economic discount rate of the country, decided at the State level, is of paramount importance for this type of evaluation. A low investment rate gives a higher weighting to the future consequences of the project (positive or negative) than a high discount rate. Many studies have been done about the discount rate to be taken, in relationship with the preference for the present and the risks of the main parameters of the project.

8.3 Prioritization according to the economic IRR by invested euro (or dollar or currency unit)

Normally, the ranking of projects should be done independently of the origin of funds, whether public or private. At present private funds are more easily available than the public ones, and the practical observed financial discount rate of the Public Authorities is higher than the private lenders or investors rate. So the rule has changed and, as reported in the Lebègue report²⁴, the rule should be to rank the projects according to the maximum profitability by invested euro (respectively dollars, yen, and others).

The scarcity of public funds suggested another way to ranking the projects: it consists in taking into consideration the public budget constraints. The balance of socio-economic costs and benefits for a given project is divided by its monetary cost in local currency. This ranking gives a higher priority to the projects which are requiring less public money. This process is valid when there are strong debt constraints in the country, which is unfortunately the case of most of the countries nowadays.

This approach has been developed particularly in a report under the responsibility of Daniel Lebegue, former Director of the French Treasury²⁵.

8.4 How to act when the studies concerning the economic efficiency are not available or not accurate enough.

In many countries, the knowledge corpus and the country statistics are not reliable enough for developing the methodology presented in the above paragraphs. So it is possible to use as a palliative a practical methodology. For instance OECD²⁶ has developed a specific methodology for situations when there is no time or no possibility to do the classical economic studies (cost-benefits, feasibility studies). First a selection of projects is done in terms of functionality, then evaluation criteria are developed and finally a scoring is made for selecting the projects and their timing.

²⁴ Lebègue report about the Revision of the discount rate to be used for public investments, January 2005. France. Commissariat Général du Plan.

²⁵ « Révision du taux d'actualisation des investissements publics » Commissariat General du Plan, 21 janvier 2005, Publisher : la Documentation Française.

This report has been later updated under the responsibility of Christian Gollier, Roger Guesnerie and Emile Quinet in 2016 and 2017.

²⁶ Documentation related to Irak reconstruction

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8.4.1 Selection of projects of all ministers

8.4.1.1 *Agriculture: The Ministry plans to implement 20 projects, including production facilities and market complexes for goods delivery and dispatch*

8.4.1.2 *Education: The Ministry plans to build 25 schools, 5 gymnasiums and 1 university*

8.4.1.3 *Health: The Ministry plans to build 4 new hospitals and renovate one*

8.4.1.4 *Energy: The Ministry plans to construct 3 new gas-powered electricity generation station*

8.4.1.5 *Transport: The Ministry of Transport is focusing on 20 projects, including new airports, railways and sea ports.*

A rough evaluation of the necessary budget is made at that initial time of the process. For correctly implementing this step, it is necessary to have reliable and practical rules for cost evaluation.

8.4.2 Prioritizing infrastructure projects

The priority order of the suggested projects is determined on the basis of a list of criteria reflecting the benefits of each project to the country and the projected return on investment (RoI) for companies involved in public-private partnerships. In our example, the seven criteria retained for analysis were: development strategy; priority sector; basic services; social and environmental impact; trade facilitation; technology transfer; and projected return on investment. Each of these criteria is detailed in the following paragraphs.

8.4.3 Evaluation Criteria and Scoring

8.4.3.1 *Development strategy*

. This criterion reflects the presence or absence of a given project in the National Development Plan. Although this criterion is scored out of 10, as are the other criteria, it is an all-or-nothing grade: a project scores 10/10 if it is mentioned in the National Development Plan and 0/10 if it is not.

8.4.3.2 *Priority sector*

. This criterion reflects the extent to which a project corresponds to a sector that is of immediate importance to the country development, growth and jobs. *Projects necessary for developing GDP are ranked higher than other projects*, like waste recycling project (corresponding to the waste management/environmental services sector), although laudable in terms of sustainable development, would not be expected to have the same impact, and therefore receives a lower score.

