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Is risk management the same for public transport infrastructure projects as it is for private projects? The example of motorway and high speed train projects in France.

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Abstract

In France, transport infrastructures are planned, financed and constructed in three different ways : either within the framework of an agreement between the State, one or more Regions and the local authorities (public projects), or within the framework of public-private partnerships (concession contract or partnership contract). Transport infrastructure planning can meet risks and uncertainties (social risk, political risk, institutional risk, financial risk, technical risk, etc). The research question is as follows: if the planning of transport infrastructure projects in the form of concession contracts or partnership contracts is based on the performance of the service providers, do projects carried out by a public contracting authority comply with the same planning model, in the context of the new public management ? How do this evolution position itself against collaborative, flexible and strategic planning ? The paper shows that the public practices seek to control the classical criteria of project management as the private sector (cost, delay, quality) and use risks management (whichever is the nature of the risk). Private sector tends to exclude projects for which a too strong political or social risk is known in advance. But it can accept to manage projects with general interest objectives. A planning model using risks management could be developed. It could have common points with collaborative, strategic and flexible planning , even if it keeps its own specifications.

Introduction

Public transport projects can exceed certain cost and completion time limits and do not always achieve the initially planned objectives (such as traffic and profitability forecasts). The urban planning objectives (creation of new districts, urban renovation, etc.) that can accompany these projects are not always attained. Risks, no matter whether social or political (public or political opposition to a project), financial (unanticipated costs), technical (such as a rockslide during the excavation of a tunnel)

or environmental (such as the effects of the infrastructure on the ecosystem), are highly present in the decision-making process (Lessard, Miller, 2008).
Infrastructure projects are often criticised for not always meeting their objectives (Flyvberg et alii, 2008). In addition, their construction is a greater source of risks than other economic activities due to their complexity resulting from the necessary and delicate coordination between multiple and closely linked skills and activities (Shen et alii, 2006).

In France, transport infrastructures are planned, financed and constructed in three different ways:
- either within the framework of an agreement between the State, one or more Regions and the local authorities. These projects are financed by public budgets forming part of State-Region project contracts. The public authorities can also take out loans to finance these projects. This solution is used for roads, highways and high speed train projects.

- or within the framework of public-private partnerships contracts. *"The partnership contract is an administrative contract through which the State or a State body places into the hands of a third party, for a fixed period set in accordance with the time required to amortise the investments or chosen methods of financing, a global mission whose objective is the construction or transformation, cleaning, maintenance, operation or management of structures, equipment or intangible properties necessary to provide the public service, as well as all or part of their financing, with the exception of any participation in the capital[1]".* A public-private partnership contract allows the risks to be shared between private and public partners. The private operator is remunerated by the licensing authority. This remuneration can vary in accordance with the results attained by the operator when compared with performance objectives (traffic levels, service quality, etc.). This solution is used for high speed train projects.

- or within the framework of a concession contract. *"Public works concession contracts are administrative contracts whose objective is to have all the building and civil engineering works carried out by a concession-holder whose remuneration consists in either the right to operate the construction or is given this right in association with a price[2]"*. The concession-holder fully assumes the risks associated with the construction and operation of the structure as well as the commercial risk linked to traffic levels through the collection of a toll. This solution is used in France for highways.

As the concession-holder assumes the commercial risk of operating the infrastructure at its own peril, it is in its interest to respect its cost, construction deadline, traffic forecasts and profitability objectives in order to repay its loans, bear the functional and operational charges, and make a profit.
The concession contract is based on the definition of the nature of the service placed in the hands of the concession-holder, its operating conditions and responsibilities, the works, the duration of the concession, the financial clauses (tariffs, taxation, repayment to the delegatee of taxes due to the delegator, price paid by the public authority, etc.), the control methods available to the community or the revision of the operating

[1] Source : Art. 1 of Order no. 2004-559 dated 17 June 2004
[2] Source: Order no. 2009-864 dated 15 July 2009

conditions to adapt the contract to any encountered problems. All these call for an identification of risks and their distribution.
The choice between public financing, a concession or a partnership contract is carried out by the conceding authority through the means of a preliminary evaluation.
The preliminary evaluation consists in comparing the options of financing by public funds, a concession or a public-private partnership (PPP) for a given project. It is based on the global cost, the allocation of risks among any concerned partners, performance and sustainable development objectives. Oudot and Ménard (2009) underline several limits to this evaluation. The cost, performance and potential risks depend on hypotheses that are difficult to specify at this early stage of the project. In this case, the allocation of risks among private and public partners is difficult. The changing economy (crisis or growth) can form part of the hypotheses for analysing the risks linked to the contract. The evaluation consists in a financial approach that associates a cost to each risk and shares these costs between partners, but does not incorporate a socio-economic analysis. For example, neither the social risk of opposition by local residents nor political risks are taken into consideration.

