



Norwegian University of
Science and Technology

Possible ways to improve infrastructure project governance on front-end and planning phase.

Case study S-7 Koszwaly-Nowy Dwór Gdanski
highway project in Poland

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Submission date: July 2016

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Thesis Title:	Date: 25.07 2016		
<i>Possible ways to improve infrastructure project governance on front-end and planning phase. Case study S-7 Koszwały-Nowy Dwór Gdańki highway project in Poland</i>	Number of pages (incl. appendices): 102		
	Master Thesis	×	Project Work
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Abstract: This thesis is about the project governance scheme in the Polish road sector. It is based on the case study of the project of the expressway S-7 realized in northern Poland. The aim of this research was to present Polish road sector scheme and to analyse it with basis on the implemented project. To provide investigation properly, a literature study was performed as well as a definition of the road sector scheme based on guidelines and law acts. Based on the research, significant strengths and weaknesses were identified. The most important weaknesses were found to be, firstly, a too large number of actors in decision-making process, and secondly, slighting of the economic values. The most important strengths were found to be, firstly, a very accurate supervision of environmental impact, and secondly, the self-control of the General Directorate of National Roads and Motorways (GDDKiA). The thesis had many limitations what encourages to further research. The biggest limitation was difficulties with obtaining accurate data adopted to the analysis for project. The thesis offers two main possible ways for further research. The first consist in advancing deeper into an analysis of the road sector. The other consist in the possibility of an analysis of other sectors and, based on a comparative approach, trying to propose measures with the intention of creating a general national project governance scheme for Poland. On basis of the thesis, some suggestions were formulated based on identified European practices. Examples of these are, reducing the number of participants involved into the scheme, and addressing economic issues in more detail. This thesis should contribute real value for Polish scientists, who are interested in project governance, and international society of scientists by presenting Polish project governance scheme in road sector.

Keywords:

- | |
|----------------------------|
| 1. Project governance |
| 2. Road project governance |
| 3. Polish road sector |
| 4. Public project scheme |

Preface and Acknowledgement

This thesis has been conducted at the Norwegian University of Science and Technology, Department of Civil and Transport Engineering with companion of Gdańsk University of Technology, Department of Management and Economics, which is my home University. Performing this thesis was possible because of Erasmus exchange cooperation and EEA Grants, which enable me to stay in Norway for the whole academic year.

The idea for this research initiated from numerous discussions I had with my supervisor Professor Tore Haavaldsen about project governance and Polish system and its comparison to Norway. Accordingly to lack of time the research scope was reduced to Polish road sector.

First and foremost I would like to thank my parents, Barbara and Dariusz, without your patience in rising me and sacrifice that you made to enable me to walk that path I chosen, this thesis would have never appear, as well as my adventure in Norway. If you had not been the kind of people you are, I would never have reached the level I am at today.

Special thanks to Professor Tore Haavaldsen, who made my one year experience in new university a real pleasure. His inspirational support and guidance lead me throughout my research peacefully and effectively, as much as it was possible in case of lack of time and problems with obtaining proper data to analyse.

Deep thanks to Regional Directorate of National Roads and Motorways in Gdańsk, especially to Jarosław Sobolewski, who was the person I contacted with, and who gave me not only data I needed for my research to be carried out, but also huge help by explaining the everyday practise from his point of view as Director of Investment Preparation. His review of phase stages and decision-makers interrelation tree in Polish road sector I have made was essential to do it right.

I would like to thank my supervisor in Poland Katarzyna Tubielewicz, who made me realize that in my position a reduction of research scope to one sector is necessary. Finally we were agreed that road sector will be sufficient.

Bartłomiej Jan Wilk

July 2016, Trondheim

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Abstract

Besides the huge experience with investment projects throughout number of centuries, there are still some areas that need to be improved. Project management is a complex issue with many tasks. Despite well-organized building sites and processes of project implementation, the front-end and planning phases of the project are still challenging to provide sustainability, especially in long-term perspective. Those problems encouraged to write this thesis and provide research on project governance in Polish road sector.

The aim of the research was to describe Polish road sector in case of preparing an investment project with biggest focus on front-end and planning phases. To do that properly a first step was the literature study to present problem from the scientific point of view. Description of the literature study was the theoretical basis for the research of Polish governance regime in the road sector. Providing the breakdown of project phases and decision-makers interrelation tree enabled to analyse the implemented project in practice. Afterwards schemes from other European countries was presented to make comparison between Polish system and practices from those countries. At the end some findings and proposals were formulated and then concluded.

Realization of this thesis met many limitations what should encourage to another study with extended scope of analysis. Lack of time, language barrier and difficulties with obtaining data to analyse made that thesis narrow in its scope. Nevertheless the findings can answer a few questions that seems to be interesting for project governance investigators, especially from Poland. What is the scheme of investment projects in Polish road sector? What responsibilities have participants of the investment project process in Polish road sector? How Polish practice differs from European examples?

The aim of the literature study was to present the issues that are a part of investment project. Main focus as in the entire thesis was on front-end and planning phase. The key issues were mentioned in scientific terms as follows: sustainability, accountability, and transparency. Preparing the project by providing those terms would lead to achieve final success.

Description of the Polish road sector scheme was based on guidelines and law acts that determine the entire process of investment project and participants of it. Every phase stage was described as well as decision-makers. As a result of description the decision-makers interrelation tree was created.

Accordingly to description of formal scheme the case study was provided. The project of expressway S-7 was chosen and studied. The entire process of project preparation was described based on the data from Regional Directorate of National Roads and Motorways (GDDKiA in Gdańsk). Study allowed to compare scheme and practise what was necessary in case of finding strengths and weaknesses of the scheme in Polish road sector.

To present different approaches to the same issue, and possible ways to improve the scheme in Polish road sector, the European practices were presented. After selection of five countries: Norway, The Netherlands, The United Kingdom, Sweden and Denmark, and based on Concept Reports, the short descriptions of the schemes were provided respectively.

Accordingly to presented schemes in the thesis the final finding were formulated. Some strengths and weaknesses of Polish road sector scheme were pointed. Thorough assurance of environmental issue and self-control of the General Directorate of National Roads and Motorways were found as strengths. The weaknesses were manifested in neglecting the economic value of the project and too big number of process participants. In the final part of the thesis some proposals and conclusions are formulated as well as the suggestions for further work, which seems to be very interesting.

1. Introduction

Among centuries public investments were one of the most challenging and significant affairs in society cohabitation. In very ancient times, people starts to understand importance of public goods and necessity to provide it. Adequate examples are aqueducts from ancient Rome or Greece. Even then, people knew importance of public “investment” projects. Over the centuries the awareness of social needs, and capabilities to ensure them increased spectacularly. From slave labour in the construction of aqueducts to analytical approach including budget, realization time, providing sustainability and relevance, focusing on environment and many other issues. Even though the development of public investment projects improved enormously, there are still a lot to focus on.

1.1. Research problem

Research problem is defined as a challenge to improve a project governance on front-end and planning phases. Those two phases are in fact most tricky when it comes to evaluation existing, for example roads. There are still a lot of projects that miss their long-term goals. It is still not clear how to approach this issue to achieve best result in long-term perspective. Issues as sustainability, accountability, or transparency are still a big concern. That lead to decision on carrying out those issues throughout this research. In case of lack of time it was necessary to reduce a scope of the research and focus on one particular sector. Road sector in Poland was chosen to describe and study. To make that research valuable despite of analysis of Polish guidelines and law acts, a case study on Expressway S-7 was performed.

1.2. Research purpose

The purpose of the research is to present Polish road sector scheme in order to project governance. It allows international scientists to get familiar with Polish practices and governance regime existing in Polish road sector. It should be also interesting for Polish scientists, who investigate project governance issue. The aim is not only to present scheme of Polish road sector, but also to compare it with European practice. To do that schemes of five countries was described briefly. That allowed to point some findings and proposals for improvement of Polish road sector scheme.

1.3. Research questions

1. What is a quality assurance scheme in Polish road sector? How the structure of the scheme looks like?
2. How Polish scheme looks on the background of European practice, comparing to more developed countries?
3. What are the strengths and weaknesses of the scheme in Polish road sector? Which European practice could work in Poland?

2. Public investment projects

Nowadays we know well the public investments process and every part of its process separately is examined. The Organization for Economic Co-operation and Development (OECD) defines public investment as (OECD, 2014):

“Generally, “public investment” refers to capital expenditure on physical infrastructure (e.g. roads, government buildings, etc.) and soft infrastructure (e.g. human capital development, innovation support, research and development, etc.) with a productive use that extends beyond a year. Public investment comprises both direct and indirect investment. Direct investment is defined as gross capital formation and acquisition, less disposals of non-financial non-produces assets during a given period. Indirect investment is defined as capital transfers i.e. investment grants and subsidies in cash or in kind made by subnational governments to other institutional units. Information in this document focuses on direct public investment, unless otherwise specified.”

Despite the fact that there is well defined public investment process and the high standard project management knowledge about such projects realization, still not everything is clear. There is many issues that scientists are investigating. At present the biggest problem in case of public investment projects, especially in large one at national projects level, is providing a sustainability. The sustainability definition was formulated commissioned by Ministry for Foreign Affairs in Sweden (Sida, 2007):

“The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time. The term environmental sustainability refers to the extent to which an activity can be maintained at a steady level without exhausting natural resources or causing severe ecological damage.”

“Sustainable development: development that supports the ability of future generations to meet their social, economic, and environmental needs.”

The complexity of sustainability issue makes it very difficult to define in large public projects and properly address all of its components. It is the problem not yet solved by scientists and

will be discussed in this thesis. The stage of project responsible for ensuring sustainability and its implementation at every timeframe project level (strategic, technical, operational), as well as every kind of next generation's needs (social, economic, environmental) occurs at the very beginning of project works. This stage includes concept and planning phases and should provide answer whether the project will be sustainable or not. That issue concerns scientists the most.

2.1. Impact of public investments

The Organization for Economic Co-operation and Development (OECD) is an international organization focused on collecting data from number of countries. After analysing data creates recommendations for governments to help foster prosperity and fight poverty through economic growth and financial stability. To help in effective implementation of public investment have created recommendation based on three pillars (OECD, 2014):

- Pillar A: Co-ordinate public investment across levels of government and policies.
- Pillar B: Strengthen capacities for public investment and promote policy learning at all levels of government.
- Pillar C: Ensure proper framework conditions for public investment at all levels of government.

2.1.1. Pillar A

Pillar A contains design and implement strategies of specify investment with focusing on investment aim to serve. The strategy should be related with regional or local strategies with competitive advantages, innovation and potential job creation as an aim. Investment strategies needs to be clearly defined as policy goals (results-oriented), realistic and fully informed. Forward-looking is important feature that helps localities for competitiveness and sustainable development in the context of global trends. Seeking complementarities and reducing conflicts between sectoral strategies should be assured. To do that it is recommended to use strategic framework for public investment to align objectives across ministries and levels of government and minimise administrative barriers to improve co-ordination mechanisms. Collecting data at the relevant sub-national scale to improve knowledge about investment strategies and future decision-making is also required.

Pillar A corresponds also to need of adopting effective instruments for co-ordinating through national and sub-national government levels. It is necessary to point investment opportunities

and bottlenecks. That helps with manage joint policy competencies, avoid cross-purposes, ensure proper resources and capacity to undertake investment, and build trust among actors at every level of government.

The horizontal co-ordination is also mentioned in pillar A. It should be implemented among sub-national governments to invest at the relevant scale. It is necessary to increase scale of economic efficiency and to enhance synergies between policies of linked sub-national governments.

2.1.2. Pillar B

Pillar B is focusing on assessing upfront the long-term impacts and risk of public investments. It is recommended to use versatile, long-term assessments for investment selection. It should including both clarify goals and reveal information. The assessment should be connected with different types of risk and uncertainty associated with public investment, especially with political, social and environmental risks.

The important issue is to engage with the whole investment cycle stakeholders. Stakeholders as public, private and civil society to provide design and implementation of public investment strategies. That is important to enhance social and economic value, and to ensure accountability. Not less important is to find balance among stakeholders views and make effort to prevent disproportionate influence by any group of interest.

Strengthen capacities should include mobilising private actors and financing institutions. Diversity of founding sources and strengthen capacities are desirable. The Public Private Partnerships (PPPs) are great examples of such doing. In PPP case it is important to co-ordinate with the budget process and their potential value-for-money should be compared to that of traditional procurement. The financial involvement is not only possible one. National or sub-national governments should seek in private actors and financing institutions values as expertise to strengthen the capacity of government at different levels.

Pillar B applies also to process of reinforcement the expertise of public officials and institutions involved in public investment and reminds about focusing on results and encourage to learn from experience.

2.1.3. Pillar C

In pillar C recommendation is up to development of fiscal framework adopted to the investment objectives pursued. It is important to set enabling conditions for sub-national governments and make them be able to exploit their own revenue rising potential. Not only in case of finance investment, but also in co-financing arrangements and long-term operations as well as maintenance costs.

Proper framework applies also to requirement of sound and transparent financial management at all levels of government. It requires good practices for budgeting and financial accountability such as transparency costing plan, investment plans occurs in budget strategies and allocation processes. A medium-term budget framework, duly considering long-term operating and maintenance costs should fitting into them.

Promote transparency and strategic use of public procurement is another insurance of proper framework conditions for public investment. It is important to maximise transparency at all stages of the procurement cycle, establish clear accountability and control mechanism. It is recommended to use procurement to ensure effective public service delivery for different levels of government while proceeding strategic objectives.

Pillar C concerns also to tending for quality and consistency in regulatory systems across levels of government. It is focusing on high-quality and coherent regulation while evaluating investment priorities and programmes. Main task is to maximise co-ordination mechanisms to develop coherent regulation through sectors and levels of government. There is place to constant improvement of assess costs and benefits of regulations.