8.4.3.3 *Basic services*

. This criterion concerns the role of the project in the provision of basic services such as water, electricity, sewage collection and treatment, hygiene, and housing. The score reflects the extent to which a given project is perceived by the evaluator to contribute to such services

8.4.3.4 *Social and environmental impact*

. This criterion measures the contribution of a project to positive social effects (such as community building) or positive environmental impacts (such as reduced pollution or more sustainable forms of consumption). One obvious positive social impact, job creation, is not included in this criterion because it is measured as part of the priority sector criterion.

8.4.3.5 *Trade facilitation*

. This criterion measures the contribution of each project to various forms of trade facilitation, including improved transport of goods, better adherence to standards, and the reinforcement of local product visibility in overseas markets (national branding). Transport and energy infrastructure draws high grades due to the extreme importance of foreign trade, while sewerage and housing projects score poorly.

8.4.3.6 *Technology transfer*

. This criterion concerns the role of each project in encouraging technology transfer and the acquisition of international know-how by the country

8.4.3.7 *Return on investment*

. This criterion reflects the rates of return on investment of the different projects. The return on investment is generally calculated as an annualized rate of return on the total investment (including all on going fees and maintenance costs) over the entire life of the project and should be based on thoroughly researched cash-flow forecasts.

For the purposes of assigning a score out of 10, scores might be allocated to intervals of rates of return, for example: 1-3% = 1, 4-6% = 2, 7-9% = 3, 10- 12% = 4, 13-15% = 5... and 25%+ = 10. The scores for this criterion have not been calculated but estimated since the necessary detailed cash-flow projections for the various projects are not available.

8.4.4 *Calculating the Weighted Average*

The overall ranking of projects is calculated not on the basis of a simple average of the criteria scores but on the basis of a weighted average reflecting the fact that certain criteria are regarded as being of greater importance than others. Each criterion is assigned a weight of 1, 2 or 3, with 3 being the heaviest weight. For the purposes of this demonstration, weights have been assigned as follows:

Criteria	Weight
Priority sector	3
Basic services	3
Return on investment	3
Development strategy	2
Social and environmental impact	2
Trade facilitation	1
Technology transfer	1

The heaviest weight is accorded to the priority sector and basic services criteria because of the urgency of development and sustained growth and because of the importance of basic services for social stability and economic activity. The return on investment is also considered a key factor given its importance in attracting firms to PPP opportunities and obtaining the guaranties that such private operators would require. The development strategy and social and environmental impact criteria carry a weight of 2, again reflecting the importance of basic development issues, while the trade facilitation and technology transfer criteria – although important – are assigned a weight of 1 in recognition of their less direct relationship with the immediate infrastructure and reconstruction needs of the country.

8.4.5 *Limitations of the Process and Implementation Options*

The scoring table is to a certain extent influenced by subjective judgments on the part of the evaluator. This subjectivity may play a particularly critical role when the weighted averages are separated only by very small values, such that a slight alteration of the score for one criterion may cause the related project to gain or lose several places in the overall ranking.

Several options exist to minimize subjective bias in this type of exercise, and one of them is the **collection of a maximum of hard data**. Scoring should be based on reliable and recent data, such as econometric simulations of project impact on growth, the numbers of people to benefit from basic services projects, quantified pollution reductions, estimates of technological complexity, and interviews with sectoral experts.

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Carefully researched cash-flow projections will also be necessary to allow the calculation and scoring of rates of return on investment. Remaining subjectivity could be further managed by forming a large pool of evaluators: for example, the various ministries could each perform the evaluation based on the same data set, and the results could be averaged, thereby ensuring greater balance within the inevitable element of subjectivity inherent in all such processes.

9 The fiscal impact of the project cost depends on its funding and financing.

The socio-economic evaluation done according to the standard cost benefits provides information about the strictly economic aspect of the project. But the way it is funded and the type of contract selected for its implementation are interacting with this evaluation and it is necessary to adjust the socio-economic evaluation after the decisions concerning funding and type of contract have been taken.

For instance concession operations reduce the charge on the public budget since a large part of the commercial revenues is assigned to the reimbursement of debt. Partnership contract operations (PFI) rely on public budget for all of the costs of the operations (capital expenditures, operation expenditures, maintenance and all related financial costs, obviously). It is for this reason that, for the same project, according to the type of contract, very different socio-economic and financial results are obtained.

