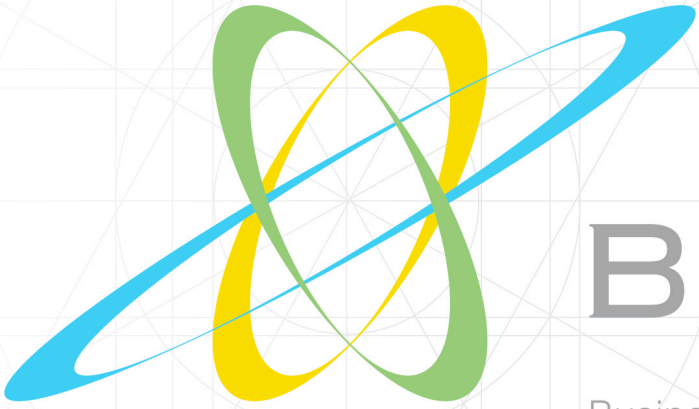

BENEFIT

Business Models for Enhancing Funding
& Enabling Financing for Infrastructure in Transport

Deliverable: D 2.4 – Governance Typology

European

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Business Models for Enhancing Funding
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Grant Agreement No.: 635973
Deliverable: D 2.4 – Governance Typology

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Glossary

Within BENEFIT certain terms are used throughout. These are described here.

Collective BENEFIT database: This is the BENEFIT database consisting, at the start of the project, of seventy-five case studies of funding transport infrastructure and twenty-four country profiles. These are published data from COST Action TU1001 and the OMEGA Centre megaprojects. During the course of the project, the database will be supplemented with at least twenty-eight more cases of funding/financing infrastructure (in particular public funding/financing, which are less represented).

Funding Scheme: A funding scheme is considered to be any combination of private and public income generated by or towards the infrastructure over its life cycle. These may include any combination of user contribution (tolls, fees, fares etc.) or public contributions based on direct and indirect taxation etc.. Public funding may also take on the form of availability fees, shadow tolls etc.

Financing Scheme: A Financing scheme is considered to be any combination of public and/or private financial investments required by the infrastructure over its life cycle.

Business model: The business model describes the business case of the overall investment. Depending on the setting, it may be narrowed, including strictly the infrastructure projects considered, or it may be widened, including other planned and commonly designed activities in order to capture other "planning gains" (and other value-added services) and even exploiting synergies across the sectors (eg. transport, energy, ICT). The latter incorporates the notion of innovative procurement and other approaches to infrastructure delivery, now in the pilot phase.

Key Elements: Elements are groups of variable dimensions of the same context, which influence the performance of the funding scheme and financing scheme. Elements, as noted in figure 1, are the implementation environment (socio-political, micro and macro economical, institutional, regulatory, etc.); the transport mode (functionality; natural and contractual exclusivity, etc.); business model structure; funding scheme; financing scheme and governance arrangement (risk allocation; decision process; ownership rights, etc.).

Typology: A typology concerns groups of factors describing an Element that contribute in demonstrating a particular behaviour. Example: Negative Private investment environment type in the implementation context typology. The group of factors leading to the demonstration of this behaviour may be: poor growth forecast, lack of enabling legal framework etc. Typologies for every element (context) will be generated during the project using the collective BENEFIT database (country profiles and case studies) as field examples and desk research. Quantitative and qualitative analysis are the analytical tools that may be used.

Decision Matching Framework: This is the Analysis and Decision Framework to be developed by the BENEFIT project. The framework will contain typologies influencing the overall performance of the investment. It will initially be developed using hypotheses of optimum matching between types, which are confirmed as Matching Principles (rules describing by which optimum performance may be achieved) during the course of the project. As such, it could be used as an analysis tool (eg. identification of "mismatches") or decision tool (eg. given the types of elements, which funding scheme type is most appropriate) or project rating framework (expressed as the risk to match a specific financing scheme) or project rating enhancing framework (which types may be changed and in which direction to improve project rating).

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1. Introduction

BENEFIT takes an innovative approach by analysing funding schemes within an inter-related system. Funding schemes are successful (or not) depending on the Business Model that generates them. The performance of the Business Model is affected by the implementation and the transport mode context. It is matched successfully (or not) by a financing scheme. Relations between actors are described by a governance model (contracting arrangements). These are key elements in Transport Infrastructure Provision, Operation and Maintenance, as illustrated in figure 1.