2.2. Four instruments of project governance accountability

Large public investment projects are known as very complex and complicated affairs. A lot of institutions and stakeholders involved makes the governance of such project truly challenging. One of the most significant aspect that should be provide with great accuracy is accountability issue. Accountability as one of essential parts of every major investment project has to be well defined. There are four instruments formulated as a key sections to establish an appropriate process and institutional set-up for accountability (Bent Flyvbjerg et al., 2003):

- Transparency;
- Performance specifications;

- Explicit formulation of the regulatory regime, and clear identification - and where relevance, elimination – of policy risks before decisions are taken;
- The involvement of risk capital.

2.2.1. Transparency

Large public investment projects are planned and implemented by governmental institutions. Those institutions are public interest representatives and manage public financials. That requires authorities to ensure full transparency of such projects. Transparency can be defined as (Fourniau, undated):

“The transparency requirement means, inter alia, that all documents and other information prepared by the government and its agencies should be made available to the public”

The fact that major investment projects are classified as most costly affairs in a society, and it is financed by ordinary taxpayers, makes obvious the necessity of informing citizens fully about ongoing projects, as well as those in planning phase. That approach allows citizens, stakeholders and media to say concerning what they think about them. The communication task should work as two-way communication with all involved in. The importance of communication task should be equal with technical tasks, as environmental and economic ones, right from the early planning stages. The communication should be secured by professional expertise to become effective and contribute to all parties being heard (Bent Flyvbjerg et al., 2003).

Every participating group (stakeholders, civil society, etc.) should be invited from the very beginning, throughout feasibility stage and decision making. Participation should be as representative as possible. It is highly important to find balance among participating groups to avoid any to get to capture and dominate this early stage of processing project. All documentation should be widely available to the general public as they are produced, and feedback received as participating groups' opinions should be used in the feasibility studies and in the decision-making process (Bent Flyvbjerg et al., 2003).

Stage of public consultations is one of the most important processes which makes project society orientated and answers public needs. That leads to conclusion, the more citizen participation the better, such as public hearings, social surveys, arbitration, advisory

committees, citizen panels, citizen juries, citizen initiatives, compensation and benefit sharing, negotiated rule making, mediation, etc. (Bent Flyvbjerg et al., 2003)

Even in case of complexity of information received from feasibility study, according to former projects experience, can be suspected such information to be often unreliable and biased. There are examples when difficulties, to decide whether information received on feasibility stage is state-of-the-art and balanced, or not, appeared. In such cases peer review is recommended to established, both as traditional peer review and “extended peer review” carried out by “extended peer communities” (Bent Flyvbjerg et al., 2003).

2.2.2. Performance specifications

The performance specification requires to imply, except the conventional technical solution-driven approach, a goal-driven one. Implementation of performance specification approach force to considering technical alternatives and apprising the proposed project after decision about all requirements with respect to a possible project. There are opinions that this way of thinking should apply not only to technical aspects of projects but also, for instance, in case of considering external effects of projects (Bent Flyvbjerg et al., 2003).

In fact, the performance specifications are policy objectives formulated as public interest requirements to be provided by the project. Depending on particular project aspect related with, for instance economic performance, environmental sustainability and safety performance (Bent Flyvbjerg et al., 2003).

As more than just technical development of project, performance specifications contains requirements reflected in national objectives like transport or environmental sectors. It is require to specifications to be formulated consistently and enable to be measured in an unequivocal way. The advantage of implementation a performance specification approach is forcing the people to focus on the aim rather than the means. That allows to ask questions more of what we want to achieve or avoid instead of technical questions. The point of using performance specifications is not only to be set before a decision is taken. The process should be started even before major investigations have been undertaken on feasibility stage. That helps with assurance of constructive and reflexive dialogue with active actors with respect to environmental, safety, economic and other issues. Simultaneously the approach makes institutions and actors to play constructive role in achieving objectives they would like to see achieved, and detracts the credibility at major projects simply because they are a part of it (Bent Flyvbjerg et al., 2003).

2.2.3. Regulatory regime

Regulatory regime applies to not only economic rules that have a major influence on the financial and economic project performance. It relates also to rules regulating the supplementary investment that requires assurance of rational use of the project. It is important to specified this regime up front, that helps government review the issues under this heading carefully and identify all costs before any decisions are made. Regulatory regime has also essential influence on project risk (Bent Flyvbjerg et al., 2003).

Regulatory regime allows to finance project in more insecure ways, possibility of using genuine risk capital appears. It touches also price regulation issues, there should be some kind of control or competitive services to make possible verification of potential future operator. Importance of price regulation is equal with risk of rising economic costs and unexpected inefficiencies, what should be taken under consideration. There are needs that have to be mentioned, such competition legislation favours combating dominant behaviour what is also controlled by allowing for competing services. It leads to situation that the economic regulatory requirements, in case of entity operating a given facility, can be consequently very limited, for instance limitation of requiring disclosure of financial information like setting the tariffs and the like (Bent Flyvbjerg et al., 2003).

2.2.4. Risk capital

When it comes to large project investments including multibillion-money range the uncertainties involved are significant. That leads to problem with accountability and the decision-making whether the investment should be undertaken or not. Based on experience, it is known that government itself is not capable of enforcing accountability efficiently with respect to, for example decisions on major infrastructure investments. The possible solution of this problem could be involvement of capital, partly in form of genuine risk capital. That arrangement would cause participation of private financiers in the project without a sovereign guarantee. It leads to significant involvement in the form of risk capital what makes ordinary citizen to not carry any, or only limited, risks (Bent Flyvbjerg et al., 2003).

Genuine risk capital is motivated by pure economical requirements consisting on future income, the return of investment. To motivate people to invest their savings in the long uncertain investment is really challenging. In such cases the decision whether to build or not is highly motivated by economic issues and there is no objective way to measuring the cost of

that uncertainty. That enforces governmental institutions to ensure ordinary people their savings would be placed in hands of people who can be held accountable. Such dependence on private financiers willingness to invest in a project, when they take a risk of a wrong decision, is an objective guarantee that a project will be implemented only in case of real demand for it (Bent Flyvbjerg et al., 2003).

Private financiers decision to involve into project will also benefits during implementation. The control of the project will be improved by more effective monitoring influencing better final design, construction and operation, as well as controls against constructions delays (Bent Flyvbjerg et al., 2003).

2.3. Accountable public investment project decision making – two main approaches

According to described above instruments to secure accountability, there are two main alternatives for developing and reaching accountable decisions on whether a public investment project will be implemented or not. The first alternative is based on the build-operate-transfer (BOT), that means it is based on the assumption regulated by the concession. The second alternative is based on construction and operation of a project made by a state-owned enterprise (SOE). There is claimed that both alternatives at least in one third cannot secure required capital by government guarantees. The alternatives are presented in tables below (Bent Flyvbjerg et al., 2003).

Table 1 Alternative 1: the concession approach to project development

Steps	Actions	Responsibility
1.	Undertake policy study; publish policy document	Government
2.	Prepare terms of reference; and recruit consultants to draft performance specifications	Government
3.	Prepare draft performance specifications based on government policy objectives, laws and regulations	Consultants
4.	Prepare terms of reference; recruit consultants to prepare feasibility study	Government
5.	Prepare terms of reference; recruit consultants to prepare plan for public involvement (public hearings, stakeholder group involvement, peer review, etc.)	Government
6.	Prepare pre-feasibility study; if study indicates an unfeasible project, the process may stop here	Consultants
7.	Prepare Consultation Document 1, to be used for wide consultations with public and stakeholders	Government
8.	Consultation with public, stakeholders and regulatory bodies	Government

9.	Prepare terms of reference; recruit consultants to: propose regulatory regime; do further analysis of additional, associated costs; prepare risk management plan; and make proposals for operation, etc.	Government
10.	Prepare Consultation Document 2 for wide consultation with public and stakeholders	Government
11.	Prepare Final Performance Specification Document	Government
12.	Prepare Decision Document to identify: <ul style="list-style-type: none"> • performance specifications • financing conditions for operation • risk management • mode of operation • tender procedures, if relevant • regulatory regime • cost estimates and financing conditions for additional associated costs 	Government
13.	Develop necessary legislation and make decision in Parliament to stop or go ahead with project	Government/ Parliament
14.	If project is ratified, undertake pre-qualification of bidders	Government with assistance of consultants
15.	Prepare shortlist and ask for bids	Government with assistance of consultants
16.	Evaluate bids, including acceptance from performance point of view; if no bids received, or bids fail to meet performance specifications and bidders not willing to modify their bids accordingly, the process stops here	Government, including relevant regulatory bodies
17.	Select concessionaire, negotiate and sign preliminary agreement	Government with consultants
18.	Prepare and circulate Information Document; publication subject to review by Auditor-General; at this point selected concessionaire can initiate final designs to obtain: (i) final permits from regulatory authorities (ii) bids from contractors	Government and concessionaire
19.	Submit negotiated agreement for approval and signature by relevant authorities and concessionaire	Concessionaire and government
20.	Prepare detailed design and obtain final clearance from environmental and safety authorities; if clearance not obtained the project may be terminated at this point	Concessionaire and government
21.	Implement agreement	Concessionaire
22.	Monitor and audit agreement	Government

Source: (Bent Flyvbjerg et al., 2003)

Table 2 Alternative 2: the state-owned enterprise approach to project development

Steps	Actions	Responsibility
1-13.	Same as in Table 1	
14.	If project is ratified, establish state-owned enterprise(SOE)	Government
15.	Identify financial performance requirements to be met by SOE; negotiate preliminary agreement for these requirements	Government
16.	Require SOE to negotiate preliminary agreement with potential financiers; if agreement not reached, project may be terminated at this point	Government
17.	Prepare and circulate Information Document; publication subject to review by Auditor-General	Government
18.	Submit agreement between government and SOE for ratification and signature by relevant authorities and SOE	Government
19.	Implement agreement	SOE
20.	Monitor and audit agreement	Government

Source: (Bent Flyvbjerg et al., 2003)

The two alternative approaches presented above are examples of how to institute accountability. The example of a build-operate-transfer approach is more like alternative in a number of contexts. It would be best to analyse building bridges and tunnels across waters where competing ferry lines will be in operation after establishing alternative. The state-owned approach is more orientated to risk capital involvement and provide at least one third financing from private savings. The advantage of SOE approach disclosures in offering better opportunities for ascertaining that the operator has an appropriate management structure (Bent Flyvbjerg et al., 2003).

2.4. Characteristics of governance framework

Governance is a term that can be defined a number of ways depending on which public life area is referred to. As general governance contains issues related with complex steering of people and organizations in order to achieve some purpose (often economical). In case of large project governance, the definition of public governance defined by OECD suits well (OECD, 2005):

“Governance” refers to the formal and informal arrangements that determine how public decisions are made and how public actions are carried out, from the perspective of maintaining a country’s constitutional values in the face of changing problems, actors and environments.

To provide a large investment project relevance and sustainable it seems to be essential to ensure best possible project governance. To do that was formulated governance framework what sets this issue in order (Klakegg et al., 2009):

Governance framework: an organized structure established as authoritative within the institution, comprising processes and rules established to ensure projects meet their purpose.

The governance framework presented below was based on case studies carried out in Norway and Great Britain. Those two countries was chosen because of quite fresh valid frameworks that was rational to compare. In case of proper approach to the government framework research it wasn't entering blindly. Two starting assumptions was made, first the theories of what a project governance is, was established, second, the variations between frameworks was established as well, to point how to carry out the case studies (Klakegg et al., 2009).

Table 3 Characteristics of a governance framework

Category	Theme	Explanation	Categories of Characteristics
1. The process of development	Background – why and how the framework came to be	Setting the stage to understand the context and explain the framework’s initiation and development up until current edition	Political setting; administrative setting; social economics; traditional market mode of operation; initiators; when the framework was officially introduced
	Explicitly stated purpose of the framework	Identify the official policy, the statement the framework in founded on	Any explicit statement of purpose (political), made by the decision makers
	Current status and how framework in maintained and developed	Identify how the framework in implemented, improved, and developed	Political and administrative anchoring; policy/strategy of implementation; policy/strategy of further development and assessment; results of the implemented framework
2. Embedded governance principles	Governance principles	Descriptions and characteristics of embedded governance principles	Establishing a common worldview and stabilizing rules of conduct; differentiation between projects based on complexity, etc.; mechanisms to reduce complexity, distribute risk, and trigger governance processes in response to environmental turbulence
3. The structure of the framework	Current structure of the framework	Describe and define the current framework structure	Explicitly stated ends/goals for the framework; users; framework elements; framework structure; vertical and horizontal integration; extent and control of independent/outside engagement
4. Detailed governance elements	Framework elements concerning cost estimation and time planning	Descriptions/characteristics of framework elements concerning cost estimation and time planning in early phases of the project	Elements specifically addressing the development of cost and time estimates; governance principles concerning cost estimation/control; systematic analysis of the effect of these principles
	Etc.	-	-

Source: (Klakegg et al., 2009)

Table above presenting a systematic checklist of framework characteristics for public investment projects. The characteristics was divided into four categories. This structure of framework was made to become a useable tool that giving basis for empirical studies (Klakegg et al., 2009)

2.5. Perspectives on public decision-makers processes

The decision-making process is a complex and complicated. There are few perspectives that secure quality assurance system and makes decision-making process more transparent. The whole issue is defined by many elements, a control or regulation process, a planning process, a quality-assurance process, a technical and an economic process; what of course is with political frames and administrative process connected to the central level. The perspectives can be defined as follows (Christensen, 2009):

- The economic-rational perspective,
- The instrumental-structural perspective,
- The cultural-institutional perspective,
- An environment perspective,
- A garbage can perspective.

To illustrate main element of each perspective and their relevance it was summarized by putting into table below (Christensen, 2009).