So it is necessary to develop in parallel 3 types of analyses: i) the socio-economic analysis, ii) the financial analysis and iii) the fiscal analysis, but taking into consideration that in general the projects with positive IRR are creating GDP and this fiscal revenues for the public authority.

We have already discussed hereabove the socio-economic analysis.

The financial analysis is relatively more standard and therefore simpler, since the majority of engineering companies, consultancies, and banks understand the process, and many organisations are able to provide financial analysis. It corresponds to the notion of 'financing' and thus the practical implementation of financing (bank loans, bonds, equity, mezzanine,) which will be reimbursed either by public budget (coming from taxes and levies), or by the client-consumers, or by a combination of the two (see 'funding' above').

The concept of 'private financing' must be clarified according to the role that the private partner plays:

1. To raise banking or bond finances, without engaging himself in lending, to finance a project company (SPV).
2. To provide loans or buy bonds to the SPV
3. To fund the SPV as an investor in equity, and recover these funds as dividends during the contract life and according to the results of the project society

The technical benefit obtained due to the use of concession and PPP contracts allow for the compensation of financial and transactional additional costs in long duration contracts. The parallel calculation of economic and budgetary aspects allows it to be proved in which conditions it is preferable to use the standard contracts and in which concession or PPP contracts are more effective. The role of a PSC (Public Sector Comparator) is to compare the results from the public sector point of view of a standard procurement and a concession or PFI type of contract.

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The fiscal evaluation cost takes into account the effects of cumulative debt on the budget of the Public Authority and the fiscal revenues providing from the economic activity provided by the investment.

10 The contractual process used for implementing the project

Although it is impossible to provide guidance on this topic for all projects and all countries, it is possible to give a specific example to explain the practical mechanisms which are relevant to it. We have taken the example of a simple transport project (a tolled bridge in a European country) which has been built according to time and budget and proven successful from the economic and financial point of view. Accurate data were available and then a numerical example was realistic and useful to illustrate the concept of sensitivity of the economic IRR and fiscal effects versus the funding and type of contract²⁷.

The numbers presented in this article cannot be generalized to any kind of project or any country, but part of the methodology used in this example may be applicable in many countries. It is inspired by the various Public Sector Comparators which are currently used, and in particular the French PSC which has been developed when the “Contrat de Partenariat” was first developed in France following the decree dated June 17th, 2004.

It is necessary to note that the socio-economic profitability of the projects depends on its finances, and that its calculation must be done in an iterative manner, between the economic and financial evaluation in order to find the best solution.

10.1 The various possibilities of contracting

Let us imagine that we are to build a bridge. The questions of what options are available to a government to carry out such a project, and how their suitability can be judged – these are the issues we set out to examine below.

A number of options are open to decision-makers. To illustrate our concept we have selected 7 options although much more are now available.

- Option no. 1: the bridge can be constructed entirely from public funds as budgeted, and can then be thrown open to traffic without charge. It will be managed by a public entity.
- Option no. 2: at the opposite end of the administrative spectrum for the award of public contracts, it is possible to build a bridge entirely out of private funds, operated by a private company which derives its remuneration from the tolls collected. This is the classic case of a public infrastructure built under a concession agreement. In this case, the amount of the toll is discussed with the public authorities and must be set at a satisfactory level of political acceptability (cf. our studies published previously in the journal *Transports*²⁸). The revenue may be sufficient to cover operating costs, to repay the loans taken out with financial institutions and, lastly, to provide a reasonable return on the capital invested by the private enterprise.
- Option no. 3: the bridge can be built by a public authority out of budget resources, with the imposition of a toll charged to users for the right to cross it. Toll revenue is paid into the general State budget.

²⁷ See article « La dimension économique du partenariat public privé dans les transports » . Revue « Transports » No 442 mars-avril 2004

²⁸ Article « Transports, urbanisme et péages, peut-on chiffrer l’acceptabilité politique ? » Revue “Transports” No 402 octobre 2000.