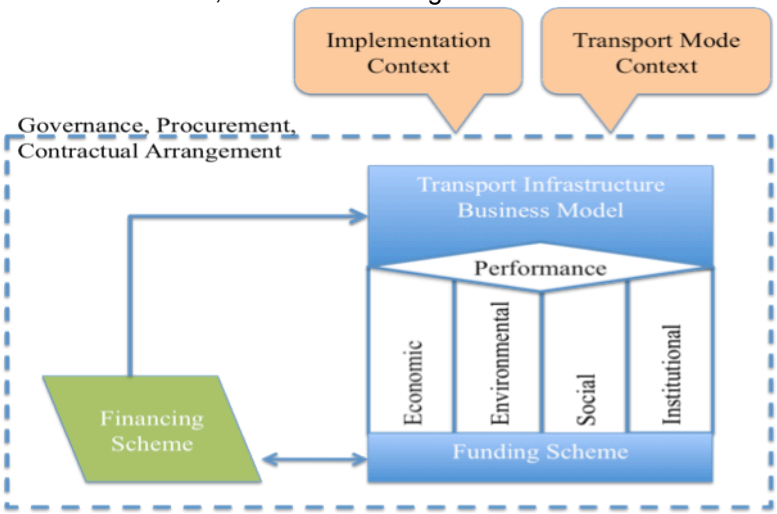

Figure 1: BENEFIT Key Elements in Transport Infrastructure Provision, Operation and Maintenance

Success is a measure of the appropriate matching of elements. Within BENEFIT funding and financing schemes are analysed in this respect. Describing these key elements through their characteristics and attributes and clustering each of them into typologies is the basis of, first, developing a generic framework. Identifying best matches in their inter-relations (matching principles) leads to move from a generic framework to a powerful decision making one (Decision Matching Framework) that is developed to guide policy makers and providers of funding (and financing) extensive comparative information on the advantages and limitations of different funding schemes for transport infrastructure projects and improve the awareness of policy makers on the needs of projects serving an efficient and performing transport network within the horizon 2050. Besides, the framework allows policy makers to identify changes that may be undertaken in order to improve the potential of success, such as improving the value proposition of the business model.

In developing this framework, BENEFIT takes stock of case studies known to its partners in combination with a meta-analysis of relevant EC funded research and other studies carried out with respect to funding schemes for transport (and other) infrastructure and direct contact with key stakeholder groups. More specifically, BENEFIT uses the published case study descriptions of seventy-five transport infrastructure projects funded and financed by public and private resources from nineteen European and four non–European Countries covering all modes of transport. It also exploits twenty-four European country profiles with respect to contextual issues (institutions, regulations, macroeconomic and other settings) influencing funding and financing of transport infrastructure. This data has been produced within the framework of activities undertaken by the OMEGA Centre for Mega Projects in Transport and Development and the COST Action TU1001 on Public Private Partnerships in Transport: Trends and Theory. In addition, BENEFIT, through its partnership and respective experts, consolidates almost twenty years of successful European Commission research with respect to issues related to transport infrastructure and planning, assessment and pricing of transport services. Therefore, its approach is supported by the tacit knowledge and insights of the BENEFIT partnership with respect to infrastructure projects in transport.

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By applying the Decision Matching Framework, BENEFIT will undertake:

- An ex-post analysis and assessment of alternative funding schemes (public, PPP and other) based on existing experiences in different transport sectors and geographical areas and their assessment with respect to economic development, value for public money, user benefits, life-cycle investment, efficiency, governance and procurement modalities, etc.; and, provide lessons learned, identification of the limitations of the various schemes and the impact of the economic and financial crisis.

- An ex-ante (forward) analysis and assessment of the potential of transport investments and the related funding schemes, including innovative procurement schemes still in a pilot phase, to contribute to economic recovery, growth and employment, in view of future infrastructure needs with a 2050 horizon for modern infrastructure, smart pricing and funding.

BENEFIT is concluded within twenty one months and bears the following innovative aspects:

- Transport infrastructure business models and their project rating: Improved value propositions lead to funding schemes with enhanced creditworthiness enabling viable financing, balancing of project financing and funding risks, increasing the value basis of stakeholders and highlighting the potential of transport investments.

- Transferability of findings with respect to lessons learned, limitations and the impact of the economic and financial crisis through the introduction of typologies.

- Open-access case study database in a wiki format, allowing for continuous updates and providing a knowledge base serving both practitioners and researchers.

1.1 Contribution of this Report to the BENEFIT project - Typologies

The key concept of the BENEFIT project is the analysis and re-construction of transport infrastructure funding and financing through a system described by its elements, as shown in figure 1. These elements are described through their key characteristics vis-à-vis the funding and financing schemes described as “typologies”. These are the clustered as “dimensions” attributes of the elements. Each dimension, in turn, is described by indicators, which provide “values’.

Using these typologies, the property space may be re-structured generically allowing for objective analysis of cases and, also, the creation of a framework guiding decision-making. Achieving the “ideal type” is an objective.

For each element of the transport infrastructure delivery system (see figure 1), a typology is identified. More specifically, a typology is identified for:

1. The implementation context, i.e. the particular political, legal/regulatory, social etc. environment the infrastructure is delivered in.