The research question is as follows: if the planning of transport infrastructure projects in the form of concession contracts or PPP is based on the performance of the service providers, do projects carried out by a public contracting authority comply with the same planning model? Do public authorities and public contractors integrate performance into the planning of their projects? If so, in what way? How is this development positioned with regards to existing planning models?
Performance is defined as being to what point the project objectives are met (completion times, cost, quality, traffic forecasts, profitability and related objectives). As from the project planning stage, players must set up a strategic programme to attain these objectives. This implies envisaging the risk that these objectives are not met and thus the setting up of a risk management system.

Rather than envisaging project planning as a series of independent sequences (evaluation, design, financing, construction, operation, etc.), we see this as a global approach with interdependent phases.
Three hypotheses are examined in this article:
- The public contracting authority practices adapt due to budgetary resources that are increasingly difficult to obtain.
- Public contracting authority planning practices appear to be increasingly similar to those of the private sector.
- While the planning models currently being theorised (flexible, collaborative and strategic planning) appear to offer the necessary conceptual framework, they are not sufficient to meet the needs of these new planning practices.

The first part of the article lays out the theoretical context underlying these questions by specifying the concept of infrastructure, the concept of risk when compared with the concept of uncertainty applied to the planning of infrastructures, the incorporation of performance and risk in new public management systems and the various existing forms of planning.
The second part presents the practices used to take into consideration performance and risk in the planning currently used within the scope of concessions, partnership

contracts and public contracting management in France. It presents too the parallels and the differences between public and private practices.
The third part discusses the results in relation to their theoretical context and positions the practices used to take performance and risks into consideration when compared with existing planning models. It also specifies the limits as well as the various advantages and disadvantages.

1- State of the art

1-1 Definition of infrastructure, risk and uncertainty

According to Grimsey (2002), who synthesises various sources, the infrastructure can be defined as an investment developed to provide ``basic services to industry and households''(Martini, Lee, 1996),, ``key inputs into the economy'' (Threadgold , 1996),, and ``a crucial input to economic activity and growth'' (East Asia Analytical Unit, 1998) although what is ``basic'', ``key'' and ``crucial'' varies from country to country and from one time to another".

Transport infrastructures are characterised by considerable capital intensity, works on a large scale and even on several scales, and a long gestation process involving a large number of players over several years or decades. They involve civil society, elected representatives, the economic environment, etc. and a working life that that can last several decades. They are also catalysts for change inasmuch as the simple technical objective of controlling flow movements in a regular manner while ensuring good safety conditions can be accompanied by other types of objectives such as urban projects (such as Euralille with the TGV Nord high speed train in Lille), economic projects (such as the creation of offices and shops with their accompanying employment), etc. at a range of different scales. These projects can be backed by public stakeholders at different levels that occasionally have divergent objectives and the possibility of financing spread over time.

These complex characteristics can make a project and its decision-making and planning process vulnerable. In other words, the characteristics can be affected by measurable damages (such as delays and additional costs) resulting from a random event (such as the opposition to a project). Yvette Veyret and Magali Reghazza (2005) state that in geography, the concept of vulnerability, initially developed by American geographers, also makes it possible to define the causes of damages and delineate the reactive capacity of the threatened object. This concept can be applied to the planning of transport infrastructures. For example, it is possible to determine the causes of damages[3] (such as a delay and an additional cost) to an infrastructure by tracing back the decision-making process. It is possible to define the reactive capacity of a project exposed to a random event. For example, the Paris city authorities only accepted the financing of the Météor automatic metro project on condition that the route served a new housing and business district located to the south of the capital. The client accepted this compromise to complete the project and consequently modified the

[3] The word of « damages » is used here in the sense of affecting the project or the décision making process.

route. As a result, Météor is now integrated into a much larger regional suburban metro system known as the Grand Paris Express.

While in geography the random event results from a physical process (such as a flood, cyclone, etc.), risk is defined as a social object, the result of a negative and dangerous perception of a random event by society (Veyret, Reghazza, 2005).
Risk is also defined as a dangerous event whose causes and consequences are known, and for which the frequency and seriousness for a given potential target can be determined (Le Ray, 2010).

For infrastructure projects, the question of the methods used to quantify this frequency and seriousness is raised. The fact is that there are very few major projects and, because they are developed within institutional, economic, technical, organisational, etc. contexts that are very different from one another, it is difficult to have a clear understanding of the causes and consequences of any potential risks, particularly as these can vary over the long process of a project's gestation. It is therefore difficult to determine the probability of the frequency and seriousness of a risk within a context specific to the project, given that this can evolve over the long term. Independent expert opinion can be used in these circumstances.