Table 4 Perspectives on public decision-making process

Type of perspective	Sub-elements	Relevance and use of the perspectives for the following questions
Economic-rational	-Principal-agent -Public choice -Transaction cost -Capture	-The role of self-interest for central actors -Apriori goals and unambiguous means-end thinking -The central role of political executives and private consultants
Instrumental-structural	-Hierarchical -Negotiations	-Fulfilling main aims -Influence pattern in the system -Separate quality assurance system, adding QA1 -Structural complexity -Quality of organizational thinking
Cultural-institutional		-Role of traditional project culture -Developing new project culture
Environmental	-Technical -Institutional	-Technical pressure to improve major public project planning and quality -Quality assurance as myth and symbol
Garbage can		-The complexity of the quality assurance system

Source: (Christensen, 2009)

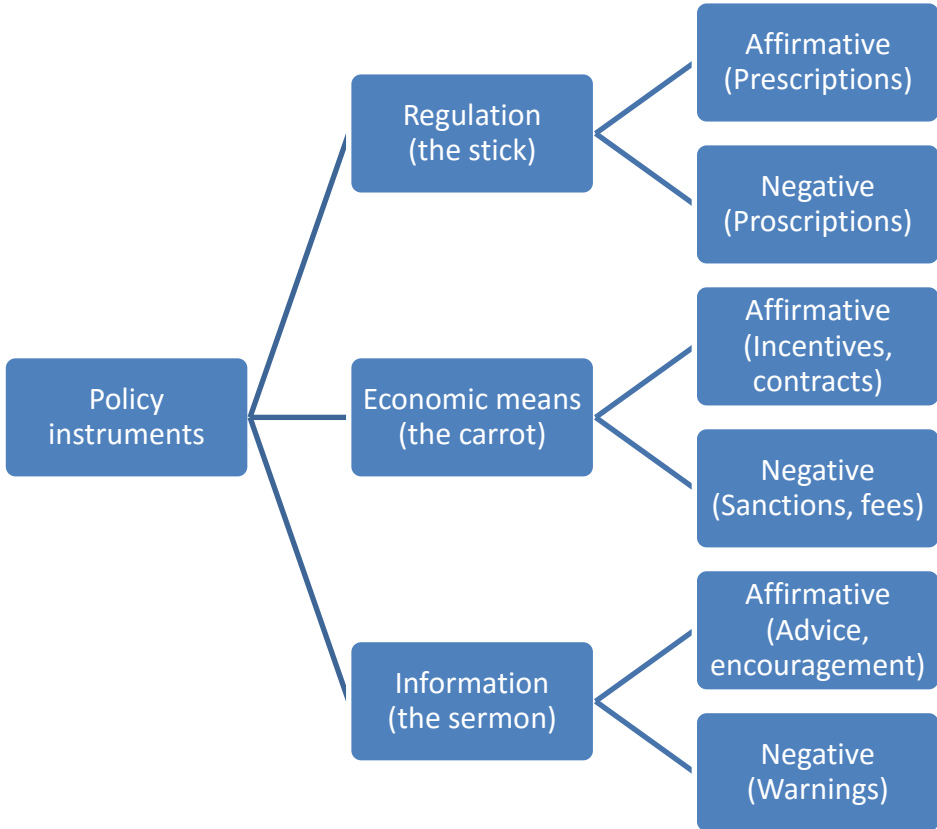
Each perspective carry specific issues related to different stages and types of decision-making process. The economic-rational perspective is focusing on “economic man” concept (March and J.P., 1989), that defines what drives actors in decision-making process and how their approach can be implement to the structure and functioning of the public sector. The instrumental-structural perspective is also concentrated in analytical aspect (March and H.A., 1958), as economic-rational perspective is concerned in examining the “logic of consequence”. Except this similarity the instrumental-structural perspective is more focused on bounded rationality and satisfying solutions, while economic-rational perspective is based on full rationality. The cultural-institutional perspective works differently than two above. Gradual adaptation defines this perspective. It provides to external and internal pressure a public organization, that goes through a process of institutionalization (Selznick, 1957). Thanks to that process a cultural features of a unique character, encompassing informal norms and values are proceed to be developed. An environmental perspective is divided into two parts (Meyer and Rowan, 1977): the technical and the institutional. First one is related to technical activities in an organization. As example the EU directives are a technical environment for Norwegian government organizations. Institutional environment mainly consists of many myths circulating, as for example how to organize public organizations. A garbage can perspective is divided into two observations – most actors are part-time actors.

That provides to problems with their attention and capacity, what in most decision-making situations makes the stimuli for action ambiguous (March and Olsen, 1976). This means that decision-makers behave unpredictably, problems and solutions are defined ambiguous, and decision making situations are flexible and subject to change (Christensen, 2009).

2.6. Policy to facilitate public management reforms

The political trends are changing through decades what makes it more and more liberal. To follow that trends various types of public management reforms are necessary. The goals are always the same, to create effective and accountable institutions in the public sector. Assurance of good governance by improving performance and promote economic development is an main objective. Higher autonomy of public and private institutions needs to be followed by increasing control measures and regulations. To ensure good governance process, facilitate autonomy of public sector investments, and increase efficiency the policy instruments was established (Samset et al., 2006).

Figure 1 Policy instruments to improve governance in public sector



Source: (Bemelans -Videc et al., 1998)

As see above the instruments can be affirmative or negative as well. Regulations can provide rules to be followed (prescriptive), or specifying what is not allowed (proscriptive). Economic means can offer terms of benefits or refunding arrangements (incentives), or terms of taxation or fees (sanctions). Information can be formulated in terms of encouragement giving guidance (advice), or in terms of descriptions of pitfalls, etc. (warnings) (Samset et al., 2006).

The figure above was a base for the World Bank model to enhance of state capability. According to that model OECD has formulated what is termed the principles of good governance (OECD, 2002):

- Accountability.
- Transparency.
- Efficiency and effectiveness.
- Responsiveness.
- Forward vision.
- Rule of law.

The policy instruments mentioned above was used as a reference to create mechanism to improve governance of public investment projects (Samset et al., 2006).

Table 5 Mechanisms to Enhance State Capability: Three Drivers of Public Sector Reform

	Rules and Restrains	Voice and Partnership	Competitive Pressure
Rules and Restrains	-Judicial independence -Watchdog bodies -Budgeting rules -Public auditing rules -Decentralisation		-Merit-based Recruitment-promotion
Voice and Partnership		-Community action -Public-private deliberation councils -NGO support -Decentralisation	-Client Survey
Competitive Pressure	-Merit-based Recruitment-promotion	-Client Survey	-Competitive service delivery -Decentralisation

Source: (World Bank, 2000)

2.7. Problems encountered up-front in public projects and principles for front-end phase

Public investment projects meets many problems before its implementation. Before facing problems of cost efficiency, delays and cost overrun during the project's implementation, there is need to handle deficiencies in the analytic and the political processes. Interactions between analytics and decision makers must be clear to ensure final decision be successful. The fundamental challenges appears as follow (Samset et al., 2006):

- Tactical budgeting in responsible agencies at various levels
- Choose the most relevant project concept
- Ensure a transparent and democratic processes
- Avoid adverse effects of stakeholder's involvement and political bargaining
- Make process predictable in order to possibility of change in political authorities

The biggest challenge for project governance framework is to comprise the processes and systems that need to be assured on behalf of the financing party what makes the project successful. There are few aspects that regulatory framework has to ensure (Samset et al., 2006):

- Adequate quality at entry
- Compliance with agreed objectives
- Management and resolution of issues that may arise during the project
- Standards for quality review of key governance documents

There are two main approaches how to define a governance regime that will cover all requirements of the different project phases, especially front-end one. Miller and Hobbs (Miller and Hobbs, 2005) propose to leave traditional conception of governance as a static, binary, hierarchical process. They pointed at fact that project is a time-dependent and self-organizing process. It allows to adapt governance regime and update during the project implementation. Rather than focusing on one best regime structure, make it flexible that will bear various of issues in different phases of the project life cycle. Second approach was formulated by Flyvbjerg (Bent Flyvbjerg et al., 2003), the authors pointed risk-negligence and lack of accountability as main issues that influencing projects and make them unsuccessful. Those two issues allows project promoters to make project meets their own interests,

economic or political, not to ensure public welfare. To avoid such situations the cure was proposed (Bent Flyvbjerg et al., 2003):

- Risk and accountability should be much more centrally placed in megaproject decision making
- Regulations should be in place to ensure that risk analysis and risk management is carried out
- The role of government should be shifted from involvement in project promotion to keeping an arm's-length distance and restricting its involvement in the formulation and auditing of public interest objectives to be met by the megaproject
- Four basic instruments should be employed to ensure accountability in decision making:
 - Ensuring transparency
 - Specifying performance requirements
 - Making explicit rules regulating the construction and operations of the project
 - Involving risk capital from private investors (willingness to invest as a test on the viability of the project up-front).

2.8. Problems with front-end phase

There are two main problems that occur in the front-end phase. Lack of relevance and lack of sustainability were pointed out by 80 respondents as most important and significant (Klakegg and Haavaldsen, 2011).

“The most important reasons for lack of relevance are: user needs are unknown, misunderstood or ignored, and project objectives are unknown or misunderstood. The most important reasons for lack of sustainability are: lack of commitment to the project from key stakeholders, conflict over objectives and/or strategies concerning the project, low economic and financial benefits compared to and operational costs, and business or other conditions changing between concept stage and final delivery.”

The results of the survey was placed in the table (Klakegg, 2010):

Table 6 Main results of a survey of the most important reasons for lack of relevance and sustainability.

Problem	Reasons
RELEVANCE	
User needs are unknown, misunderstood or ignored	Users' needs are ignored by planners and decision makers due to political or personality reasons
	The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs
Objectives of the project are unknown or misunderstood	The objectives of the project are not stated at all, or are expressed in a very unclear manner
	The decision makers do not understand the planners' formulation of goals and objectives
SUSTANABILITY	
Lack of commitment to the project from key stakeholders	Not identifying that the project outcome has weak support in its owner – and financing organizations
	Neglecting that the project outcome has weak support in management or accepting weak leadership
Conflict over objectives and/or strategies concerning the project	Neglecting/not solving conflict over priorities among key stakeholders
	Neglecting powerful interacting organizations/individuals in opposition to the project
Economic and financial benefits are low, compared to investment and operational costs	Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not
	Bad cost effectiveness is accepted
Business or other conditions change between concept stage and final delivery	Planning optimism (underestimated costs) misleads the decision makers, deliberately or not
	The political and administrative setting is changing regularly

Source: (Klakegg, 2010)

According to the survey, the lack of relevance and sustainability are the biggest problems that occurs while front-end phase. In reference to those problems it becomes essential to present definition of relevance (sustainability definition was presented in point 1.1) (OECD, 2002):

“The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies. Note: Retrospectively, the question of relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.”

As a conclusion of the survey there were pointed problems that should be handled in project governance framework. It is important to make sure that in front-end phase are considered issues which were claimed as problems in the survey (Klakegg, 2010):

Relevance:

- The users' needs are unknown, misunderstood or ignored
- The objectives of the project are unknown or misunderstood

Sustainability:

- Conflict over objectives and/or strategies concerning the project
- Lack of commitment to the project from the key stakeholders
- Economic and financial benefits are low, compared to investment and operational costs
- Business or other conditions change between concept stage and final delivery

Relevance problems seems to be easier to solve by better planning and bigger involvement of decision makers and stakeholders. Sustainability issue is more complicated and a solution is not clear and obvious. It is related to long term assessment what is obviously more complex and requires much bigger involvement. Nevertheless those two issues seems to be most significant while front-end phase. This is priority to handle relevance and sustainability in project governance frameworks. Only when these matters are attended to, other issues can be set as priorities (Klakegg, 2010).

2.9. Importance of Sustainability in front-end phase

Sustainability is a term that became popular and widely used. Every governance framework says about sustainability importance and requires to use it during project planning. Despite the awareness that sustainability is one of the most important parts in project governance regime, its complexity is still neglected. Understanding that sustainability in context of fulfilling purpose and prioritized beneficiaries and of the plethora of other affected groups is also of relevance. To meet every aspect of this complex issue, it can be divided into three major goal levels in the cause-effect chain. The goal levels was formulated as follows (Volden et al., 2015):

- Strategic level (refers to the political level that provides the project with a purpose according to valid policy, relevant priorities and budgetary restrictions)

- Tactical level (refers to specific needs of targeted project beneficiaries)
- Operational level (refers to the delivery of facilities and services according to qualitative and quantitative specifications usually set in contracts)

Many public investment projects are founded without a clear definition of these three goal levels and in fact usually are able to follow objectives from the political arguments that had led to the decision of the financing a particular project. It does not mean that skipping it is rational, define goals at every level are important to secure intended sustainable results. At the end when assessment are not addressing sustainability issues on all three goal levels separately, it can cause problems. Table below shows matrix consisting of the goal levels and impact issues, correct sustainability assessment should check all spaces in this matrix, what enables to proper evaluation, if the project meets the sustainability conditions (Volden et al., 2015).

Table 7 Suggested criteria for ex ante evaluation of sustainability of project benefits

Evaluation of sustainability Selected goals, their timelines, risk resilience & relative significance	Broadness to be secured by these resulting benefits...		
	Economic Impacts	Social Impacts	Environmental Impacts
Strategic goal(s) Timeline: Approx. 100 years Risk resilience: Low Relative significance: High	(list of expected net benefits)	(list of expected net benefits)	(list of expected net benefits)
Tactical goals Timeline: Approx. 10 years Risk resilience: Medium Relative significance: Medium	(list of expected net benefits)	(list of expected net benefits)	(list of expected net benefits)
Operational goals Timeline: Approx. 1 year Risk resilience: High Relative significance: Low	(list of expected net benefits)	(list of expected net benefits)	(list of expected net benefits)

Source (Volden et al., 2015)

As the table above illustrates to provide proper evaluation all spaces in the table should be checked. Every goal level have to be referenced to three components: “Timeline perspective”, “Broadness of impacts” and “Resilience to risk”. Complete matrix can contribute to improved transparency and decrease the problem with presence of goal conflicts. This evaluation leads also to better understanding and communication about weighting of different effects, and in addition can help in prioritization the project alternatives. (Volden et al., 2015).