2. The transport mode context, i.e. the transport mode particularities and specificities the infrastructure is developed to serve.

3. The transport infrastructure Business Model, i.e. the value proposition of the infrastructure as it is bundled with other offerings and services.

4. The funding scheme, i.e. the revenue stream that is generated through the business model, which contributes in “paying back” the investment. Notably, as shown in figure 1, the funding scheme is generated by the economic, environmental, social and institutional outcomes of the business model.

5. The financing scheme, i.e. the structure of the investment, and, finally,

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6. The Governance scheme, i.e. the rules and stakeholder relations organizing and regulating the infrastructure delivery system.

The implementation and transport mode context, describe to a large extent the business model that may be developed. The business model will create economic, environmental, social and institutional outcomes and, ultimately, produce relevant and respective funding schemes. Governance introduces an external change to this initial setting by introducing new rules and relationships. Finally, the financing scheme reflects the financing capacity created.

In this approach, the typologies of the implementation and transport mode context, as well as those of the business model and funding scheme are considered in one entity described in report D2.2, while the Financing Typology in report D2.3.

The present report D2.4 is the deliverable of Task 2.4 and describes the Governance scheme typology.

1.2 Report Structure and Contribution to the BENEFIT project

The focus of the present report with respect to Governance concerns the identification of key characteristics, which defines the typology of transport infrastructure Governance, one of the Elements in Transport Infrastructure Provision, Operation and Maintenance (see figure 1).

More specifically, the present deliverable addresses task 2.4 as it is described in the BENEFIT project:

"In this task governance, procurement and contracting arrangements are reviewed with respect to the funding and financing schemes. The focus is on governance arrangements deployed by public and private parties in transport infrastructure delivery. Strategic decisions about responsibility and allocation of risk shape the type of arrangements. Changes in responsibility and risk allocation require new types of organizational forms and transactional relationships between public and private partners. Public partners can make use of formal and informal types of control to limit the opportunities for private partners to deviate from what is agreed upon and to reduce risks. UT, UCL and UCLAN will consider general governance models, while IBDIM, IST and KIT transport specific seeking potential cross-fertilisation. This objective is addressed through desk research (meta-analysis) and evidence research (with respect to types of governance arrangements) based on the BENEFIT database and provides the 6th typology."

Following this introduction, the report starts with a brief overview of Governance and then reflects on governance issues within the contractual arrangement. The typology for Governance is presented in the next section, followed by a qualitative assessment of the potential influence on project outcomes and the funding and financing schemes. Conclusions end the report.

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2. Background

2.1 Governance

Since the second half of the 20th century, the public decision process has evolved 'from organizational and uni-centric power to emphasizing the process through which outcomes are achieved' in almost every country in the world (Klijn, 2008). Governance is about a decision framework, which is critical in setting direction, monitoring performance and responding to external pressures. Closely related to a firm and its operation, governance has been studied through the lenses of (Clarke 2004, 2007; Mallin 2004, 2006):

- Agency theory, as the firm is viewed as a set of contractual relationships between the owners as 'principals' and the directors of the firm as their 'agents'.

- Transaction cost economics, which incorporates the notion of a series of contracts among various players to overcome the limitations of a single contract between the agent and the principal. The set of contracts is a governance structure that corrects any misaligned actions.

- Stewardship Theory, by which optimum governance structures can nullify the inherent conflict of interest between owners and managers. Accordingly, company directors are regarded as stewards of the company's assets who will act in the best interests of the shareholders. Stewardship Theory is informed by theories of motivation, power and situational factors such as management philosophy and culture.

- Stakeholder Theory, whereby equal emphasis is paid to internal and external stakeholders, with Corporate Social Responsibility extending this scope.

- Institutional Theory, where governance is described by relations and norms and policymaking.

In addition, policymaking is largely seen as the result of interactions between a multitude of actors (Conteh, 2013). According to this new perspective, traditional hierarchical management styles have been replaced by hybrid multi-actor and multi-level governance along with mutually interdependent decision-making structures (de Bruijn and ten Heuvelhof, 2008): the issue each time being the alignment of interests in defining the overarching scope to be achieved.

According to the Organisation for Economic Co-operation and Development, (OECD, 2004), public sector principles of good governance include:

1. Accountability - government is able and willing to show the extent to which its actions and decisions are consistent with clearly - defined and agreed-upon objectives.

2. Transparency - government actions, decisions and decision-making processes are open to an appropriate level of scrutiny by others parts of government, civil society and, in some instances, outside institutions and governments.

3. Efficiency and effectiveness - government strives to produce quality public outputs, including services delivered to citizens, at the best cost, and ensures that outputs meet the original intentions of policymakers.