The works in transport planning carried out on risks underline various types of risks. Lessard and Miller (2008) single out the social risk corresponding to the potential opposition or potential dissent of residents with regards a project for different reasons (NIMBY syndrome, ecological position, etc.), the political risk represented by a potential disagreement between elected representatives concerning a project, and the differing objectives that elected representatives might have concerning a particular project. The risks include:
- the institutional risk consisting in a modification to the regulations that might affect the project (such as technical, safety, etc. regulations)
- the technical risk associated with the construction or operation of the infrastructure, such as the collapse of a tunnel
- the environmental risk which concerns the impact that the project might have on the environment (water drainage, ecosystem, soil quality, pollution, noise related nuisances suffered by residents, etc.).
- the financial risk resulting from additional costs linked to the above-mentioned risks, unforeseen project problems, badly estimated traffic levels or profitability forecasts, etc.
Grimsey and Lewis (2002) underlines the importance of the risk of force majeur resulting from, for example, a natural or climatic disaster.

The risks that might affect a project can combine and create a system. For example, the opposition of local residents to a project might result in elected representatives also being opposed and this could lead to delays and, as a result, additional costs. The risks can also change over the working life of a project.

Discussing risks and risk management in the planning of transport infrastructures brings us very close to the frontier between the concept of risk, where one knows the causes and consequences, and the concept of uncertainty where neither the causes nor possible consequences are clearly understood (Miller, Lessard, 2008). While these two

authors group together the concept of risk and the concept of uncertainty under the term of risk (p148), we feel it would be appropriate to mark the difference between the two insofar as infrastructure projects are concerned. Uncertainty concerns random events whose impacts can affect a project (delays, additional costs resulting from unforeseen events) and for which a causality system has not been determined (such as the collapse of the tunnel during the excavation of the Météor metro line in Paris in 2003). Uncertainty can concern the difficulty of accurately anticipating traffic levels or commercial revenues and this, in turn, can generate a financial risk. Finally, it can concern the economic development of the context of a project that can vary as a result of changeovers in political power, the health of the economy, environmental standards, etc.

Planners and clients can alternate in their practices between risk management and uncertainty management. This can explain the use of independent expert opinion for the use of context analysis methods and the analysis of uncertainties and risks, as developed by Réseau Ferré de France, a State-owned public industrial and commercial institution that is owner and manager of the French rail network.

Planning models adapt to this changing and uncertain context within which performance also becomes an important criteria. This is because social and political criticism can play a considerable role when it comes to projects costing more than expected or that do not always respect their objectives. In addition, the increasing scarcity of budgetary funds demands that cost forecasts are respected as far as possible or that the delegation of the works and operation of projects be placed in the hands of private partners within the scope of partnership or concession contracts.

1-2 Performance and planning models

The traditional rational planning model (predict and provide) is currently subject to widespread criticism (Flyvbjerg, 2008 Bertolini, 2005) and planners are now developing other models. Literature in the sector criticises the low performance nature of the classic planning and process used to develop a project based on traffic forecast and profitability models. It is argued that forecasts are rarely accurate as it is difficult for them to cover the long gestation period and working life of projects that, in addition, are also marked by subsequent changing conditions. Planning models (strategic, collaborative and flexible) all share a deliberative planning process.

Strategic planning permits the establishing of a global planning policy that articulates, thanks to a collective decision-making process, the various and multiscalar policies and objectives over the long term thanks to a collective deliberation process (Motte, 2005). This is translated by priority infrastructure and machinery investments, protection measures (for example, environmental) and regulations governing land planning (Healey, 2004).

Basing ourselves on project management theories (Le Ray, 2010), we consider that the definition of a strategy requires the definition of objectives and priorities (which also corresponds to the concept of strategic planning) as well as the incorporation of any risks that might prevent these objectives being attained, or which might generate new opportunities, and consequently the need to practice risk management. General

literature provides many examples as to how risks might be identified, analysed, quantified, avoided, transferred, etc., with the aim, as far as possible, of making the management of a project (no matter what type), as high performance as possible in terms of the defined objectives.

According to the British model analysed by Healey (1996), collaborative planning is based on the involvement of all players (civil society, public players, and the economic sector) concerned by a planning approach within a collaborative decision-making process. It uses the classic scientific and technical method to evaluate projects (such as cost-benefit analysis, etc.) and the knowledge that local residents have of their immediate environment, the issues at stake and the impacts that the project might have. This planning approach is global, horizontal and multi-sectoral rather than vertical and mono-sectoral. It gives local and regional levels a greater power in implementing their policies. The State only intervenes in a small number of fields. This planning approach permits the replacement of a project's collective construction by an approach that seeks to resolve the conflicts that can occur when the planning is organised in a more centralised manner. It is based on the legitimacy of the results of technical and scientific analyses and only allows local residents or local elected representatives to position themselves as being in favour or against the concerned project. For the author, this model has the advantage of reducing conflicts, making mediation more effective and reducing the cost of statutory transactions. By extension, this model can reduce the risk local residents or elected representative opposing, for example, an infrastructure project and, subsequently, the risk of delays and additional costs.