Authors of the assessment proposed above pointed the need of improving project appraisal tools, practices and governance frameworks also. Based on empirical conclusions, the traditional CBA seems to be far not enough to measure project sustainability properly. To answer to the needs of improving project sustainability approach, some measures was proposed (Volden et al., 2015):

- The underlying societal needs and their stability, to which an investment project is an answer, ought to be considered according to a longer time frame than is practiced today.
- Choice of temporal horizon in an analysis ought to be discussed and justified to a greater extent that is common today, and should in most cases be extended.
- The perspective on project impacts ought to be broadened, systemically aiming to assess more complex impacts such as environment impacts and other side effects. Unpriced impacts must be allocated a place in the analysis.
- In cases where societal needs are conflicting, the terms for balancing must be made clear.
- Due to the discounting of future impacts, a CBA will put a higher weight on the interests of present-day generations. Therefore, inter-generational equity must always be discussed and appropriately weighted in the analysis, Likewise, intra-generational distributional effects ought to be identified and described more thoroughly.
- It is relevant to identify political uncertainty. Performing assessments of real options are particularly important in cases where future relevance of an investment projects is uncertain. To a larger degree than today, the realism of financing operations and maintenance in the long run ought to be questioned.

As shown above an approach to project sustainability should be widely considered decision makers especially. The CBA is not a sufficient tool to handle every aspect of project sustainability. Cost Benefit Analysis provides only most important assessment where majority of issues are expressed in financial terms. Using discount rate makes the assessment biased where contemporary effects overwhelm effects for future generations. Problem with neglecting effects for future generations seems to be one of the biggest which refers to decision makers, and becomes a huge challenge for scientists to convince decision makers that this issue needs improvement (Volden et al., 2015).

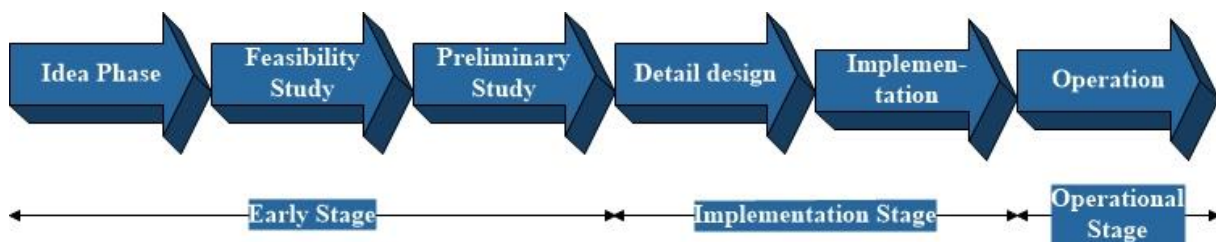
3. Governance scheme of public investment projects in Poland

This thesis' aim is to present and propose an improvement of Polish governance regime for strategic roads projects on national level. In Poland exist no general regime for all kinds of public investment projects that could be possible to describe and compare to other countries regimes. In order to lack of such regime it was necessary to narrow the research and focus on one sector. Roads sector was chosen in case of huge improvement of this sector in last decade in Poland. European Union grants and big need of improvement road infrastructure in Poland made Polish land an one big building site. Numerous of highway and expressway projects are still in implementation and planning phase what encourages to investigate how governance regime works and what could be possibly improve.

3.1. Project phases

Public investment project, in this case infrastructure one, can be divided into few phases. Today when knowledge about operational aspects of project implementation is wide and complex, the most concerning and challenging phase is Early Stage of the project. It is Early Stage where most valid decisions about project are made. The whole process of project performance can be divided as in the figure below (Samset et al., 2015):

Figure 2 Project phases classification



Source: (Samset et al., 2015)

A study of more than 1,000 projects that were done by the World Bank is perhaps the one of best justifies the importance of early phase (World Bank, 1996). A detailed review of the scope and quality of pre-investigation, prior assessment and design before the projects were implemented were compared with whether they subsequently appeared to be successful or not. The study concluded that 80 percent of the thoroughly prepared projects were successful, while 65 percent of ones that were initiated without proper preparation proved to fail (Samset et al., 2015). A similar study of 23 Norwegian projects gave similar results (Whist and Christensen, 2011).

As mentioned in the first chapter, Early Stage and decisions made on that stage have biggest influence on project sustainability. When it comes to infrastructure projects a sustainability term becomes a priority. The long perspective of such projects requires thoroughly foreseen costs and benefits of every kind of impact. Only complex approach to this issue can secure success of a project.

The roads sector in Poland has its own phase classification to secure success of public infrastructure projects.

Figure 3 Infrastructure (roads) projects phases classification in Poland



Source: Own elaboration

3.1.1. Idea Phase

In this phase the idea of project shows up. In Poland the ideas of new infrastructure projects are formulated in collective document Transport Development Strategy 2020 (with perspective to 2030). TDS sets major transport development directions in Poland. Strategy includes all transport means: roads, railways, air, maritime, inland waterways, urban and intermodal. TDS is one of 9 integrated strategies that are created according to two national documents of higher order: Long-term (Ministry of Development, 2012) Strategy and National Development Strategy 2020 (Ministry of Infrastructure and Civil Engineering, 2016).

TDS includes priorities of EU policies – transport, regional, innovation and environmental protection. There is also reference to European Commission proposal from White Paper concerning transport. The Council of Ministers adopted Transport Development Strategy 2020 in 22 January 2013 (Ministry of Infrastructure and Civil Engineering, 2016).

Every infrastructure investment should meets some public needs and/or improve facilities to general economic growth. To ensure that the goal tree was established (Ministry of Infrastructure and Civil Engineering, 2013):

Table 8 Structure of Transport Development Strategy goals

MAIN GOAL – Increasing accessibility of transport, improving the safety of road users, and efficiency of transport sector through the assurance of coherent, sustainable and user-friendly transport system at the national, European and global level.								
STRATEGIC GOAL 1: Creation of integrated transport system			STRATEGIC GOAL 2: Creating conditions for the smoothly functioning transport markets and developing efficient transport systems					
Specific goals:			Sectors					
The creation of modern, coherent transport infrastructure networks			Road Transport	Railway Transport	Air Transport	Maritime and Inland Waterway Transport	Urban Transport	Logistic
1. Improving the organization and management of the transport system								
2. Safety and Reliability								
3. Reducing the negative impact of transport on the environment								
4. The creation of rational model for financing infrastructure investments								

Source: (Ministry of Infrastructure and Civil Engineering, 2013)

To make ideas of public investment projects more rationale and economically efficient it is important to make general strategy more detailed by formulated auxiliary goals. Such goals was formulated in table below (Ministry of Infrastructure and Civil Engineering, 2013):

Table 9 Main directions of interventions stated in Transport Development Strategy 2020

Road transport	
Goal 1	Development of highways and expressways road system (accordingly to The Council of Ministers' decree from 20 th of October 2009) (Council of Ministries, 2009)
	Development (with local authorities) local roads and their connections with national roads
	Elimination of transit traffic from city centres by developing ring roads in areas most loaded by traffic
	Development of safety traffic infrastructure
	Development of infrastructure of innovative technological solutions to optimize the traffic flows
Goal 2	Model of organization and management of system will be based on: close cooperation between central and local government, infrastructure managers and operators to ensure efficient, safe and secure transport; impact on the demand for transport services and the implementation of new technological solutions
Goal 3	Ways of intervention will be focused on:
	Safe behaviour of traffic participants
	Safety road infrastructure
	Safety vehicles
	Effective rescue system and medical help
Goal 4	Transport development 2020 (with perspective to 2030) will be based on:
	Modal balance of diversity and complementarity of transport means within the system of national and international networks
	Supporting innovative transport arrangements least polluting
	Appropriate management of demand for transport traffic
	Implementing innovative traffic management systems in particular sectors to help reduce the environmental pressure generated by transport
	Modernization and development of transport infrastructure (linear and pint) corresponding to the EU and national standards, and ecological requirements (e.g. By considering the regulations regarding the protection of natural areas and species, including the Natura 2000 network, the protection of the marine environment and coastal)
Goal 5	Modernization of all kind of vehicles, devices and equipment in order to bring it to the state corresponding to the EU and national standards and environmental requirements
	A necessary condition of maximizing the efficiency of financial resources is the appropriate level of interdependence between all instruments (the state budget, funds from the EU capital market, private investors and emerging new credit guarantee instruments). The budgetary resources and EU will be allocated in priority to the implementation of the current investment plans (revitalization and construction). These investments will be made and implemented in a manner that any subsequent maintenance taking into account, among others, the principle of "user pays".

Source: (Ministry of Infrastructure and Civil Engineering, 2013)

On strategical level the goals are not the only prioritizing issue that needs to be fulfilled in Public Investment Projects. Other issue that seems to be most important is to ensure financing. This is the final aspect that is decisive whether project will start or not. In Poland financing road sector is based on (Parliament, 2009):

- National Road Fund (powered by: fuel surcharge, bonds issue, EU budget, loans, and fees from electronic collection system “viaTOLL”) – funds for building, rebuilding and other capital expenditure.
- National budget – funds for rebuilding, preparations works and maintenance, and management of roads network.
- Others potential financial source – PPP’s, EBI loans, project bonds, etc.

There is recommendation due to the need for full internalisation of costs and the implementation of the “user pays” principle. The aim must be to modify the current functioning of the system of financing roads that the charges for access to infrastructure supply NRF were spent mainly on the maintenance and repairs (Ministry of Infrastructure and Civil Engineering, 2013).

As presented above the idea phase in Poland is based on strategic planning the whole infrastructure sector according to Transport Development Strategy. That enables to provide infrastructure project ideas compatible with National Development Strategy which is overarching document stated by government. In case of roads infrastructure for the rest of roads project process the General Directorate of National Roads and Motorways is responsible.

3.1.2. Preliminary design

Preliminary design phase is based on Network Study which is first phase where General Directorate of National Roads and Motorways is responsible. There is Ordinance of General Director of National Roads and Motorways where next steps of road projects process are described.

Network Study involves the actualization of road network directions, its functions, and external and domestic connections. It should reference to developing priorities at national and regional levels. The main task for Network Study is to check potential changes from the perspective of effectivity of road sector. It is recommended to make wider assessment and

include intermodal issues (connections road-railway-airports) (General Director of National Roads and Motorways, 2009).

According to Ordinance of General Director of National Roads and Motorways the Network Study should consist as follows (General Director of National Roads and Motorways, 2009):

- Localization of developing object
- Project background
- Identification of problems to solve and projects objectives
- Concept and planning conditions of developing object
- Solution analysis
 - Status of existing network
 - Guidelines for planning solutions
 - Formulation of analysed solutions (alternatives of network development)
 - The traffic forecast for considered options
- The analysis of impact to the environment by examined solutions
- Cost of proposal changes
- Planning and financing investment issue
- Summary and conclusions

3.1.3. Administrative phase

Administrative phase is divided into two main parts that are independent but must be fulfilled respectively. Firstly the Decision on Environmental Conditions must be obtain, after that the application for Permission for Road Investment Implementation can be executed.

3.1.3.1. *Decision on Environmental Conditions*

The application is divided into three main parts that must be fulfilled to obtain Decision on Environmental Conditions which is necessary to continue the process of road project. In Ordinance of General Director of National Roads and Motorways the three parts looks as follows (General Director of National Roads and Motorways, 2009):

- Corridor Study with multi-criteria analysis (*Studium Korytarzowe*)
- Technical-Economic-Environmental Study (*Studium Techniczno-Ekonomiczno Środowiskowe – STEŚ*)
- Required documents to obtain Decision on Environmental Conditions

3.1.3.1.1. Corridor Study with multi-criteria analysis

This is the basic design document comprehensively describing intention of new road investment. Corridor Study is first project documentation where the location of road corridor on land is stated in terms of regional and local geographical, natural and social requirements. This document should be treated as a first (preliminary) planning and development document of the road network and in such form should be subjected to public consultation on local autonomy and institutions responsible for land use where the investment will be located. Corridor Study with multi-criteria analysis consists of two stages (General Director of National Roads and Motorways, 2009):

- Stage I – Specifying the location of possible corridors to carry out road route or area for specific project implementation (road junctions, bridges, tunnels, crossing).
- Stage II – Formulating variants of technical solutions and its comprehensive (multi-criteria) preliminary assessment.

Corridor Study task is also to assess the reasonableness of project intention for investor (in that case GDDKiA - General Directorate of National Roads and Motorways) and says whether the project should be process further or not. The main aims of Corridor Study are (General Director of National Roads and Motorways, 2009):

- Specifying field corridors for the courses of route variants.
- Preliminary analysis of potential variants of road covered by the investment project and its links with the public roads network with particular consideration of spatial relations between different areas and their functions (e.g. protected by nature conservation or protection of monuments) with focus on acts of local law (local zone plans) and studies of conditions and directions of spatial development of municipalities.
- Choice of variants interfering with the local conditions the least, including the areas and objects covered by the nature and monuments protection. This variants are to be subjected to further consideration in the next stages of documentation process.

On Corridor Study should be excluded solutions technically unrealistic, not fully secured, economically doubtful, the least favourable natural and socially. Other variants should be evaluated and ranked on the ranking list specifying the preferences of the study authors (General Director of National Roads and Motorways, 2009).

3.1.3.1.2. Technical – Economic – Environmental Study

Technical-Economic-Environmental Study (STES) should be proceed after Corridor Study with multi-criteria analysis. STES is more detailed than Corridor Study and its aims are accordingly more detailed (General Director of National Roads and Motorways, 2009):

- Initial formulation of material and financial scope of the project and its economic efficiency determination.
- Clarification of different variants of the routes (based on variations analysis and opinions obtained) and the final determination of the types and basic technical buildings parameters.
- Provide an information to make an initial decision by the investor about expediency, scope, time horizon of project implementation.
- Enable the possibility to obtain Decision on Environmental Conditions.