4. Responsiveness - government has the capacity and flexibility to respond rapidly to societal changes, takes into account the expectations of civil society in identifying the general public interest, and is willing to critically re-examine the role of government

5. Forward vision- government is able to anticipate future problems and issues based on current data and trends and develop policies that take into account future costs and anticipated changes (e.g. demographic, economic, environmental, etc.), and

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6. Rule of law - government enforces equally transparent laws, regulations and codes.

While for a government the definition of goals serving public interest is under scrutiny, for the private sector corporate governance is defined as 'a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance is determined' (OECD 2004, p 11, Klakegg et al., 2008).

Law /regulation or rule setting in both cases is an integral part of governance, as are other instruments used such as economic means and information (cfr. Bemelmans-Videc, Vedung and Rist, 1998). These instruments can be either affirmative or negative. Regulations can be either prescriptive and provide rules to be followed, or proscriptive, specifying what is not allowed. Economic means can be either incentives or sanctions. Information can be either in terms of advice and encouragement giving guidance of what can be achieved and in which way, or in terms of warnings or description of pitfalls and possible adverse effects.

Project governance is considered as a framework for decision making, encompassing the process of making decisions, the established framework, models or structure for their enablement (Garland, 2009). In the construction of this new decision framework, policymaking becomes an inter-organisational process in which policies need to be conceived as the result of an interaction between several stakeholders (Conteh, 2013). If the hierarchical had a simplifier effect in the decision process, the assessment of multiple relations, incentives and objectives took the complexity of the decision framework to a much higher level of complexity. Thus in order to respect the social principles of fairness, equality and equity, governance rises as an institutional environment for the development of collective decision-making in settings where there are a plurality of actors or organisations and where no formal control system can dictate the terms of the relationship between these actors and organisations (Chhotray & Stoker, 2010).

From this definition, Chhotray and Stoker (2010) address the theoretical framework about governance in four elements: Rules, Collectivity, Decision Making and Decentralization.

- Developed from the principles of theory of institutional economy, the element of **Rules** represents the structure behind the distribution of the decision power. In other words, the specific combination of formal and informal institutions that influences the way that a group of people determine what to decide, how to decide, and who shall decide: the classic governance issues.

- **Collectivity** represents the integration of the stakeholders in this multi-level decision making structure. At glance, this collectivity principle might only represent the segmentation of the decision power. However according to Chhotray and Stoker, besides this initial perspective, collective decisions also may involve issues of mutual influence and control. In short, this collective space has to build the most involving network of relations between stakeholders where the outcomes represents the sum of the decision processes covered by the system.

- The **Decision Making principle** represents the organic structure of relations within the networks of stakeholders. The structure of the decision in a multilevel structure depends on the definition of who can decide what, and how decision-makers are to be made accountable. From the unit to the system, the development of this organic structure depends on the comprehension of the objectives, incentives and behaviour in two interconnected levels: societal systems and internal processes within organizations.

- Regarding the idea that in governance 'no formal control system can dictate' the relationships and outcomes, the **Decentralization principle** may be considered an orientation principle in the theoretical framework. According to this value, any structure of governance has to consider that social interaction must rely on negotiation, signals, communication and hegemonic influence rather than direct oversight and supervision.

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Most of the work in the categories proposed by Chhotray and Stoker (2010) comes from the analytical works of Williamson (2000) about transaction costs in governance structures and the economic agency theory. In this perspective, the governance rules adopted, the level of collectivity, the decision making process and the level of decentralization will also determine the level of transaction costs involved.

This brief synthesis of the literature is presented in order to illuminate the path for the identification of the governance dimensions in the environment of public contracts for transport infrastructure provision. In order to advance the analysis BENEFIT's study object, the following section reviews the literature about governance in public sector infrastructure provision with emphasis in the transport sector.

2.2 Governance in Infrastructure Contractual Arrangements

Notably transport infrastructure bears the characteristics of a "public good" and therefore the interests considered when addressing decisions with respect to its delivery and operation are multiple and involve many actors. Moreover, the delivery of infrastructure projects is the common ground of public sector governance, corporate governance and project governance where goals need to be aligned.

While considerable research has been focused on methods by which projects deal with unique, novel and transient operations, project governance did not receive much attention until rather recently (Abednego & Ogunlana 2006; Crawford & Cook-Davies 2005). As a mode of organizing transactions, project governance presents as a multidimensional phenomenon, encompassing the initiation, termination and maintenance of the ongoing relationships between a set of parties (Heide,1994). However, governance is more than a controlling process. It is about giving direction, monitoring compliance, sharing and mitigating risks (Moldoveanu & Martin 2001). Moreover, project governance is project-focused and describes how the project management processes are governed throughout the project lifecycle (White 2001; Winch 2001). In addition, the governance function has a closer link to **ownership** than it has to management (Carver 2001). This is a crucial aspect of governance especially in projects that bear the characteristics of a "public good".