Flexible planning envisages the planning of infrastructures as a participative process able to adapt to changes in the context of the project's gestation. This model was particularly developed in the United States following the construction of the Interstate Highway System in the 1950s and 1960s that saw the population opposing urban sprawl and the disappearance of urban communities affected by the projects (Gifford, 2003). This flexible planning can be based on the use of monitoring tools that develop and maintain performance indicators that follow the options and opportunities that might present themselves to the project and which evaluate the environmental, economic and financial feasibility of the latter (Gifford, 2003, p 232).

These planning developments are incorporated into the context of the introduction of a new type of public management whose end purpose is "*the search to improve public performance in five different ways: "strategic planning, participative management, quality management, the introduction of technologies of information and communication and management control*" (Pesqueux, 2006). The State's role finds itself modified inasmuch as it becomes a strategic State that can "be visionary in its consultations with civil society, be a guarantor of the general interest (public services, control of activities, use of public funds), assure social cohesion through rational and transparent decisions, organise itself to attain its objectives (adaptation of administrative structures) and place the initiative back in the hands of citizens (participative democracy) (Pesqueux, 2006).

In planning, this is translated by the adoption of a certain number of more or less recent procedures.

- participative democracy (with transparent consultation processes and deliberations during the project decision-making process)
- the introduction of a strategy and objectives (detailing of multi-sectoral, multiscalar, etc. planning objectives as part of the deliberative process)
- evaluation of the efficiency and the performance of the infrastructure project (use of decision-aid methods such as the cost-benefit analysis, multi-criteria analysis and risk management methods).
- the contracting of certain projects in the form of concession contracts or partnerships with private contractors.

These various items are either partially or fully developed in the three planning models developed above.

The question of adapting the decision-making process and the project to a context occasionally undergoing change (economic crisis, new players, new objectives, changes in regulations, etc.) is not included in the methods used by new public management.

2- What parallels are possible and what differences continue to exist between the risk management practices of private clients and of public contracting authorities?

2-1 Public authorities seek to limit environmental, social and political risks during the preliminary studies

Preliminary feasibility studies and risk anticipation

The project feasibility study, carried out by the State, a local authority or a State body[4], was implemented in 2004 to determine the important social, environmental and economic issues related to any given project. These include the protection of the natural environment, services to be provided, connection to other networks, urban development, local governance, etc. These aspects could potentially be examined during consultations. This approach also allows the public authority to check whether the proposed technical solutions are worthwhile and whether others might not be more sustainable (such as, for example, a railway solution in place of a roadway solution). The risk analysis carried out here does not aim to provide a methodical identification and treatment (as this would be too early in the project's development), but rather intends to identify issues that might generate uncertainty, such as users hostile to having to pay a toll, fragile natural settings, political tensions, etc. This anticipatory approach is appreciated by the client body as, if conducted in a continuous manner, it facilitates the subsequent public debate.

Participatory democracy and social risk

If necessary, these feasibility studies can be subject to a referral by the French national commission for public debate (CNDP) whose role consists in assuring the "*participation of the public in the process of preparing development or works projects of national interest, when these present considerable socio-economic issues or have*

[4] An EPIC is a legal body governed by public law whose purpose is to manage a public service activity. Its income is provided by revenues and loans.

significant impacts on the environment or land use planning"[5]. The public debate concerns the advisability of the project, its main characteristics and objectives. The CNDP drafts an assessment of the debate but does not adopt a position as to the merits of the project. It is up to the client, having examined this assessment, to take a position regarding the future of the project and any modifications it wishes to make. This debate, and the entire subsequent consultation process, allows the public authorities or EPIC to make the planning and decision-making process more transparent and adapt the project to a local context. The public authorities can make the planning and the project more flexible by integrating the environmental, social and economic issues revealed by the deliberative process. They can also decide to abandon a project judged to be too "risky" (local opposition, possible additional costs due to major environmental constraints, etc.).

The preliminary studies, always carried out by the public authority or State body, then allow the technical, economic and environmental data to be assembled to specify the precise route. This takes into consideration the local problems of inserting the infrastructure into its specific ecological and economic environment, and assesses the impacts that the infrastructure might generate within a 1 km wide strip, and then within a 300 m wide strip. The three preliminary studies are carried out to further define the project and prepare the preliminary investigation for the declaration of public utility. The concept of flexibility acquires meaning as several route variants within the 1 km and the 300 m strip might be proposed during the investigation.