The Technical-Economic-Environmental Study task is to make complete assessment of chosen variants as a result of Corridor Study with multi-criteria analysis. Contents of STES should looks as follows (General Director of National Roads and Motorways, 2009):

- General part
- Geological-engineering study
- Project documentation – Road part
- Project documentation – Engineering subjects
- Analysis and forecast of traffic
- Traffic management study
- Audit of Road Safety
- Economical-Financial study
- Environmental protection study
- Summary and conclusions
- Technical and organizational guidelines for project implementation

The scope of each chapter needs to be adopted to the specifics of a particular investment.

3.1.3.1.3. Required documents for Decision on Environmental Conditions

Obtaining the Decision on Environmental Conditions is required for the planned projects that can have significant impact on the environment and projects that can potentially have a

significant impact on the environment. The application for the Decision on Environmental Conditions in case of projects with significant impact on environment requires report on the impact of the enterprise on the environment. In case of projects that have potentially significant impact on environment an information card of the enterprise is required. To the application needs to be attached also (General Director of National Roads and Motorways, 2009):

- Copy of cadastral map of the project which will be implemented covering the area which will be affected by such project, certified by the competent authority.
- Excerpt from land records covering the project affected area.

Considering the impact of the project on the environment its need to be embrace the most adverse effects. In most cases the noise is an crucial issue. On registration maps should be marked area for 10-15 years' time horizon after commissioning road to public use, taking into consideration installation of acoustic shields (General Director of National Roads and Motorways, 2009).

3.1.3.2. Permission for Road Investment Implementation

The application for Permission for Road Investment Implementation requires four elements. In case of fulfilling all requirements the project operational phase is allow to start. To achieve it the follow steps must be done (General Director of National Roads and Motorways, 2009):

- Geodetic-mapping study for project purposes and formal-law referring to real estate.
- Road Concept Program.
- Construction Project
- Required documents to obtain Permission for Road Investment Implementation

3.1.3.2.1. Geodetic-mapping study for project purposes and formal-law referring to real estate

There are strict requirements stated by General Directorate of National Roads and Motorways that need to be fulfilled by any kinds of maps and situational plans. Graphical attachments to design documentations needs to be prepared in numerical form in one of the flat rectangular coordinate systems defined in Ordinance of the Council of Ministries of 8 August 2000 (Council of Ministries, 2000). As contracting authority GDDKiA requires specified format named Standards of Property Data Collection stated in Decree of General Director of National Roads

and Motorways of 28 July 2005 (General Director of National Roads and Motorways, 2005). There are two main indicative plans that need to be made for further work in Road Concept Program and Construction Project (General Director of National Roads and Motorways, 2009):

- The route of planned road in the network of existing roads – scale 1:100 000.
- Indicative Plan of planned road and the links with other public roads – scale 1:25 000
or
1:50 000.

3.1.3.2.2. Road Concept Program

Road Concept Program can be start after obtaining Decision on Environmental Conditions for the chosen variant of planned road. The role of Road Concept Program is to deliver to investor (General Directorate of National Roads and Motorways) adequate material to make a choice and take decisions. Main aims consists of (General Director of National Roads and Motorways, 2009):

- Clarify the scope of material and financial project issues by finding detailed solutions to the geometric elements of the road, constructions of the road and engineering subjects, field borders of investment and the bill of quantities and its cost estimate.
- Providing information to the investor that allows to final decision on the expediency, scope and time horizon of the investment implementation.
- Provide to obtaining decision on Permission on Road Investment Implementation.
- Determination of guidelines for the Construction Project.

Implementation of the objectives of Road Concept Program requires a calculated design and analytical elements. Their detail should match the needs. Contents of RCP looks as follows (General Director of National Roads and Motorways, 2009):

- General part
- Technical road study
- Engineering objects
- Geological – Engineering documentation
- Analysis and forecast of traffic
- Traffic Management Concept
- Audit of road safety

- Economic – Financial study
- Technical – Organizational guidelines

3.1.3.2.3. Construction Project

Construction Project is the main element of the set documents that are part of Construction Documentation. Other elements are Executive Project and/or Project Documentation (named also as Tender Documentation), and other project studies (accordingly to the needs) (General Director of National Roads and Motorways, 2009).

Construction Project should be prepared for the selected (in Decision on Environmental Conditions) variant of the road route and the selected variant of the engineering objects. These detailed project designing, accordingly to the needs, serve for following elements (General Director of National Roads and Motorways, 2009):

- Clarify all elements of planned investment.
- Obtaining the Permission for Road Investment Implementation.
- Preparation of the Executive Project.
- Preparation of the Tender Documentation.

There are two ordinance and government act that sets detailed scope and form of Construction Project:

- The Construction Law (Parliament Office, 1994).
- Ordinance of Infrastructure Minister of 3 July 2003. On detailed scope and form of construction project (with subsequent amendments) (Infrastructure Minister, 2003).
- Ordinance of Infrastructure Minister of 2 September 2004. On detailed scope and form of project documentation, technical specifications for execution and acceptance of construction works and the functional – operational program (Infrastructure Minister, 2004).

3.1.3.2.4. Required documents to obtain Permission for Road Investment Implementation

The Permission for Road Investment Implementation is issued by district governor. The application should consists following documents (General Director of National Roads and Motorways, 2009):

- Map with planned road route and field needed for engineering objects – scale at least 1:5 000.
- Analysis of links planned road and existing ones.
- Maps with project of properties division, prepared in accordance with separate regulations.
- Determination of changes in the existing land infrastructure development.
- Four copies of Construction Project with certificate mentioned in article 12 of Construction Law (Parliament Office, 1994).
- Permission mentioned in article 23 and 23a of Act on maritime areas of the Republic of Poland and the Maritime Administration (Parliament Office, 1991) (if required).
- In case of mining plant objects, objects situated on closed areas and those mentioned in article 82 paragraph 3 of Construction Law (Parliament Office, 1994), a decision on the agreement with the body of architectural and construction administration based on article 82 paragraph 2 of Construction Law (Parliament Office, 1994).
- Statements of decisive authorities listed in Ordinance No. 17 of the General Director of National Roads and Motorways of 11 May 2009 about the stages and the composition of project documentation for roads and bridges in project preparation phase (General Director of National Roads and Motorways, 2009).
- Administrative decisions required by separate regulations.

Important part of Permission for Road Investment Implementation application is the report on the impact of the planned road on the environment made for reassessment the impact on the environment (General Director of National Roads and Motorways, 2009).

3.1.4. Detail Design

Detail Design phase is divided into two stages, complementary and final designing, and external found sources application. In complementary and final designing, there are few studies to provide (General Director of National Roads and Motorways, 2009):

- Post-implementation Audit of Road Safety
- Environmental protection studies
 - Report on the implementation of administrative decisions in the environmental protection field
 - Post-implementation analysis

- Ecological review
- Construction works documentation carried out on notification
- Tender documents
- Tender documentation for the Design and Build System

The external found sources application stage is addressing to EU funds that have huge impact into Polish road investments in last decade. Obtaining EU funds is a restricted process that requires extra documentation (General Director of National Roads and Motorways, 2009):

- Feasibility Study
- Results of Feasibility Study

3.1.5. Implementation and operation phase

Those two phases are not a subject of these thesis and it won't be discussed under any terms. Only reason to mentioned these phases was to point entire process of public road investments in Poland.

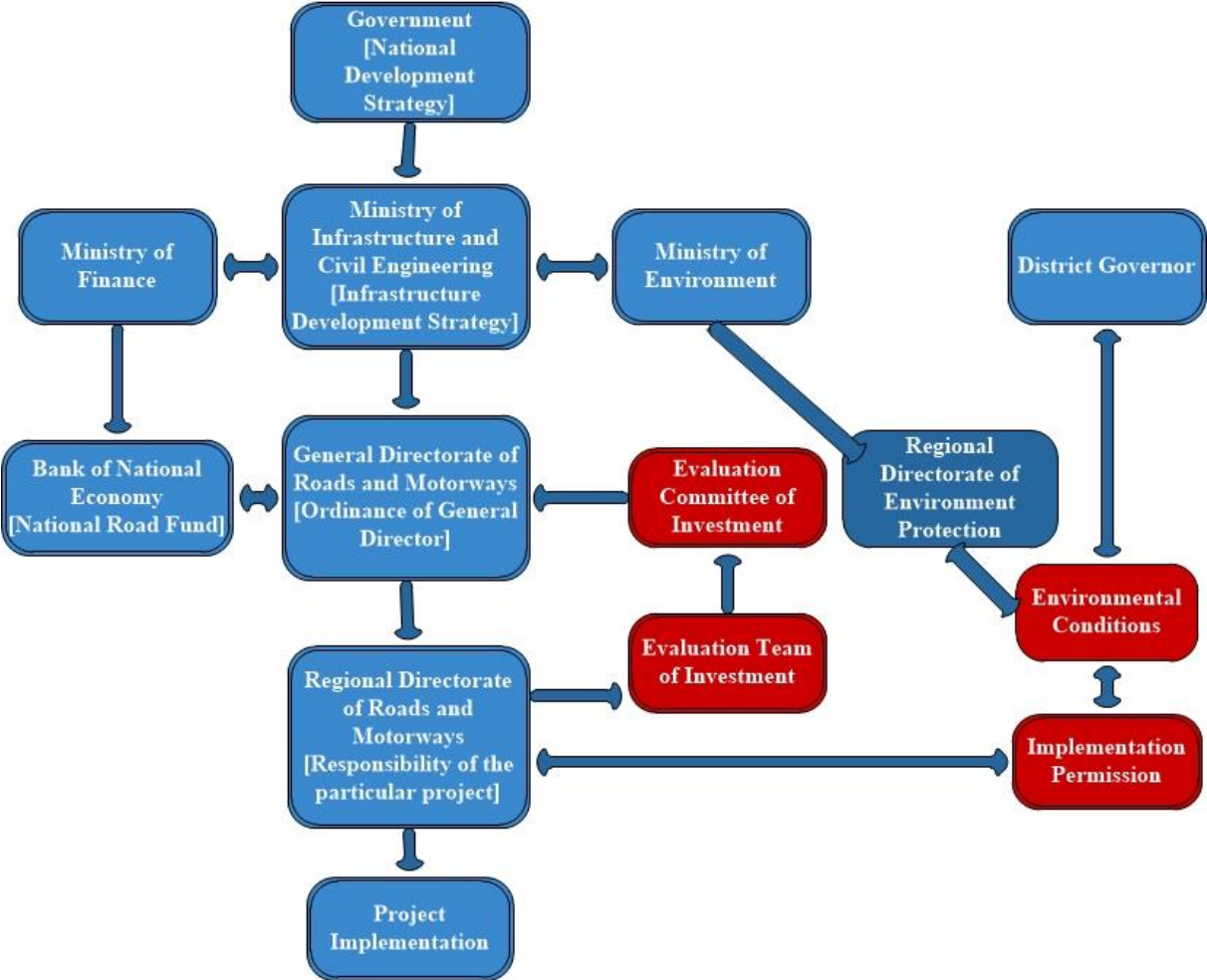
3.2. Decision makers – scheme of decision-making at the national level in Poland (road investments)

The first decisive body in Polish public investments hierarchy is Government. The Council of Ministries sets periodically a general strategy that is overriding document for 9 specific strategies provided by different ministries. Currently the National Development Strategy 2020 is in force (Ministry of Development, 2012). Accordingly to this document ministries prepares more detailed strategies in order to their sectors. The complexity of Polish public investment schemes preclude the possibility of analysing them simultaneously as one similar process. In that case the Road Sector which is dependent on Transport Development Strategy stated by Ministry of Infrastructure and Civil Engineering was chosen (Ministry of Infrastructure and Civil Engineering, 2013). There is special institution that is responsible for public roads issues, both developing roads network and maintenance existing infrastructure. The General Directorate of National Roads and Motorways holds big responsibility. On one side it is a central body of government administration, and thus fills the administrative functions, for example issuance of administrative decisions, and on the other side it is responsible for the preparation and implementation of the road investment. In that case the General Directorate of National Roads and Motorways cannot be just regular administration

body, but it is need to be focused on the effective achievement of objectives (Mickiewicz, 2011).

In the entire decision making scheme in road investments process in Poland are more institutions then Government, Ministry of Infrastructure and Civil Engineering, and General Directorate of National Roads and Motorways. Each of them has significant role that makes the whole process complete. The remaining institutions are Ministry of Finance and Bank of National Economy, Ministry of Environment with Regional Directorates of Environment Protection and the District Governor who gives a Permission of Road Investment Implementation in the specific district where the investment is meant to be implemented. The decision tree with interrelations among institutions is presented below:

Figure 4 Road investment Decision-makers in Poland. Interrelationship tree.



Source: Own elaboration

The decision tree above contains institutions that are illustrated on blue spots and the red spots which shows quality assurance stages where the evaluations and decisions are provide. Whole

presented process can be divided into few stages that have to be performed in sequence. In fact every of these stages ends with some evaluation and assurance of fulfilling numerous of guidelines.

To present the whole preparation process of road investments in Poland more detailed and make it better understanding, a role of every particular institution participating in this process should be described.

3.2.1. Government – National Development Strategy

Public investment projects in Poland are implemented by number of different institutions that are responsible for particular sector of economy. There is a general document that sets the major ways of national development. National Development Strategy 2020 which is a more detailed version of Long-Term National Development Strategy 2030, sets trends in key developing operations that are possible to be performed with EU fund perspective 2014-2020. There is 9 integrated strategies established by different ministries that specify ways of development: Innovation and Economic Efficiency Strategy, Human Capital Development Strategy, Energetic Safety and Environment, Efficient State, Social Capital Development Strategy, National Strategy of Regional Development 2010-2020: Regions, Cities, Rural Areas, National Security System Development Strategy, Strategy of Sustainable Development of Rural Areas, Agriculture and Fisheries, and Transport Development Strategy.

Road Sector projects are performed according to Transport Development Strategy where the most important issues of all kind of transport means are addressed. There are addressed general issues like vision and goals of strategy, safety and integration of transport means, organization and management of the transport system etc. Those issues are not specific in a way to follow it by proceeding a project. This is why the Document of Transport Development Implementation Strategy exist. This document sets a way of achieving the specific objectives of TDS.