- Option no. 4: a public establishment is specifically set up with the power to borrow money, construct the bridge and collect the revenue, which is then used to repay the loans. The economic and budgetary consequences of this, although similar, are not totally identical.
- Option no. 5: the State can decide to entrust responsibility for the construction (execution and operation) to a private company, even if a subsidy may be needed for the latter if the toll revenue is not sufficient to pay for the whole project.
- Option no. 6: the State can also entrust the building of the bridge to a private company, which will be remunerated in accordance with the traffic crossing it, but without users being charged a toll at point of use. The sums received by the enterprise will come from the State's budget. This method of remuneration is known as a "shadow toll" in the English-speaking world.
- Option no. 7: Unfortunately, it must be noted that there is a seventh option, which is to do nothing in the immediate future; we shall take this into account in the present article by considering simply that the construction is put back by three years.

10.2 Determination of parameters

To achieve the full comparison on the three fields economical, financial and fiscal we have developed an IT model representing the way the initial parameters which are driving the year by year results. This model uses 70 different usual parameters and we shall present in the following paragraphs the main ones, using the example developed in the article already quoted above.

For this same bridge, the various options for structuring the project lead to different results in each case. This is because there are four major quantities to be taken into account: the total cost of the construction, the opportunity cost for public funds and related shadow price of public fund scarcity, the operating costs (including maintenance) and the financial revenue deriving from the activity generated by the completed construction.

10.2.1 Socio-economic benefits or utility

The use of the bridge, and therefore its utility, will depend on the pricing of the toll.

This is so because the toll will eliminate a certain number of potential customers. Since this will make no change to the operating expenses for the bridge, there will be a diminution in the surplus, and this diminution will increase as the level of the toll rises. In options 1 and 6, no actual toll is envisaged, and consequently the use of the bridge – and therefore its utility – is maximised. In the other options, the traffic will be less and there will therefore be a lesser overall surplus.

Utility has been estimated using a conventional supply & demand curve. To make the computations easier, we will not use a constant elasticity curve but one in which the elasticity for traffic "T" in relation to the generalised cost is a linear function of generalised cost "C". Such an approximation provides a satisfactory representation of the behaviour of users/customers. The coefficient of elasticity ($\frac{C}{T} \frac{dT}{dC}$) is the $\frac{C}{C_0}$ (see the form C/Co, graph no. 4)

The equation defining traffic as a function of generalised cost is therefore:

$$T = T_0 \cdot e^{(-C/C_0)}$$

10.2.2 The total cost of the construction

If the public funds devoted to the construction of the bridge come solely from the State budget, the contracts for the engineering studies, the building of the bridge and the operations of it will be entered in the accounts on the basis of the usual procedures when the State is the owner of the project. If the chosen contractual arrangement provides for a broader delegation of responsibility to private enterprise (under a concession agreement or a public-private partnership), the overall cost of the construction will not be the same. Remember that total cost comprises the following:

- Costs relating to upstream phases such as project programming, preliminary studies, preliminary project design and building the public tender dossier, in addition to awarding and signing the contracts.
- Construction costs (detailed engineering studies, the construction work *per se*, including possible adverse claims and insurance costs).
- The costs of maintaining and operating the structure throughout its life cycle.
- The costs of risks

A number of specialists in the field (NAO²⁹, CSTB³⁰, MIQCP³¹) have arrived at the conclusion that the public-sector process costs significantly more than the private-sector process associated with a concession agreement or a public-private partnership contract. There are two categories of reasons for this: purely technical considerations relating to the efficiency of private enterprise compared with public bodies, and considerations relating to budgetary constraints and delays in the public funding.

It is impossible to give fixed and accurate figures contract by contract for the cost reduction made when the overall process is entrusted to the private sector compared with the conventional procedure followed when the project is wholly owned by the State. This is because the parameters vary from one contract to the next.

A public project owner which does a great deal of construction work will have technical skills comparable with those of a large private company, and will be able to effective budget planning. Such a Authority will know how to stand up against unnecessary demands generated by political lobbying and will avoid wasting public funds. But it is often the case that project owners are insufficiently experienced, and budgetary regulations may delay the entry into service of a structure that is almost finished because a section of highway or minor infrastructure required to finish the operational portion of the network are lacking.

Generally speaking, European decision-makers consider that total delegation to private enterprise, which shoulders the risks involved in design-construction-maintenance and keeps to project deadlines, will reduce the total cost of the production process for the final structure by about 17%³², and provide a time saving of 10% compared with the public-sector process. If we combine these two factors, we arrive at a gain of 20% in our bridge example.