The environmental impact assessment and environmental, natural and technological risks.

The environmental impact assessment is carried out by the public authority or a State body and, since the 2011 decree[6], has been integrated into a more global set of studies that allow the project to be fully analysed. The creation of control measures allows the public authority to be sure that the client will apply avoidance, reduction and compensation measures insofar as environmental impacts as well as natural and technological risks are concerned. The public's assurance that the negative effects of the project are subject to these measures and that these are followed by effects, are included in the negotiation elements for a project undergoing the decision-making and planning process and can serve to limit the social risk. However, risk anticipation is limited as the study only takes place late in the decision-making process (prior to the public enquiry).

Is the cost-benefit analysis a source of rationality or uncertainty in the decision-making and planning process?

The cost-benefit analysis develops the advantages and costs associated with a project and helps define its social value. Among other decision-support tools, this calculation should help the public decision-maker choose a particular project among other competing projects within a context of scarce resources. In this situation, the benefits

[5] source: http://www.developpement-durable.gouv.fr/Principales-etapes-de-l.html

[6] Decree no. 2011-2019 dated 29 December 2011 concerning the reform of impact assessments for projects concerning works, constructions and development.

must be greater than the costs. Rather than seeking to derive a maximised profit, the analysis should develop the collective surplus which takes into consideration a collective preference based on externalities (pollution, safety, etc). The main limit to the cost benefit analysis lies in the difficulty of quantifying and giving a monetary value to phenomena such as the effects of pollution on health, the time saved, human lives saved, etc. While this approach is considered as rational, it is also seen as a source of uncertainty as it presents a result to an often unexperienced public in the form of a profitability rate that is calculated in a way that is largely unclear to them.
It is difficult for public authorities and State bodies to take risks into consideration in the cost-benefit analysis. While methodological progress has been made in this sector, it has yet to be integrated into the analysis (Quinet, 2010).

A multi-criteria analysis adapted to the social risk when compared with the cost-benefit analysis?

The circular dated 9 December issued by the Ministry of Ecology and concerning the creation of an evaluation quality charter recommends that the risks associated with each impact be studied through the use of multi-criteria analysis. These risks can, for example, concern the economic vulnerability of households, the environment, companies, etc., but without specifying how they could be evaluated.

The importance given to multi-criteria analysis when compared with the cost-benefit analysis carried out by the decision-making public authorities has increased since 2008. What is new in this text lies in its sustainable approach that bases the evaluation of projects and their variants on a comparison made of their impacts, be they social (employment, vulnerable groups, accessibility, social mix, etc.), environmental (climate, pollution, noise, etc.) or economic (impact on households and companies, cost, competitiveness, etc.). However, for the time being, there is no standard method for evaluating these impacts and this can limit the relevance of this evaluation.

The multi-criteria analysis presents several advantages over the cost-benefit analysis in terms of limiting the social risk. This lies within the framework of increased levels of consultation with the public and the project partners developed in 1992, 1995 and 2010[7]. Firstly, it presents the public with qualitative results that are clearer and more easily understood. In addition, the value of the multi-criteria analysis made for each project variant is that it allows problems, issues and variants resulting from the deliberative procedure to be integrated into the process. This means that there are now a large number of stakeholders from different institutional levels participating in the decision-making process. The circular dated 9 December 2008 had the effect of further reinforcing this approach. Elected representatives can have their own varied and even contradictory objectives insofar as a given project is concerned. Where necessary, the multi-criteria analysis can be used to evaluate several variants with different objectives and impacts. Where applicable, this multi-criteria analysis can

[7] The Bianco circular dated 15 December 1992 concerning the implementation of large national infrastructure projects, the Barnier law no. 95-101 dated 2 February 1995 concerning an increased level of protection of the environment, and the Grenelle 2 law no. 2010-788 dated 12 July 2010 concerning the national commitment to the environment.

allow an evaluation of several variants having different objectives and impacts. This approach can, as far as possible, limit the social and political risk when compared with the cost-benefit analysis.

The public enquiry as a way of handling a risks system

The public enquiry, run by independent enquiry commissioners named by the prefect, State representative or President of the administrative tribunal, completes this study phase and uses the result to enter into debate with the public. This can either concern the general interest of the project or its public utility. In particular, following the opinion expressed by the commissioners concerning the project, the Prefect can declare the public interest of the project or the Prime Minister, the Minister of Ecology or the Prefect (depending on the type of infrastructure) can declare the public utility of the project. Here again, the enquiry allows local demands to be heard and answers given. Using a programme file, the public authority commits itself to a certain number of measures to facilitate the integration of the project into the environment, reduce impacts and meet the specific demands of certain local residents liable to be disturbed by the future infrastructure (anti-noise walls, etc.) and who are occasionally backed by their local elected representatives. This supervisory approach can simplify the local acceptance of the project. The multi-criteria analysis takes the same approach.