Due to the fact that the documents mentioned above are addressed to every mean of transport the government by Council of Ministries preparing a document named National Roads Building Program. Existing one is established for 2014-2023 (with perspective to 2025) period. This document specifying investment goals and priorities in road sector, and maintenance and safety of roads infrastructure as well. This document indicates level and sources of funding and list of investments addressed to realization. In the National Roads

Building Program the government sets also estimated funding for realization investments put on the list.

There are two main sources of funding the road investments, National Road Fund and National Budget. Current Program secured 107 billion PLN in NRF for new investments realization. For the safety improvement government secured 4,8 billion PLN. Other issues like maintenance of technical standards cost, preparation of the investments and management are to be funded by National Budget for 46,8 billion PLN.

National Roads Building Program defined objectives and priorities of roads investments in Poland by establishing four lists of planned investments (Council of Ministries, 2015):

- List of investments involving motorways and expressways building and ring roads on national roads.
- List of investments involving building motorways in no budgeting system, especially by Road Companies of Special Purpose.
- List of investments involving a rebuilding of national roads.
- List of investments involving improvement of road safety.

The role of Government can be extended in case of exceeded funds secured in National Roads Building Program. Any extra funds must be consulted with Government and be accepted by Council of Ministries.

3.2.2. Ministry of Finance

Role of Ministry of Finance is to control Polish national budget and expanses. In case of road investments there are two main sources of funding and both are under Ministry of Finance. Expenses coming from budget are stated directly by Ministry and are analysed every year. Those funds as mentioned before are intended for maintenance of technical standards cost, preparation of the investments and management. Other and the biggest source of funding which is intended to provide road investments come from National Road Fund which is supplied by Bank of National Economy.

3.2.2.1. Bank of National Economy – National Road Fund

Bank of National Economy is the institution responsible for Polish development investments. Its main goal is to support Polish economy development and growing quality of people life in Poland. State ownership enables to participate in the financing of major infrastructure

investments and stimulates the development of enterprises. To maximize effect of Polish economy stimulation Bank has stated different funds to make financing possibly most effective and transparent.

The Fund responsible for roads investments was founded in order to improve and develop the investment process of building roads and improving the efficiency of public resources use. National Road Fund enables the implementation of National Roads Building Program.

The main goals of National Road Fund is to collect funds and financing new roads building and rebuilding existing ones. Scope of roads that are financing is narrowed to those are managed by General Directorate of National Roads and Motorways. Fund supports as follows (National Road Fund, 2016):

- Financing building and rebuilding road engineering objects, ferry crossing and weighing instruments.
- Financing database of public roads and preparation of public road network information, improvement of road safety.
- Financing building and exploitation tolls system (electronic system and manual toll collection).
- Payments to companies for building or maintenance contracts.
- Financing costs of advising service related to the building or rebuilding.
- Financing costs of creation a specific company and projects run by those companies.
- Debt service incurred by Bank of National Economy for the Fund (Payment of loans, including interest and other costs of operating and covering the costs of issue).

The main source of Fund's financial is in 80% the fuel fee paid up from entering the domestic market of motor fuels and gas used to power internal combustion engines which is obligatory to pay by manufacturers and importers of motor fuels. Other sources are as follows (National Road Fund, 2016):

- Resources from loans taken by Bank of National Economy and income from bonds issued.
- Refunds from EU funds.
- Proceeds from toll on the toll motorways managed by General Directorate National of Roads and Motorways, the expressways and selected national roads vehicles and combinations of vehicles with a maximum weight of over 3.5 tonnes and buses,

regardless of their maximum permissible total weight (electronic toll collection system "viaTOLL").

- Proceeds from toll motorways managed by the GDDKiA vehicles and combinations of vehicles with a maximum permissible laden weight below 3.5 tons (manual system).
- Proceeds from fees and penalties specified in the Act on public roads and in the Act - Road Traffic Law and the fees referred to in the Act on road transport.
- Proceeds from fines imposed by the Road Transport Inspection for traffic violations disclosed by the recording equipment.
- Payments made by the company in accordance with the terms of the contract for the construction and operation or only operation of motorways, including motorway tolls charged by the company, if the contract provides so.
- Proceeds provided by GDDKiA under: paid share of real estate acquired for the construction of roads (service areas), collected fees for the specifications of the tender, stop the bid bond with interest, stop with interest the performance guarantee, liquidated damages.

The basis of National Road Fund management are the annual financial plans stated in National Roads Building Program and be agreed by minister of infrastructure and minister of finance in financial term, and minister of regional development in the resources allocated to road projects implemented under the programs co-financed from EU funds.

Distributions from the Fund are made on the basis of applications, submitted in electronic form by the General Director of National Roads and Motorways or persons authorized by him through the portal of communication Bank of National Economy – ORDERS . Payments are made in respect of the preparation and implementation of investments in the framework of the national road network managed by the General Director of National Roads and Motorways.

3.2.3. Ministry of Infrastructure and Civil Engineering – Transport Development Strategy

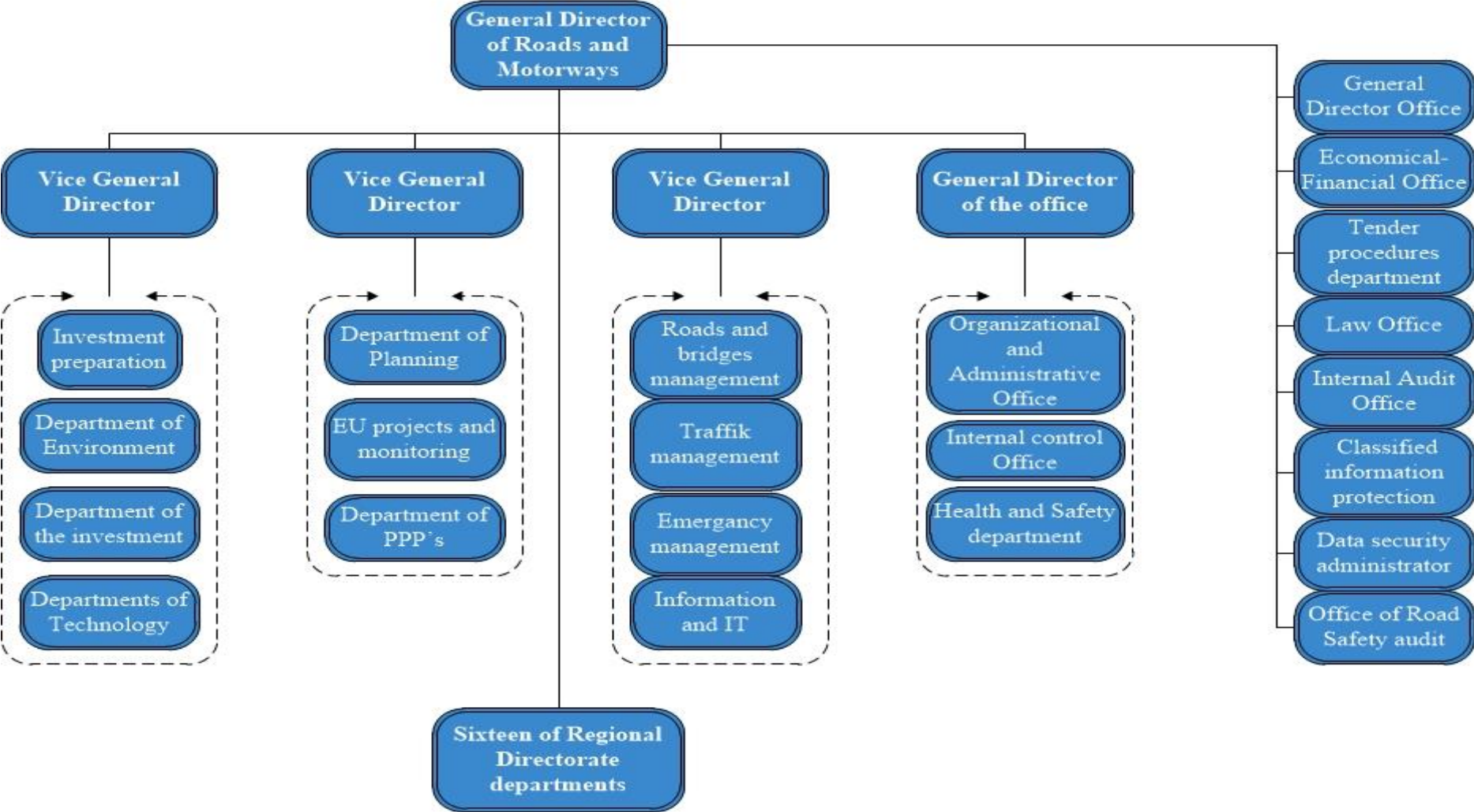
Ministry of Infrastructure and Civil Engineering is an institution that General Directorate of National Roads and Motorways is subordinated. Ministry is responsible for preparing Transport Development Strategy and more detailed document Transport Development Implementation Strategy. Those two documents accordingly to National Development Strategy sets aims and priorities for national road development, and investments planned to run.

Based on Transport Development Implementation Strategy is formed a National Roads Building Program carried by Government. General Directorate of National Roads and Motorways is obligated to follow aims and priorities stated in these two documents what makes a proper preparation of them very important.

3.2.4. General Directorate of National Roads and Motorways – Ordinance of General Director

General Directorate of National Roads and Motorways is the main body responsible for maintenance and developing Polish national roads network. It is special institution that has to manage roads infrastructure and stands in investor position while realization of roads mentioned in National Roads Building Program. This responsible and complex tasks can be divided into two parts. On the one side GDDKiA is a central governmental institution which has administrative functions (makes administrative decisions). On the other side GDDKiA is a body responsible for preparation and realization of road investments. That makes this institution more focused on effective achievement of objectives what requires detailed guidelines. Such guidelines was established by General Director of National Roads and Motorways in Ordinance no 17. The stages and the composition of project documentation for roads and bridges in project preparation phase (General Director of National Roads and Motorways, 2009). In figure below is presented an organization structure of General Directorate.

Figure 5 General Directorate of National Roads and Motorways structure



Source: (General Director of National Roads and Motorways, 2014)

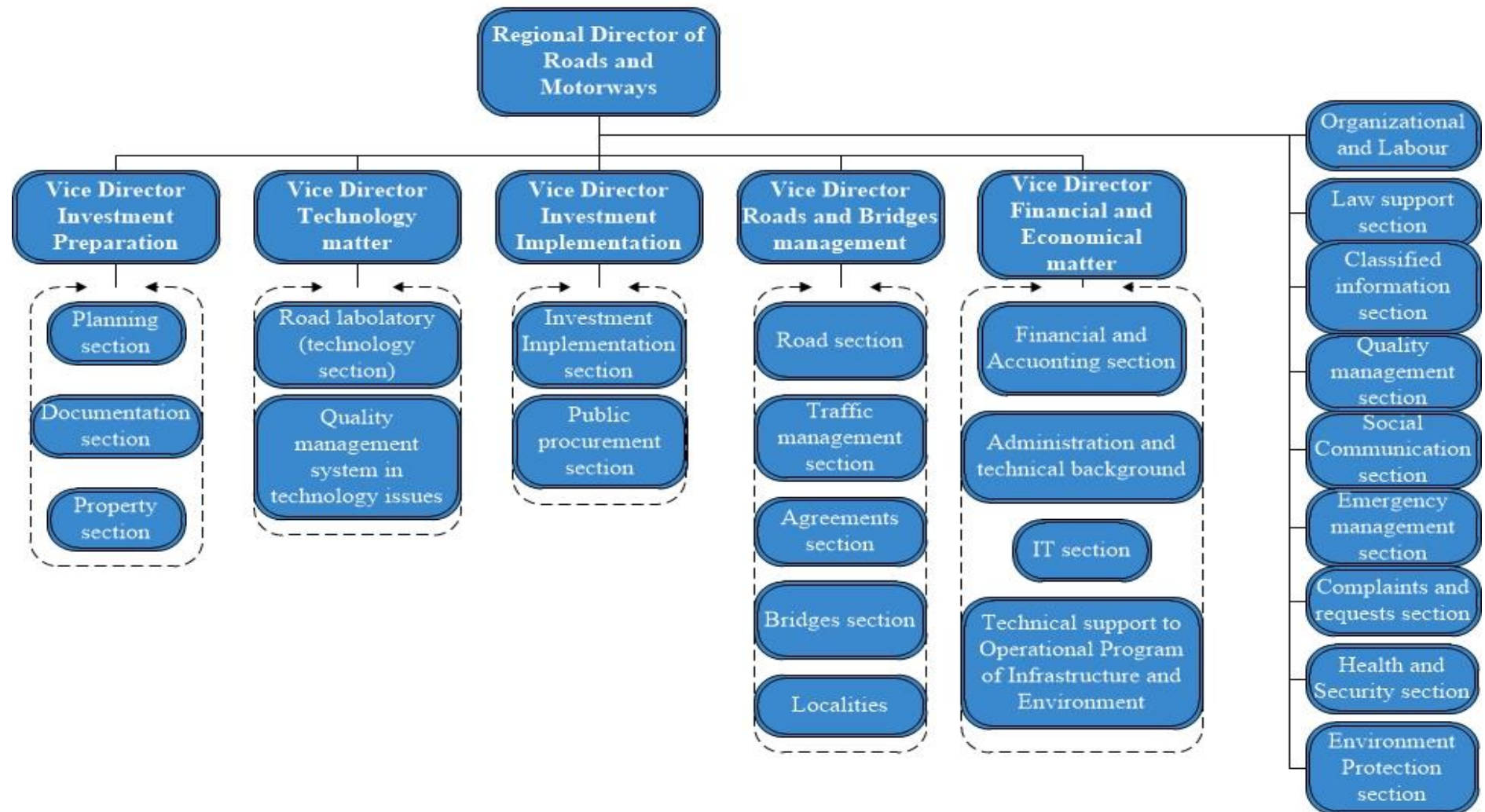
In process of road project preparation takes part only few departments of General Directorate, most work is done by Regional Directorates. Which Regional Directorate is responsible for particular project depends on area where the biggest part of the specific investment will be situated.