These figures should be permanently updated to reflect the most recent and reliable studies on this subject and cannot be taken as an universal rule.

²⁹ NAO: National Audit Office, the UK equivalent of the French *Cour des Comptes*

³⁰ CSTB: *Centre Scientifique et Technique du Bâtiment* / scientific and technical centre for the construction industry

³¹ MIQCP: *Mission Interministérielle pour la Qualité des Constructions Publiques* / interministerial mission for quality in public building.

³² Various MIQCP documents dated 2008.

In the case of publicly-owned corporations, a SEMCA for example [*Société d'économie mixte concessionnaire d'autoroutes* / public-private motorway concession holder] or an EPIC [*Établissement public industriel et commercial* / public industrial or commercial establishment], there is less budgetary constraint and the specialist nature of such bodies usually means that they have a good level of competence. Consequently, in our comparison of the options, we have considered that the difference in total cost between private enterprise and an EPIC is no more than 10%.

10.2.3 The cost of private and public capital

The introduction of private enterprise into the funding of construction is reflected in an increase in financial expenses because the borrowing of the private partner will be at higher interest rates than its public-sector principal. The precise rate will depend on three parameters:

- The base rate for long-term government borrowing, which derives from the combination of decisions by public authorities and the confidence felt by the banking sector in the robustness of the national economy.
- The way the total risk is split between the private and public sectors, which in turn defines the spread between public and private interest rates.
- The WACC of the private company

The WACC (Weighted Average Cost of Capital), which combines the requested return on private capital and a loan interest rate, the rate of the former being significantly higher than the latter, but applicable to a smaller part of the capital actually raised.

Where the construction is funded out of public funds through a SEMCA or an EPIC, we have considered that over the long term that the WACC is less than the one of the private sector but that the public shareholder wishes nevertheless to receive dividends.

If the construction is financed solely out of public funds, we nevertheless considered in pricing the toll charge that the capital will have come at a cost, set at the rate in real terms of the 10 years public bonds. This means that the final financial cost accounting balance for the bridge would be equal to zero, with no profit nor loss.

10.2.4 Revenue generated by the utility of the construction

An economically viable construction will generate additional activity (GDP increase) and therefore additional revenues. Such flows will be split between the private-sector actors, commercial or industrial companies, and the public-sector actors. It is possible to estimate budget revenue for the State, which collects taxes and social contributions. The figure will largely be dependent of the country and of the efficiency of its tax collection system, but it cannot be neglected. If there is VAT in a country, the related rate may give an order of magnitude of the marginal ratio fiscal revenues versus increase of GDP.

10.2.5 Tax wedge

Tax wedge is defined as the ratio between the amount of taxes paid by an average single worker (a single person at 100% of average earnings) without children and the corresponding total labour cost

for the employer. The average tax wedge measures the extent to which tax on labour income discourages employment. This indicator is measured in percentage of labour cost.

This means that a part of the investment cost paid by the public authority is retrieved by it. This has to be estimated for having the full fiscal impact of the investment cost.

10.3 The results

10.3.1 Politically acceptable pricing

In some economic articles³³ we have put forward the political concept of “bitterness” in order to illustrate the problem raised by frequent users of infrastructures in urban areas for which tolls are charged. In fact, it is usually possible to define a rational approach to this illustration by examining the percentage contribution of toll revenue to the total economic surplus generated by the facility.

10.3.2 Economic ranking for the different options

According to the global model economic, financial and fiscal that we have developed, the economic IRR varies between 10 and 14% for the example of the bridge (already quoted hereabove). This cannot be neglected and the public decision should look carefully at that effect.

10.3.3 Financial ranking for the different options

The ranking is different. When the bridge is tolled, the fiscal revenues for the government are largely exceeding the financing cost of the bridge. This is normal because the concessionaire will pay taxes (VAT and corporate) during several years.

If the bridge is toll free, there is a fiscal burden left on the shoulders of the public authority as long as the revenues generated by the utility of the bridge and the tax wedge are not taken into account.

10.3.4 Conclusion of this example

The above example cannot be generalized but summarize the various mechanisms which are to be considered when prioritizing the projects according to the country various constraints and their fiscal costs.