In general, in the context of projects, governance could be thought of as building consensus necessary to achieve an objective in an arena where many different interests are in play. In the project environment, governance mechanisms are needed to support the operational control processes, and to manage the interface between project teams and their clients (Turner & Keegan, 2001).

In the context of Public-Private Partnerships (PPPs), Guo et al. (2013) and Reeves (2013) defines governance as the phenomenon of steering and coordinating (i.e. governing) a PPP by setting up organizational structures, running decision-making procedures, and using instruments such as contracts and agreements that do not rest solely on the authority and sanctions of government. First, structure concerns the actors and institutions involved in a PPP (Scharpf, 1991). Then, procedure brings dynamics in and covers PPP decision-making procedures as they are run from the initiation phase to the operational phase (Verhoest et al., 2012). The procedural approach seems to be better positioned than the structural one to describe the actual relationship between actors over time. Finally, instruments are the tools used by the government to steer a PPP towards the achievement of its objectives (Verhoest et al., 2004).

More specifically, in any project, the structure is defined by the procurement process. Procedures are defined contractually or not for the implementation and the operation phase of a project respectively. In order to better understand the governance of transport (and other) infrastructure projects, the four elements of governance as described in the previous section 2.1 are discussed per infrastructure development phase also with respect to public good governance principles. Considering the context of the BENEFIT project, the project life-cycle may be considered in two discrete phases: before and after its financing. The process may also be categorized based on the financing source: public or private. The latter implies the distinction with respect to traditional procurement and PPP procurement and the governance structure the public sector selects to put in place. Table 1 summarizes the discussion on project phases and governance elements.

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Planning Phase
An infrastructure project may be planned over a short or long period of time. Typically, during this phase stakeholder consultations take place, a draft design is prepared and a preliminary cost-benefit analysis is undertaken. A long planning period before the project receives the "go-ahead" allows for the alignment of interests between the various stakeholders and market actors (contractors, lenders etc.) to properly prepare. However, the planning period may also be exploited to serve specific interests. The decision-maker/governor at this phase is usually the future contracting authority.

Design or Tender Preparation Phase
While in this phase typically the project design is advanced, the key decision taken concerns the future governance structure of the project as it will be finally produced through the procurement process. More specifically, the public authority responsible for the project financing decision will decide whether to finance the project through public funds or private co-financing.

In the first case, depending on availability of public financing and the capability of the public authority the infrastructure project may be phased (i.e. procured in parts), may decide on the number and type of construction contracts (for example if all expertise needed will be under one contract or multiple contracts will be assigned for the supply of different expertise), the rules of future engagement. In the public financing route, the public authority will also decide whether to retain or outsource the operation and/or maintenance phase of the project. Implicitly in this case, the public authority transfers risks according to the type of activities it outsources, the type of procurement procedure it selects and the payment scheme it decides to offer.

In the private co-financing case, the public sector authority considers a hybrid governance structure including both the private and the public sector. Preparing the tendering phase becomes an important part of the process, especially with respect to potential risk sharing and risk mitigation, as well as introduce instruments by which to potentially retain the alignment of interests over time.

Tendering Phase
The key principles of good public governance pronounced during this phase are transparency and accountability coupled with following the rule of law. Public authorities will function within the boundaries of respective procurement laws and regulations.

However, one of the key responsibilities of the contracting public authority is selecting an agent/contractor with potentially aligned interests and the capability of reaching the envisaged project performance. Collectivity is a governance element to be achieved. Notably, in public financed projects the "alignment of interests" may be described as selecting an contractor with respective expertise as depicted by the design of the project. In private co-financed projects, where operation is bundled with the construction, "alignment of interests" may represent selecting a contractor capable of financing the project or capable of addressing the demand/revenue risk of the project.

Contract negotiations will usually condition the governance of the project in the next phase and will include the Rules, the decision-making principle and the decentralization principle. Governance instruments will also be put in place. Hence, while the tendering phase is not in itself part of infrastructure project governance, it is the phase where project governance is designed. Therefore, while the governance structure was decided in the previous phase, the procedures are potentially set in this stage.

Public Financing
Public financing is typically characterized by a considerable number of contracts between the contracting authority and contractors either due to the staged development of the infrastructure due to budgetary constrains or/and because contractor selection is based on the appropriate selection of contractor expertise. This is a fragmented process, which includes many contractors with short-term horizons and minimum alignment of interests. More specifically, in this approach, transport, and other public, infrastructure is typically produced by multiple counterparties through a complex sequence of interlinked transactions. Consequently, the governance of infrastructure projects faces two contractual hazards:

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opportunism in the presence of displacement agency; and political and regulator risk due to ex-post interventions. The number of counterparties increases the probability of these hazards.