Nevertheless Departments of Environment and Investment Preparation takes active participation in process of investment planning and preparation.

3.2.5. Regional Directorate of Roads and Motorways

Regional Directorate of Roads and Motorways is the one fully responsible for planning and preparation of the investment and afterwards realization. To do this effectively the Ordinance no 17 of General Director is followed. The complexity of preparation road investment and multitasking required to provide possible best results lead to organizational structure as shown below.

Figure 6 Regional Directorate of National Roads and Motorways structure



Source: (General Directorate of National Roads and Motorways, 2007)

The process of preparing road investment as mentioned before, can be divided into three main stages. First is a road route study when the responsibility of preparation have Department of Investment Preparation and Department of Environment in Regional Directorate. After acceptance of the study in departments is convened an Evaluation Team of Investment in Regional Directorate as well. Then next stage is allowed to implement, a Technical-Economic-Environmental Study where biggest concern is an environment issue. Regional Department of Environment preparing environment report which is submitted to Central Department of Environment and must be approved. After approval the study is developed in Department of Investment Preparation and after that lands in General Directorate to be evaluated by Evaluation Committee of Investment supervised by General Director. Next step is a Concept Program which has to be approved by both Evaluation Team at regional level and Evaluation Committee at central level. Afterwards a Decision on Environment Condition needs to be achieved. Decision is made by District Governor after consultations with Ministry of Environment and Regional Sanitary Inspector. That decision allows to prepare documents to location decision which is made by District Governor. Location Decision allows to proceed a construction project which also has to be approved by District Governor by Permission for Road Investment Implementation.

Key issues that secures quality of prepared investment are Evaluation Team at regional level and Evaluation Committee at general level. These are two tolls stated by General Directorate of National Roads and Motorways to secure its own process of preparing road investment.

3.2.5.1. Evaluation Team of Investment

Evaluation Team of Investment is appointed by Regional Director of National Roads and Motorways in case of assessment roads investments (including building and/or rebuilding national roads). The Evaluation Team of Investment tasks are evaluation of (General Director of National Roads and Motorways, 2011):

- Documentation in Preliminary design – Network Study
- Documentation required in the proceedings preceding the decision on environmental conditions:
 - Corridor Study with multi-criteria analysis
 - Technical-Economic-Environmental Study
- Documentation required in the proceedings preceding the decision on permission of investment implementation covering – Concept Program

- In case of technical solutions, environment protection and culture goods, field availability, setting costs of economic effectivity of investment and realization of transport policy

Evaluation Team of Investment (ZOPI) after Network Study and Technical-Economic-Environmental Study: authorize Regional Director to send an application to Evaluation Committee of Investment in General Directorate, or resend documentation to responsible departments in case of required corrections.

In case of evaluation on documents required to obtain decision on permission of investment implementation ZOPI: authorize Regional Director to send an application to General Director for acceptance, or resend documentation to responsible departments in case of required corrections, or send request to Evaluation Committee of Investment for advice.

Construction Project and Implementation Project need an acceptance of Regional Director.

The Evaluation Team of Investment consists as follows (General Director of National Roads and Motorways, 2011):

- Chairman – Regional Director of National Roads and Motorways.
- Deputy Chairman – Vice Director of Investment Preparation Department.
- Secretary – employee of documentation section.
- Member of ZOPI – head of documentation section.
- Member of ZOPI - head of bridges section.
- Member of ZOPI - head of environment protection section.
- Member of ZOPI - head of roads section.
- Member of ZOPI - head of traffic safety and management section.
- Member of ZOPI - head of planning section.
- Member of ZOPI - head of investment implementation section.
- Member of ZOPI - head of property section.
- Member of ZOPI - head of emergency management section.
- Employees of Regional Department if needed.
- Representative of General Director.
- Designers responsible for documentation phase.

- To the Team sessions can be invited representatives of local authorities and governments, and institutions interested in evaluated investment, as well as experts and appraisers.

3.2.5.2. Evaluation Committee of Investment

The Evaluation Committee of Investment (KOPI) is appointed by General Director of National Roads and Motorways and is responsible to evaluate investments under General Directorate of National Roads and Motorways.

To the duties of Evaluation Committee of Investments are included (General Director of National Roads and Motorways, 2012):

- Evaluation of documentation required to obtain decision on environmental conditions – Technical-Economic-Environmental Study.
- Evaluation documents required to obtain permission of investment implementation – Concept Program (evaluation of technical solutions, environment protection, culture goods, costs estimate, economic effectiveness of investment and transport policy realization).

The Evaluation Committee of Investment session can be organized in case of need to analyse system solutions or guidelines for designing proceedings. Session concerning the Technical-Economic-Environmental Study can be set by application of Regional Director. In case of Concept Program the session of KOPI can be set by application of General Director, Vice-General Director, Director of Organization Body in General Directorate, or Regional Director.

After evaluation of received documents KOPI apply for General Director acceptance or resend documentation back to correction.

The Evaluation Committee of Investment consists as follows (General Director of National Roads and Motorways, 2012):

- Chairman – director of Investment Preparation Department
- Deputy Chairman – director of Environment Department
- Secretary – head Investment Projects Evaluation section in Investment Preparation Department
- Member of KOPI – head of Documentation of Engineering Objects section in Investment Preparation Department

- Member of KOPI – director of Technology Department
- Member of KOPI – director of Investment Realization Department
- Member of KOPI – director of Planning Department
- Member of KOPI – head of Environment Impact Evaluation section in Environment Department
- Member of KOPI – head of Bridges Management section in Roads and Bridges Management Department
- Member of KOPI – head of Preparation of EU projects section in EU Projects and Monitoring Department
- Member of KOPI – head of Operational Planning section in Security Issues Department
- Representatives of relevant Regional Directorate
- Designers responsible for documentation phase
- To the Committee sessions can be invited representatives of local authorities and governments, and institutions interested in evaluated investment, as well as experts and appraisers.

The Evaluation Committee of Investment decision needs to be signed by General Director and then becomes generally binding.

3.2.6. Ministry of Environment

Ministry of Environment has little influence to processes of roads investments. Major environmental issues are secured by the General Directorate of National Roads and Motorways where are a lot of departments and sections taking care of investment impact to the environment.

Main role of Ministry of Environment is to make sure that environmental issues are secured at governmental level. It gives advises and recommendations to District Governor during Road Investment Process.

3.2.6.1. Regional Directorate of Environment Protection

Regional Directorate of Environment Protection is responsible for Decision on Environmental Conditions. It is an institution, which based on application from Regional Directorate of National Roads and Motorways evaluate impact of investment to environment. They analyse

the primary environmental decision and points the necessity of animals passing or need of acoustic screens installation.

Decision on Environmental Conditions made by Regional Directorate of Environment Protection is really important in the whole investment process. In fact without this decision District Governor cannot proceed the Permission for Investment Implementation process. That makes the Decision on Environmental Conditions one of key evaluation of the investment.

3.2.7. District Governor

District Governor role in Road Investment Process is very important. It is only part of process where decisions are made out of General Directorate of National Roads and Motorways. That makes the whole process longer and more complicated, but on the other hand it makes it more secured and transparent. There are two stages where District Governor decision allows General Directorate to elaborate investment further:

- Decision on Environment Conditions
- Decision on Permission of Investment Implementation

Those two stages are an external audit of work provided by General Directorate of National Roads and Motorways, where many institutions are involved. Throughout this stages different institutions analysing documentation prepared by GDDKiA and gives acceptance or rejection for every single project. Accordingly to analysis District Governor issue a decision.

Decision on Environment Conditions is made by Regional Directorate of Environment Protection and consulted with Ministry of Environment and Regional Sanitary Inspector. It says what conditions must be fulfilled by road investment to be considered as acceptable. Permission of Investment Implementation is based on Construction Project of Investment and allows to run implementation phase of the investment project.

4. Expressway S-7 as an example of Polish governance scheme of road investment project in practice

For the purposes of this thesis a section of the Expressway S-7 was chosen to present a practical part of Polish governance scheme of road investment projects. Realization of every expressway or motorway in Poland is divided into parts for better execution. In this example the section between localities Koszwały and Kazimierzowo was chosen. This section is about 40km part of expressway laying throughout Poland from Gdańsk on the north to Chyżne the locality on south border of Poland, and crossing two biggest cities in Poland, Warszawa and Kraków. S-7 is also a part of road E77 from TEN-T road network in EU.

The chosen section cost is estimated to 3,22 billion PLN (about 810 million USD) what encourage to investigate a project of such big amount of funding. It is one of the investments that are mentioned in National Roads Building Program (PBDK). In PBDK S-7 realization is planned from Gdańsk to Kraków and divided into two parts which will have together 365,7km and are going to be done by 2020.

Works with chosen section from Koszwały to Kazimierzowo started in 2006 and ended in 2015 when the project was forwarded to contractors after obtaining every decision needed to start implementation stage. Construction works started at 15.10.2015 and should be finished before October 2018 what gives 12 years from decision on running the project and potential launch into operation.

The process of expressway S-7 preparation phase was divided into stages accordingly to Ordinance no 17 of General Director of National Roads and Motorways (General Director of National Roads and Motorways, 2009). It was started in 2006 after governmental decision on developing this transport corridor and as a result the General Directorate of National Roads and Motorways commissioned Gdańsk Regional Directorate to start preparing investment. First decision of Regional Directorate was to contract an executor of Technical-Economic-Environmental Study. The whole process had stages as follows:

- Technical-Economic-Environmental Study
- Documentation for Decision on Environmental Conditions
- Concept Program
- Construction Project

- Permission for Investment Implementation

In this particular investment project Network Study and Corridor Study were not performed because its necessity as a part of investment documentation was stated in 2008 when this particular project was running for 2 years and started with Technical-Economic-Environmental Study (accordingly to past guidelines).

4.1. Technical-Economic-Environmental Study

The technical-Economic-Environmental Study was contracted to Transprojekt Gdański Company on 22.06.2006. The aim of this study was to elaborate an optimal road route based on comparative analysis in order to (Transprojekt Gdański Company, 2008):

- Environment protection.
- Social issues.
- Technical issues.
- Economic issues.

To do proper study execution company received numerous of starting materials:

- Program – spatial concept of reconstruction national road no 7, section Gdańsk-Warszawa to parameters of the expressway. Transprojekt Gdański in 2000.
- Concept program of planned expressway section on national road no 7. Transprojekt Gdański in 2001.
- Few projects of modernization and subsoil stabilization on national road no 7 corridor. Transprojekt Gdański in 2001, 2002 and 2004.
- Detailed multi-industry concept program of South Ring Road in Gdańsk. Office of Communication Engineering Maciej Berendt in 2004.
- Project of strengthen the pavement of national road no 7. Strengthening the bridge in Kieźmark. Plant of Bridges Services Witold Kaliński in 2005.
- Geological-Engineering and hydrological Study – stage 2.
- Orthophotomap developed by OPGK Gdańsk in 2006.

Main profits of investment was formulated as:

- Road capacity improvement.
- Rising of traffic loose.
- Traffic safety improvement.

- Comfort and safety improvement.
- Reduction of fuel consumption.
- Improvement of traffic service quality.
- Increasing of investors' interest in expressway area.

Technical-Economic-Environmental Study has two stages where in Stage I investment preparation consists preliminary road route study and preliminary agreements. Stage II consists variants development, statement of material and financial scope, traffic analysis, economic analysis, environmental analysis, agreements and opinions.

4.1.1. Stage I

First step in stage I was to analyse four variants of planned investment. There were variant 0 with option to do nothing and three other variants with extra options:

- Variant "Basic"
- Variant "Northern"
- Variant "Southern"

Extra options were different for each variant and for variant "Basic" were five extra options, for "Northern" one two extra options, and for "Southern" one extra option.

Every of variants with extra options was took under consideration by Evaluation Team of Investment and Office of Investment Preparation in General Directorate, and then forwarded into second stage of STEŚ with chosen options as follows:

- Variant "Basic" with options "Jazowa" and "Northern".
- Variant "Basic" with options "Rakowiska" and "Southern".
- Variant "Northern".
- Variant "Southern".

Extra option "Jazowa" consists an option where the "Basic" variant join "Northern" one in Kazimierzowo. In case of "Rakowiska" option the "Basic" variant join "Southern" one also in Kazimierzowo.

4.1.2. Stage II

On the second stage option "Jazowa" was put into variant "Basic" what resulted in :

- Variant "Basic" with option "Northern".

- Variant “Basic” with options “Rakowiska” and “Southern”.
- Variant “Northern”.
- Variant “Southern”.

And two extra options that were included into analysis:

- “Dworek” – bypassing building of village Dworek on the northern side.
- “Ryki” – correction of existing route to provide required visibility on stop within the Ring Road of Nowy Dwór Gdański.

To make a choice from those variants possibly easiest and rational the STEŚ analysed numerous of issues to ensure achievement of assumed goals (Transprojekt Gdański Company, 2008):

- The route of road.
- Variants of engineering objects (e.g. Bridges).
- Variants of road junctions.
- Location of Rest and Service Areas.
- Correspondence to Local Zoning Plan and Theories of Urban Planning.
- Areas under protection of monuments.
- Landform
- Animals’ passing location.
- Location of secondary roads.
- Existing Bridges.
- Crossing with railways.
- Crossing with rivers and watercourses.
- Number of Environment protection devices.
- Collisions with networks of utilities (energetic, gas, telecommunication, etc.).
- Number of necessary demolition.
- Economic indicators.