10.3.5 Fiscal costs evaluation

For specific fiscal cost evaluation, the World Bank and International Monetary Fund have developed a model called PFRAM (PPP fiscal risks assessment model).

The PFRAM, developed by the IMF and the World Bank, is an analytical tool to assess the potential fiscal costs and risks arising from PPP projects. In many countries, investment projects have been procured as Public Private Partnerships (PPPs) not for efficiency reasons, but to circumvent budget

³³ V. Piron « Transport, urbanisme et péages, peut on chiffrer l’acceptabilité politique ? Revue « Transports » No 402

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constraints and postpone recording the fiscal costs of providing infrastructure services. Hence, some governments procured projects that either could not be funded within their budgetary envelope, or that exposed public finances to excessive fiscal risks.

To address these concerns, PFRAM has been developed as an analytical tool to quantify the macro-fiscal implications of PPP projects, to be used not only in the context of IMF and World Bank technical assistance but also by PPP units in ministries of finance. In practice, assessing a PPP project involves both gathering specific project information and making judgments about the government's role at key stages of the project cycle. PFRAM provides a structured process for gathering information for a PPP project in a simple, user-friendly, Excel-based platform, following a four steps decision-tree:

- Who initiates the project? The impact of main fiscal indicators (i.e., deficit and debt) varies depending on the public entity ultimately responsible for the project (e.g. central, local governments, state-owned enterprises, etc.).
- Who controls the asset? Simple standardized questions assist the user in making an informed decision about the government's ability to control the PPP-related asset—either through ownership, beneficial entitlement, or otherwise.
- Who ultimately pays for the asset? The funding structure of the project is what determines its implication on main fiscal aggregates. PFRAM allows for three funding alternatives: (a) the government pays for the asset using public funds; (b) the government allows the private sector to collect fees directly from users of the asset (e.g., tolls); and (c) a combination of the two.
- Does the government provide additional support to the private partner? Governments can not only fund PPP projects directly but they can also support to the private partner in a variety of ways, including providing guarantees, equity injections, or tax amnesties. PFRAM generates standardized outcomes based on project specific and macroeconomic data (Figures 1–4). The latter include: (i) project cash flows ; (ii) fiscal tables/charts on a cash and accrual basis; (iii) debt sustainability analysis with and without the PPP project; (iv) sensitivity analysis of main fiscal aggregates to changes in macroeconomic and project-specific parameters ; and (v) a summary risk matrix of the project.

11 Conclusion: selection of the best solution needs studies and experience

The practical example presented above makes use of conventional economic methods familiar to professionals. The use of practical examples brings into sharp focus the applicable mechanisms in determining the level of the toll and drawing up an overall economic balance sheet.

There is no single, systematic solution to select a process involving the construction of a given infrastructure in a given human and geographical environment. In the light of this plurality of options, it is the task of the decision-makers to undertake fine-grained analysis of the overall context in economic, legal, budgetary, financial and other terms, and of the constraints that flow therefrom, before pronouncing on the optimum solution for the circumstances. Specifically, estimation of utility is a delicate task, since while utility can include factors that are easily measured in terms of time savings, there are also others, relating to sociological considerations or human geography, that are less straightforward³⁴.

An obstacle is often found in long contracts, which are less common in standard work contracts: transaction costs. For large operations of several hundred million of Euros, procedures are difficult, take time, these operations are in general very specific and too rare for making scale economy.

But the aim of having a pipeline of projects is precisely to decrease transaction costs. For that, it is necessary to have a strong legal and institutional framework which would permit the realisation of a continuous flow of projects of medium and low importance, and which would thus permit the establishment of a legal expertise, a financial capacity, and an industry of concession and PPP by social partners. As contractual subjects have a lot of common points, this would allow them to have standard clauses covering the majority of questions and thus to considerably reduce transaction costs.

Taxes on different products can be directed to ad hoc bodies for starting projects, and tax schemes can equally be adjusted in a way to favour the development of a certain service or favour a certain investment.

However, one fact is invariably to be seen in every case: there are no miraculous financial solutions that can make a construction economically viable if its socio-economic fundamentals are not right.

³⁴ Many documents have been done under the World Bank responsibility. In particular there are the documents under the following references : WPS7433, WPS7674, "Prioritizing projects to enhance Development impact