Private Financing

Private financing reduces the number of counterparties at the Contracting Authority level but increases complexity due to the type of stakeholders involved as financiers and other project sponsors are now part of the governance structure. Setting the process of decision-making and decentralization as well as the rules of engagement enters the realm of uncertainty as contracts and agreement typically are of long duration extending into the future where contractual incompleteness is expected to demonstrate.

This incompleteness is typically demonstrated through long re-negotiation periods where hold-up rights and information asymmetry dictate the outcome. Provisions for contractual flexibility or governance structure monitoring incompleteness have been considered as instruments that may limit the adverse effects of contractual incompleteness.

Table 1: Project Phases and Governance Elements

Project Phase	Description	Key Governor	Public Sector Governance Principles	Pronounced Governance Element
Planning	▪ Draft project design ▪ Stakeholder consultations ▪ Estimates of benefits and costs	Public sector (future contracting authority)	▪ Transparency ▪ Responsiveness ▪ Forward vision	Collectivity
Design & Tender preparation phase	▪ Final design ▪ Commitment ▪ Selection of financing scheme (governance structure)	Public sector (contracting authority)	▪ Accountability ▪ Transparency ▪ Efficiency and effectiveness ▪ Rule of law	▪ Rules ▪ Decision Making principle ▪ Decentralization principle
Tendering/ Contracting	▪ Procurement ▪ Contracting ▪ Risk transfer ▪ Selection of agent/ contractor with “aligned” interests.	Public sector (contracting authority)	▪ Accountability ▪ Transparency ▪ Efficiency and effectiveness ▪ Forward vision ▪ Rule of law	▪ Rules ▪ Decision Making principle ▪ Collectivity ▪ Decentralization principle
Traditional Procurement (Public financing)				
Construction phase	▪ Construction	Public sector (contracting authority)	▪ Accountability ▪ Transparency ▪ Efficiency and effectiveness ▪ Forward vision ▪ Rule of law	▪ Rules ▪ Decision Making principle ▪ Collectivity ▪ Decentralization principle
Operation and maintenance phase	▪ Operation and maintenance	Public sector (contracting authority)	▪ Accountability ▪ Transparency ▪ Efficiency and effectiveness ▪ Forward vision ▪ Rule of law	▪ Rules ▪ Decision Making principle ▪ Collectivity ▪ Decentralization

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Project Phase	Description	Key Governor	Public Sector Governance Principles	Pronounced Governance Element
				principle
PPP procurement (Private co-financing)				
Construction & Operation	▪ Financing ▪ Construction & Operation ▪ Remuneration ▪ Risk allocation and mitigation	Hybrid Governance structure	▪ Accountability ▪ Transparency ▪ Efficiency and effectiveness ▪ Responsiveness ▪ Forward vision ▪ Rule of law	▪ Rules ▪ Decision Making principle ▪ Collectivity ▪ Decentralization principle

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3. Typology Describing the Element of Governance

Governance is directly linked to performance. Within the BENEFIT project there is interest in identifying the impact governance structures and procedures may have on project outcomes and how governance influences the funding and financing scheme. Since the BENEFIT project is also interested in showing the potential of new value propositions for transport, the challenge is to investigate certain characteristics in governance regimes which favour, for instance, Revenue enhancing (through 'bundling' with other business), Revenue protection and Cost reducing which are regarded in BENEFIT project as new value propositions for transport projects.

Based on the background provided on governance in the previous section 2 of this report, it is evident that project governance is connected to the characteristics of the relation of the Contracting Authority (CA) and the Contractor. Table 2 illustrates aspects of governance as posed by Scharpf (1991), Guo et al. (2013), Reeves (2013) and Verhoest et al. (2004, 2012). More specifically, table 2 reviews governance by characterising the relationships between a Contracting authority and the Contractor(s) and captures how responsibilities for activities (and in extension risk allocation is effected). Notably, the CA-Contractor relation is time-specific as it depends on the relative decision /negotiation power of the project life –cycle.

In table 2, the relation between CA and Contractor(s) is analysed against the elements of governance (Chhotray and Stoker, 2010) and accompanied by indicators and their potential measures. As the BENEFIT project addresses both public and private co-financed transport infrastructure projects, and therefore, governance structures that have emerged through traditional or PPP-type of procurement, an effort has been made to employ indicators and measures that are meaningful in both situations.