In summary, it can be noted that the public authorities concentrate on reducing the environmental risk as well as the risks of disputes or opposition to a project, no matter whether political or social. This is particularly important given that a very large number of participants that can be involved in the deliberative process. It is in the interest of the project organiser to identify and treat these risks as soon as possible to avoid any greater disputes that might result from the feeling of not being listened to or associated in the decision-making process. This could risk the project being delayed or exposed to financial risk.

2-2 Closer links between the practices used by public and private clients to develop performance levels

A number of State bodies, such as Réseau Ferré de France which is responsible for the complete planning of certain TGV projects (from feasibility studies through to open to traffic) using either public financing or a loan, have since the early 2000s used a risk management method similar to those used by clients in the private sector. The value of these methods is that permits the identification, analysis and treatment of traditional financial risks, as well as risks more linked to the sustainability of the project, such as those concerning environmental, social, political, institutional, technical, etc. aspects.

The method consists in identifying the project constraints and the potential impacts of these constraints on the cost, date of commissioning, the global performance of the project throughout its working life, as well as the ranking of risks according to their potential impact, seriousness and probability. On condition that these are considered as unacceptable, these can then be treated in one of three ways: reduction by acting on their causes or consequences, transfer to an insurer or, through a contract, provide coverage by anticipating a financial provision.

As it is difficult to keep statistics concerning the risks inherent in large projects due to the small number of the latter and the highly variable context of each project, appraisal based on the experience of experts is fairly frequently used by RFF to identify, analyse and treat the risks. This is why it is possible to be at the frontier between the concept of risk (statistically understood and for which one can estimate the occurrence, and know the causes and consequences) and that of uncertainty. This method is backed by a continuous consultation between RFF and the local community.

Identifying, analysing and continuously treating all types of risk right from the outset of the project allows, as far as possible, these risks to be anticipated. This systemic approach to risks also results in increasing the global performance of the project in terms of cost, completion time, quality, sustainable development, etc. The method is used alongside public debate, public enquiries, multi-criteria analysis, and environmental impact assessment. The latter studies only partially take risks into consideration (when they can be analysed) and only belatedly incorporates them into the planning process (being during the public enquiry). This has the effect of limiting their influence. Only environmental impact assessment tale natural and technologic risk intro account.

Globally, private project partners try to avoid assuming social and political risks. This explains why competitive procedures involving public works and operator contractors answering calls for bids only take place once the declaration of public interest has been signed and the project itself clearly specified. To ensure profitability, the private sector seeks to respect its estimated costs, handover dates, the project's quality objectives, etc. However, in addition to these traditional project management objectives, both the private and public sectors take a fairly strong position with regards the prevention and reduction of the environmental risk. This is achieved by greater environmental management practices during site works (reduced waste and increased recycling, reduced nuisance for local residents, reduced CO2 emissions, etc.) and, more widely, the adoption of sustainability objectives. These practices may vary from one partner to another.

The private Vinci group, a public works and motorway concession-holding company, targets goals in line with corporate social responsibility that seek to improve company and site performance (training, employee safety, reduced environmental impacts, etc.). Réseau Ferré de France, a State body that is owner and manager of the rail network, has stated its fairly extensive environmental protection objectives for the construction of the TGV Paris-Est line. These are regularly monitored to check for any malfunctions. The approach also includes the promotion of general interest objectives such as the creation of reinsertion jobs on work sites, etc.

2-3 Conclusion

The public authorities concentrate on the social, political and economic risks from the feasibility studies through to the declaration of public utility,at the moment when the nature and characteristics of the project need to be defined. The private sector tends to focus on risks that construction and opening to traffic might generate (technical, financial, commercial, etc. risks) or that might be produced by the context (institutional risk). The private sector candidate prefers a call for bids for projects presenting a very

low social or political risk, even though the declaration of public interest means that this type of risk cannot subsequently be excluded (for example, an owner refuses to be expropriated: a situation where even if only a single plot is concerned, the situation can lead to delays and a financial risk for the project).

The private client that constructs and operates a project within the scope of a concession contract or a partnership contract also adopts risk management methods and continuously monitors consultations with the local community. This takes place as from the signature of the contract, through to the declaration of public utility , the commissioning and even after this latter stage.

It can be noted that there is an increasing concordance in the planning performance of projects, with optimisation practices in both the private and public sectors. The former, in addition to traditional criteria, is developing general interest performance criteria focussed on sustainable development while the second uses more traditional and less sovereign criteria of cost, completion time and quality.

3- Although the planning models now being theorised (flexible, collaborative and strategic) seem to offer the necessary conceptual framework, they are not sufficient for these new planning practices

The three planning models currently being theorised (flexible, collaborative and strategic) provide reference framework for a planning using risks management in the case of social, political and institutional risks . But is this framework enough?

Collaborative planning has already been well debated**.** Among other critics, Fainstein (2000) underlines that this model ignores the role of power and powerful people and their capacity to impede the implementation of concerted actions. Pennington (2000) adds that collaborative planning limits innovation as good ideas need to be approved by a general consensus that is occasionally difficult to obtain. In addition, it is not possible to include each individual in the decision-making process.

These authors underline the limits that can accompany the collaborative decision-making process. This reflects the need to further analyse the decision-making and planning process of infrastructures when faced with social or other types of uncertainties and risks. The question of risks is not covered by this model.

The tension that appears in strategic planning with the search for compatibility between collective objectives and society itself implies a possible uncertainty in the decision-making process. Questions of public participation, the construction of collective land use objectives and the means of cooperation and relations between players are envisaged by literature with the proportion of chance that can result from the deliberative process. However, this cannot be considered as an uncertainty or a risk, with its causes and consequences for the decision-making process and for the project. These works provide fundamental elements that offer an understanding of the conditions underlying a project that is, for example, disputed by the population (Lolive, 1999, Blatrix and alii, 2001, Rui, 2004, Revel and alii, 2007), but do not increase an understanding of the other risks and uncertainties that might accompany these social

risks and uncertainties in the decision-making and planning process governing transport projects.

Flexible planning examines the issues of risks and uncertainties by criticising the approach to risks taken with the cost-benefit analysis and the risk probability calculation in the decision-making process (Gifford, 2003). The author also examines the concept of the performance of projects by taking into consideration criteria that are intrinsic to the project (traffic, safety, speed, energy consumption, congestion, etc.) (Gifford, 2003, p189).

It shows that the cost-benefit analysis is not necessarily reliable as it evaluates the costs and benefits of a project in an uncertain manner due to inaccurate measurements, the subjectivity of the expert's judgement, the inaccuracy of contexts, etc. that introduce uncertainty into the analysis. A poor understanding of the demand and the changing preferences of individuals over time represent two other sources of uncertainty. Gifford also criticises the use of probability for risk evaluation, stating that this evaluation does not necessarily permit the calculation of a probability if there is no understanding of the detailed process resulting in the production of the damage or risk.

While this model is theorised within the context of the social dispute (and social uncertainty) concerning the conditions for the construction of the American motorway network, it does not define the risks and uncertainties (political, institutional, economic, environmental, financial, etc.) or detail their integration into the planning process.

These three models make it possible to theorise planning practices marked by the new public management. However, risk typologies (political, environmental, financial, etc.) are not examined, nor the problem of their identification, analysis and treatment.

Risk planning practices use the same methods as the three preceding models, such as cost-benefit analysis, multi-criteria analysis, environmental impact assessment, etc., by integrating risks into certain of them (such as the multi-criteria analysis and environmental impact assessment). These latter can encounter difficulties in identifying, evaluating and treating risks, with the exception made for the environmental impact assessment that permits natural and technological risks to be analysed and treated. However, the RFF method for continuously managing risks can usefully complete these classic methods.

Planning using risks management, which does not ignore the other three models and even uses them as a base (especially for the social risk), presents a certain number of advantages. Risk management permits the constant monitoring of a project using a methodological approach that remains identical from the beginning to the end of the project. It makes it possible to rapidly identify a risk or uncertainty and to analyse and treat it early on (on condition that the timing of the institutional planning procedure allows it) or prepares its treatment (by, for example, adapting the project). In addition, this type of planning permits (with risk management) an analysis of all types of risk in a global manner, with their potential interactions in time and space, and, generally

speaking, permits all the objectives of an infrastructure project, which can now be very numerous, to be covered.

However, planning using risk management currently presents a certain number of limitations.
Standard studies carried out within the scope of this type planning can highlight impacts and certain risks that could be subject to negotiations. These are discussed during the public debate and the public enquiry. The environmental impact assessment has robust methods available for identifying, analysing and treating natural and technological risks. This is less the case for the multi-criteria analysis. The social risk is very important in the organisation of an infrastructure project and continuous consultation takes place throughout the project development phase. However, scientific literature does not provide elements concerning the subjectivity of the players that might accompany their positioning insofar as the project is concerned. The political risk is also important, as are power games between players, power relationships, the role of lobby groups, etc. These issues play a role in the production of the political risk. A better understanding of the role of subjectivity in the decisions taken by the players and in power relationships could give a better understanding of the causes of political and social risks and their consequences for the project. This would subsequently provide a better characterisation of this type of risk.