The Rules element of governance as described in section 2.1 concerns the relative decision power as it is formally and informally distributed. The formal decision power is related to the sharing of responsibility with respect to activities and project risks. The latter includes both the original allocation of risk and the measures of risk mitigation or reduction of risk for each party. The element also represents the relative decision power of the counterparties. In this instance the decision power of the CA stems the allocation of responsibilities assigned to the particular level of government or agency responsible for the procurement and contract monitoring process as well as the capability to enforce the foreseen contractual instruments. In many ways, the CA decision power also stems from the type of contractual agreement in relation to the type of payment scheme employed. For example, the CA will have a different possibility to make ex-post decisions depending on the type of contract signed:

- Traditional construction contracts (Design-Bid-Build) allow the CA to make and enforce decisions. Depending on the payment scheme, these decisions will come at a cost
- Design-Build contracts limit the ability of the CA to interact as input specifications define the development of works
- Maintenance contracts may foster asymmetry of information, as the CA does not have the capability to assess the level of maintenance required to achieve performance outputs.
- Management contracts are usually designed to support and empower the CA
- Framework contracts only set the framework of activities allowing for the adjustments over time
- PPP contracts (variations within) foresee the transfer of ownership over the duration of the concession contract and unless otherwise foreseen, the CA has restricted decision power.

The contractor decision (or negotiating) power stems from asymmetry of information, its capability to finance activities as well as its ability to govern subcontractors. Ultimately, negotiating power of Contracting firm(s) component refers to the characteristics of the 'entity' that has been awarded the project by the CA.

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Collectivity concerns the alignment of interests. In the tendering stage, Collectivity is influenced by the procurement process and the selection/award process adopted. Namely it may be inferred by:

- The type of procurement used by the contracting authority, e.g. “open”, 2-stage, competitive dialogue, etc.
- The prequalification criteria (e.g. what qualifications of the contractor the CA is seeking (transport service, transport infrastructure construction, transport business developer etc.)
- The set of criteria used to determine the winning bid and award the project, e.g. lowest cost, most economically advantageous, etc.
- The type of specifications used in the contracts (e.g. recipe, output, performance, warranty/guarantee, etc.)
- Contract payment mechanism: for individual contracts: fixed price vs cost-plus, for bundled/PPP contracts: lump sum vs annual payments
- Risk allocation between the CA and the contractor

The alignment of interests also has to do with the relative importance of the project in the CA’s and contractors’ strategic portfolios as well as the financing each counterparty has at stake.

With reference to the decision-making element of governance, its efficient may be assessed by the number of potential decision makers in the governance system, which is reflected in the number of contracts that are active at a given time. In addition, cooperation between CA and Bidders/Contractors has to do with the level of cooperation and interaction between CA and Bidders/Contractors. The level of cooperation is affected by friction between CA and contractor. This friction can usually manifest itself via delays during the procurement phase or as time/cost overruns during the implementation phase of the project, including renegotiation periods. Mechanisms put in place to facilitate exchange, share information or foresee procedures in case of the need for re-negotiations may be considered as having a positive influence on the governance element of collectivity.

Finally, the decentralization principle, as described in section 2.1, may be considered an orientation principle, whereas instruments are put in place to guide behaviour in governance. These instruments may include payment shemes, bonus/malus, various guarantees, warrantees and incentives.

Table 2: Key Project Characteristics with respect to the Elements of the Governance

Governance Element	Indicators	Measure
Rules	Risk allocation	Optimal risk allocation
		Risk mitigation measures
	CA decision power	Risk exposure
		Specific risk provision (budget set aside to cover specific threats)
		Level of government
		Debt/Equity ratio
		Ability to make ex-post decisions (eg. changes in design, etc.)
	Contractor negotiating power	Risk exposure
		Specific risk provision (budget set aside to cover specific threats)
		Contractor national/international ranking

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Governance Element	Indicators	Measure
		Debt/Equity ratio
Collectivity	Alignment of interests	Selection criteria
	Project importance	Importance in the Public/CA Agenda
		Importance in the Contractor Agenda
Decision - Making	Number of decision makers	Number of contractual CA- Contractor Agreements
		Contractor influence over sub-contractors
		Number of contracts with bundled activities
		Type of bundled activities in contracts
	Level of cooperation	Overruns due to conflicts between CA and Contractor
		Penalties
		Claims
		Renegotiation clauses
		Information sharing mechanisms
Decentralization	Orientation instruments	Contractual guarantees for the service provision
		Warranties
		Negotiation/ Renegotiation clauses
		Common project monitoring committee or similar
		Incentives
		Disincentives
		Financial guarantees
		Revenue protection (subsidies, caps etc.)

By studying the governance elements and their respective indicators and measures above, it may be concluded that these influence governance in two major ways: they either reflect the level of efficiency that may be achieved or the flexibility that may be induced in governance. Both these aspects have an influence on the funding and financing schemes and, hence, in the framework of the BENEFIT project they are selected as the governance typology. Table 3, restructures table 2 in this context.

Table 3: Key Characteristics of the Governance Typology

Dimension	Indicators	Measure
Efficiency / Effectiveness	Risk allocation	Optimal risk allocation
	CA decision power	Risk exposure
		Level of government
		Debt/Equity ratio
	Contractor negotiating power	Risk exposure
		Contractor national/international ranking

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Dimension	Indicators	Measure
		Debt/Equity ratio
	Alignment of interests	Selection criteria
	Project importance	Importance in the Public/CA Agenda
		Importance in the Contractor Agenda
	Number of decision makers	Number of contractual CA- Contractor Agreements
		Contractor influence over sub-contractors
		Number of contracts with bundled activities
		Type of bundled activities in contracts
	Level of cooperation	Overruns due to conflicts between CA and Contractor
		Penalties
		Claims
Flexibility	Orientation instruments	Incentives
		Disincentives
	Support instruments	Contractual guarantees for the service provision
		Warranties
		Negotiation/ Renegotiation clauses
		Common project monitoring committee or similar
		Information sharing mechanisms
		Financial guarantees
		Revenue protection (subsidies, caps etc.)
		Risk mitigation measures
		CA Ability to make ex-post decisions (eg. changes in design, etc.)
		CA Specific risk provision (budget set aside to cover specific threats)
		Contractor Specific risk provision (budget set aside to cover specific threats)
		Renegotiation clauses

3.1 Key Characteristics with Respect to Project Outcomes (Economic, Social, Environmental, Institutional)

The dimensions described in table 3 impact the economic, social, environmental and institutional outcomes of the infrastructure project/investment. The expected impact per indicator is presented in table 4. Table 4 sheds light on the governance characteristics, which likely influence project performance and further show how these governance characteristics are linked to the different dimensions of project performance (i.e. economic, environmental, social and institutional). Intricate relationships can so be inferred as existing between governance characteristics and aspects of project performance. The scientific

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investigation of these relationships will disclose critical features of governance actions that likely contribute to project performance. This will be thoroughly researched during execution of the Work Package 3, Task 3.1 and Work Package 4, Task 4.1 of the BENEFIT project.

Table 4: Governance impact on Economic, Social, Environmental and Institutional Outcomes/Performance

#	Indicator	Economic	Social	Environmental	Institutional
Efficiency/ Effectiveness					
1	Risk allocation	X	X	X	X
2	CA decision power	X			X
3	Contractor negotiating power	X			X
4	Alignment of interests	X	X	X	X
5	Project importance	X			X
6	Number of decision makers	X			X
7	Level of cooperation	X	X		X
Flexibility					
8	Orientation Instruments	X	X	X	X
9	Support Instruments	X			X

3.2 Key Characteristics with Respect to Project Funding and Financing Schemes

The various governance dimensions/indicators have a different influence on the funding and financing scheme. Table 5 exhibits possible influences between governance actions characteristics and the funding and financing schemes, which are analysed in the respective typology report. Table 5 provides valuable input to the core objective of BENEFIT project, which is the analysis of funding schemes for transport infrastructure. This will be researched throughout the proposed BENEFIT project.

Table 5: Impact of Governance on funding and financing Schemes

#	Indicator	Funding Scheme		Financing Scheme
		Revenue	Remuneration	
1	Risk allocation	X	X	X
2	CA decision power	X	X	X
3	Contractor negotiating power	X	X	X
4	Alignment of interests	X	X	X
5	Project importance	X	X	X

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#	Indicator	Funding Scheme		Financing Scheme
		Revenue	Remuneration	
6	Number of decision makers	X		X
7	Level of cooperation	X	X	X
8	Orientation Instruments	X	X	X
9	Support Instruments	X	X	X

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4. Relation to Other Elements

Needless to say, governance actions are definitively highly interactive with transport business model characteristics and funding and financing schemes. This is because governance is about coping with the many parts involved in a transportation project. Indeed, there exist the need to establish a relationship with each partner, supplier or customer in business. This is to obtain legitimated projects and value for stakeholders who might benefit from the project and bear risks thereof.

In addition, governance is influenced by the implementation context and the transport mode context within the transport infrastructure project is embedded. Governance, however, by setting rules also influences the initial predisposition of projects in the context.

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5. Conclusions

The scope of Task 2.4 has been to identify key characteristics of governance that influence the outcomes of transport infrastructure projects. Stemming from the new concepts on governance described as the inter-relation of actors and decisions made in view of reaching objectives, the characteristics of project governance were identified and grouped with respect to their potential influence on both project outcomes and the funding and financing schemes.

Identified project governance indicators were initially considered based on the elements of governance and then re-organised to reflect on the major characteristics which are important in terms of project outcomes, i.e. efficiency /effectiveness and flexibility.

We have focused on the characterisation of relationships between a contracting authority (CA) and a Contractor to describe governance actions as well as on the allocation of risk. It is noticed that allocation of risks influences many other subset of characteristics identified for governance actions.

Intricate relationships can be inferred as existing between governance characteristics and the schemes of funding and financing considered in the BENEFIT project. The scientific investigation of these relationships will disclose critical funding and financial factors that likely create and capture value for transportation projects through governance actions.

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