The three planning models appear to provide a conceptual framework for these new planning methods, but this is not sufficient.
The global approach of the planning using risks management can require additional investigations to better understand the various risks and better identify, analyse and treat them.

Conclusion

The search for performance within a context of limited budgetary funds has existed since the 1960s with the rationalisation of budgetary choices. In overall terms, public sector transport infrastructure planning practices continue to work towards better controlling risks and increasing the performance level of projects. The influence of limited budgets, a context that is favourable to the developing of the environmental, social and economic aspects of sustainable development, and a decision-making process involving a large number of players who occasionally have objectives that differ greatly from one another needs to be underlined. Public practices place emphasis on the need to control standard project management criteria such as cost, completion time and quality. These criteria are generally used in the management of private projects. It is also worth noting the use of risk management from the feasibility studies through to . This is concurrent with the standard study and procedures for consultation and the multi-criteria analysis that also provides a better incorporation of the concept of risk. The private sector, on the other hand, tends to exclude projects where there is an overly strong political or social risk that is known in advance. However, it may accept carrying out projects having general interest objectives.

References

Bertolini L., (2005), Evolutionary urban transportation planning : an exploration, *Environment and Planning* A 39 (8).

Blatrix C, Deroubaix F, Jobert A, Le Floch Y, (2001), *Evaluer, débattre ou négocier l'utilité publique ? Ménager le territoire, mémoire des acteurs et interactions des projets*, rapport Inrets n 241.

East Asia Analytical Unit (1998), *Asia's infrastructure in the crisis, harnessing private enterprise*. Canberra : Department of Foreign Affairs and Trade, 1998.

Fainstein S (2000), New directions in planning theory, *Urban Affairs Review,* 34 (4), 451-76.

Flyvbjerg B, Bruzelius N, Rothengatter W (2008), *Megaprojects and risks, an anatomy of ambition*, Cambridge, University press.

Gifford JL, (2003), *Flexible urban transportation*, Elsevier.

Grimsey D, Lewis MK (2002), Evaluating the risks of public private parnerships for infrastructure projects, *International journal of Project Management* 20 : 107-118.

Healey P (1996), Collaborative planning in a stakeholder society, *Town Planning Review*, 69 (1), January.

Healey P (2004), The treatment of space and place in the new strategic spatial planning in Europe, *International Journal of Urban and Regional Studies*, 2004, vol.28, n°1, pp. 45-67.

Le Ray J (2010), *Gérer les risques, pourquoi ? Comment ?,* Afnor éditions, Paris.

Lolive J, (1999), *Les contestations du TGV Méditerranée*, L'Harmattan, Logiques politiques.

Martini CA, Lee DQ (1996), Difficulties in infrastructure financing. *Journal of Applied Finance and Investment*, 1996, 1(1), 24-7.

Ménard C, Oudot JM (2009), L'évaluation préalable des contrats de partenariat, *Revue française d'administration publique*, n°130, 2009, pp. 349-364.

Miller R, Lessard DR (2008), Evolving strategy : risk management and the shaping of mega projects in Priemus H, Flyvberg B, Van Wee B, (eds), *Decision making on mega projects, cost benefit analysis, planning and innovation,* Cheltenham, Edward Elgar, pp145-172.

Motte A (2005), *La notion de planification stratégique spatialisée (Strategic Spatial Planning) en Europe (1995-2005),* PUCA recherche.

Pennington M (2000), *Planning and the political market : public choice and the politics of government failure*. London, Athlone press.

Pesqueux Y (2006), *Le nouveau mangement public (ou New Public Management),* working paper, Laboratoire d'Innovation, Prospective stratégique et Organisation, Conservatoire National des Arts et Métiers, Paris, http://hal.archives-ouvertes.fr/hal-00510878/fr/

Quinet E (2010), *La pratique de l'analyse coût-bénéfice dans les transports : le cas de la France*, document de référence, Centre conjoint de recherche sur les transports, OCDE.

Revel M, Blatrix C, Blondiaux L, Fourniau JM, Hériard Dubreuil B, Lefebvre R, (2007), *Le débat public : une expérience française de démocratie participative, La découverte*, collection Recherches.

Rui S (2004), *La démocratie en débat, les citoyens face à l'action publique*, Armand Colin.

Shen LY, Platten A, Deng XP (2006), Role of public private partnerships to manage risks in public sector projects in Hong Kong, *International journal of Project Management* 24 : 587-594.

Threadgold MK (1996), Private financing of infrastructure and other long term capital projects. *Journal of Applied Finance and Investment,* 1996,1(1), 7-12.

Veyret Y, Reghazza M (2005), Aléas et risques dans l'analyse géographique, *Annales des Mines*, octobre.