Economic indicators were quite different for each variant:

- Variant “Basic” with option “Northern”
 - ENPV = 391 202 025
 - B/C = 1,15

- EIRR = 6,0%
- Variant “Basic” with options “Rakowiska” and “Southern”
 - ENPV = 684 890 645
 - B/C = 1,27
 - EIRR = 6,9%
- Variant “Northern”
 - ENPV = -68 689 734
 - B/C = 0,95
 - EIRR = 4,9%
- Variant “Southern”
 - ENPV = 183 062 251
 - B/C = 1,04
 - EIRR = 5,4%

4.2. Decision on Environmental Conditions

Decision on Environmental Conditions was stated after elaboration of Technical-Economic-Environmental Study and its corrections accordingly to disclaimers of auditing institutions. The Decision was made accordingly to acceptance of General Director of Environmental Protection and Regional Sanitary Inspector. After consideration of every complain application referring to route localization, the recommended variant was proposed:

- Variant “Basic” with options “Rakowiska” and “Southern”, additionally considering options “Dworek” and “Ryki”.

4.3. Concept Program

Concept Program was made after Decision on Environmental Conditions and its aim was to clarify the scope of material and financial project issues by finding detailed solutions to the geometric elements of the road, constructions of the road and engineering subjects, field borders of investment and the bill of quantities and its cost estimate. Important role of concept program is also providing information to the investor that allows to final decision on the expediency, scope and time horizon of the investment implementation. In this particular project Concept Program included (WYG International Company, 2010):

- Investment intention (localization, scope of basic works)

- Expressway (technical parameters, vertical and horizontal geometry, road junctions, location of rest and service areas, maintenance circuit of expressway)
- Local and secondary roads (emergency exits and crossing, bus stops, exits)
- Traffic engineering
- Pavement and foundation construction
- Drainage of the road (pavement, trenches, culverts, drainages, rain sewerage)
- Environment protection devices (acoustic screen, passages for animals, greenery road)
- Road elements (safety barriers, fence, metrological system)
- Works technology (demolition works, humus, low-bearing soils construction of foundation, earthwork, embankment slope stability)

Analysis and calculations:

- Visibility analysis
- Multi-criteria comparative analysis of detours while implementation of the investment (the object of analysis, a description of embodiments, the method of calculation and weights criteria, evaluation of the options, recommendations)
- Inter-professional agreement sheet

Concept Program made on order of Regional Directorate of National Roads and Motorways in Gdańsk by WYG International Company was delivered in July of 2010. Received document was evaluated and checked by firstly Evaluation Team of Investment in Regional Directorate and then by Evaluation Committee of Investment in General Directorate. Accordingly to accepted Concept Program a Construction Project was allowed to be started.

4.4. Construction Project

It is a complex documentation which purpose it to present how the road will look like after implementation. It consists parts as follows:

- General Part (description and permissions, decisions and authorizations, agreements, drawings of indicative and land development plan)
- Road Part (description, drawings of indicative and situational plan, longitudinal sections, cross normal sections)
- Bridges Part (drawings of each bridge, animals passing, acoustic screens, retaining walls)

- Energy Part (reconstruction of power equipment, power supply, road lighting, reconstruction of high-voltage lines)
- Telemechanical Part (reconstruction of the telecommunications network, the technology channel)
- Sanitary Part (reconstruction of water supply system, reconstruction of the sanitary network, construction and reconstruction of storm water drainage)
- Melioration Part (reconstruction of drainage systems, drawings of longitudinal sections, cross normal sections)
- Cubature objects (descriptions and drawings)
- Demolition Part (demolition project)
- Geotechnical conditions for foundation of buildings Part (documentation of subsoil researches, geotechnical opinion, geotechnical project)
- Safety and Life Protection Part

4.5. Permission for Investment Implementation

Permission for Investment Implementation is issued by District Governor on demand of Regional Directorate of National Roads and Motorways. The application must consists Concept Program and Construction Project, these documents are detailed enough to evaluate a legitimacy and compatibility with numerous of guidelines. In this particular case the application was submitted in 30.05.2014 after construction project acceptance.

The application elaboration process took more than one year and become validity depending on part of the project (construction project was divided into two parts in case of contracting two different building companies). First part obtained Permission for Investment Implementation in 18.08.2015 and the second 6.08.2015. In both cases the appeal against the decision was submitted by property owners or other stakeholders. Such appeals are consider by Ministry od Infrastructure and its decision is final and unquestionable. Such decision was made in 28.08.2015 and 13.08.2015 respectively to part 1 and 2 of the construction project.

Regional Directorate of National Roads and Motorways in Gdańsk did not wait for the final decision of Permission for Investment Implementation and during this process started tendering procedure to find contractors for project implementation. This helped to save about year of tendering procedure process in case of starting it after Permission for Investment Implementation obtaining. As a result the contractors was chosen before the permission and the implementation process could start right after permission obtaining, the contracts was signed in 9.10.2015 and the implementation process started in 15.10.2015 (both contractors at the same time).

5. Europe – best practises in other countries

This chapter is meant to show best practises in Europe in case of investment project governance in front-end and planning phase. Five countries was chosen to present schemes and standards existing in their project governance process. Practises presented in this chapter will be considered in the next chapter to implement in Polish investment process to make it more effective.

5.1. Norway

In Norway the responsibility for the administration of the scheme has Ministry of Finance. The scheme is referred to every public investment project with cost above 750 million NOK. The documents are mostly prepared by agencies (in some cases by the ministries) and are evaluate by external advisors before being submitted for appraisal at the political level. The quality assurers are consortia of consultancy firms and experts that have framework agreements with the Ministry of Finance. These assurers are required to examine the quality of documents but without interference to the political issues. Their task is also to perform an independent analysis of the uncertainty associated with the investment cost and of economic profitability (Samset et al., 2015).

These analysis are examine in the further steps by ministry responsible for specific sector. After examination the summarise with findings is shown in memorandum to the Government for political appraisal before the matter is presented to the Parliament for its approval and final decision. As mentioned before there are two stages of project appraisal. First one concerns the actual choice of concept what is evaluate by Conceptual Appraisal (CA) and independently by assessing document termed quality assurance of choice of concept (QA1). This stage is responsible for making decision rather reject the project or move on to the pre-project phase (and which alternative to choose). At the next stage, after finishing pre-project, a so-called Overall Strategy Document should be implement. This document provides information on objectives, budgets, and target costs, implementation strategy, contract strategy, etc. Next quality assurance (QA2) is responsible for evaluation this document where cost estimate and management documentation is provided. Those documents are submitted to the Ministry of Finance, which makes summarising memorandum to the Government, in which special prominence is given to the proposed budget. The Government submit it further to Parliament where the final decision is made with stipulation of the budget that commits the

responsible ministry and the target cost that commits the agency. Those two stages apply only to the front-end phase (from project idea to final funding decision). (Samset et al., 2015).

The Conceptual Appraisal should be consisted as follows (Samset et al., 2015):

- Needs analysis, which shall identify stakeholders and examine normative (political) guidelines and demand-based needs in the relevant field.
- Strategy chapter, shall define societal objectives and project objectives.
- Overarching requirements, for example other societal objectives that serve to define the scope of the project.
- Possibilities study. Needs, objectives and requirements will jointly define an opportunity space. It is important that this is not approached too narrowly.
- Alternatives analysis, which shall encompass the zero option alternative and at least two other conceptually different alternatives. The alternatives analysis shall encompass an economic analysis.
- Guidelines for the pre-project phase, including implementation strategy for the chosen alternative.

In the second stage the quality assurance should be started with (Samset et al., 2015);

- Overall Strategy Document for the project. This shall provide an overview of all key features of the project; its objectives, scope, project strategy and project management framework. There are few detailed requirements as to contents, as the main priority is to ensure that the document is integrated into the agency's project management system and is actually used as a project management tool.
- Complete base estimate for costs (as well as any revenues)
- Complete appraisal of at least two fundamentally different contract strategies.

The Norwegian schemes are mainly focused on costs issues. Common cost overruns of the projects moved them to set it at the first place of prioritization. Accordingly to this issue QA2 is an assurer that makes recommendations on (Samset et al., 2015):

- Budgeted cost, including necessary contingency reserves, and target cost for the executing agency.
- How the project shall be managed in order to keep within the budgeted cost, including the organisational structuring of authorisation to draw on the contingency reserves.

5.2. The Netherlands

In the Netherlands is no central governmental scheme that generally concerns every sector of public investment projects. Each ministry has its own processes and procedures for planning, prioritisation and decision making (Shiferaw, 2013).

In case of Ministry of Infrastructure and Environment, which is responsible for mobility and transport, the environment, land development and the water sector. The scheme is based on the recommendations of the Government-appointed commission and introducing a programming and budgeting system called MIRT (Multi-year Plan for Infrastructure, Spatial Planning and Transport) (Samset et al., 2015).

In the Netherlands exist special central governmental fund for improvement the structure of the economy (FES) that helps with funding public investments. To coordinate mechanism of control how new project proposals are submitted, evaluated, prioritised and decided so-called inter-ministerial commission for improvement of the structure of the economy (ICRE) was founded (Samset et al., 2015).

The commission use assistance in the form of appraisals and advice from independent research institutions, for example the Netherlands Bureau for Economic Policy Analysis (CPB) and the Netherlands Environmental Assessment Agency (PBL). At the end of appraisal process ICRE submit a formal recommendation to Government, which makes final decision and submits it to the Parliament, which adopts the budget (Samset et al., 2015).

MIRT system developed for faster and better decision making reduced the planning period of projects by 50 percent. It specifies rules, procedures and frameworks for the development of projects that are seeking central government funding and for making the decisions. The system goal is to mitigate problems observed in past projects (Samset et al., 2015):

- Biased conclusions on needs that are not premised on any problem analysis.
- Conflicts between different stakeholders.
- Lack of political backing.
- Failure to analyse alternatives.
- Absence of well-defined decision gates.
- Inadequate needs analyses and unclear prioritisations.

The MIRT process consists three phases and four reviews/decision gates. The first decision gate MIRT1 is a technical/political issue to identify the solution to a given problem (Klakegg et al., 2016). There are analysed at least three alternatives which are appraised by technical experts in collaboration with the Ministry's people and leads to choosing one of the alternatives. The MIRT process is transparent, every documents are in the public domain, uploaded to the Ministry's website where the public comments are allowed. In the second phase MIRT2 the chosen alternative is identifying and leads to administrative decision. Next phase follows the decision to commence planning, chosen alternative is studied more detailed, which results in the documentation of the project that is to presented to the ICRE. Then subjected to political deliberation based on feedback from external independent bodies (CPB, PBL, etc.), and finally submitted to the Government for final prioritisation among other investment projects (Samset et al., 2015).

5.3. The United Kingdom

In the UK scheme of quality assurance refers to important transitions between project phases. It applies to the largest and most risky central government investment projects – across sectors. Responsibility of the scheme is spread to HM Treasury and Cabinet Office, and it is managed by the Major Projects Authority (MPA), which is a unit placed within the Cabinet Office. The scheme is additional to the requirements and processes applied by individual ministries and agencies (Samset et al., 2015).

The Cabinet Office receives all copies of quality assurance reports. The main goal of the scheme is to provide HM Treasury and institution responsible for the project a better basis for assessing whether project should be proceed further or not. The scheme is a part of a broader effort to strengthen the financial and efficiency perspective in central government activities. Despite of extensive independence in ministries in their various fields, any project or initiative has to be approved by HM Treasury. The objective is economic growth and profitability is a key focus. Economic profitability is required to be calculated on both central and local levels of the public administration what is even more important when it comes to private co-funding involvement (highly common in UK) (Samset et al., 2015).

In 2011 Government established the Major Projects Authority, which responsibility is to ensure independent quality assurance of the largest projects, as well as to report on, support and develop expertise in the management of large projects within the public administration. The MPA responsibility is to gathering and publishing data on the projects in its portfolio; the

Government Major Projects Portfolio (GMPP). The main cause is to achieve disciplining effect by transparency, and make easier choice for HM Treasury.

According to Cabinet Office the projects may be classified into four types:

- Transformation and service delivery projects (“modernisation projects”).
- Infrastructure, such as transport and buildings.
- Defence procurement.
- ICT projects.

Every project taken under MPA investigation shall provide a plan for quality assurance and decision points in advance. The plan should be approved by the MPA, HM Treasury as well as Infrastructure UK. The minimum requirement is three quality assurance points in the front-end phase, based on the three versions of the Business Case; SOC, OBC and FBC. Approval of the Full Business Case (FBC) is the same as an investment decision – the project may then start to conclude contracts and spend money. To make process fully secured it is required to provide at least one quality assurance point in the implementation phase and another after commissioning, simultaneously with five phases of the OGC process (Samset et al., 2015).

Business Case is not only requirement stated by HM Treasury, so-called Five Case method is also required, which evaluates the project along five dimensions: relevance, economics, contract strategy, financial viability and implementation. Each of dimensions are weighting accordingly to iterative process of developing the Business Case. The HM Treasury approval process involves three stages requiring the Business Case variants as follows:

- Strategic Outline Case (SOC)
- Outline Business Case (OBC)
- Full Business Case (FBC)

Stages above must to be commencement respectively.

In some cases the quality assurance is taken under consideration by external independent team of 2-3 persons. The team is appointed by MPA on case-by-case basis, from a pool of about 500 accredited quality assurers. It is arranged in case of the largest and most risky projects where recommendations of independent experts based on interviews are valuable.

5.4. Sweden

In Sweden there is no central system for large investment project. Each sector has its own processes for the planning and implementation of investments (Samset et al., 2015). The biggest central government agency is the Swedish Transport Administration, which accounts for more than 50% of the value of central government investments. The Swedish Transport Administration is subordinated to the Ministry of Enterprise and Innovation, although its director general reports to an executive board, which is appointed by the Government. Transport investment is planned in a close dialogue with affected local government administrations, regional government administration, the Swedish Transport Administration and other government agencies what results with national plan, which also includes a financial plan (Samset et al., 2015).

To choose most effective concept the application of a four-step model is elaborated. It is perform in the front-end phase of potential investments, before choosing measures. Strategic Choice of Measures involves the following steps (Samset et al., 2015):

- Reappraisal
- Optimisation
- Conversion
- New construction

The Strategic Choice of Measures shall address the following:

- Which problems and needs relating to the functioning of the road or rail network the measures are intended to address, and which stakeholders will be affected.
- The purpose of the project.
- Environmental considerations and other considerations of relevance to the measures.

The preparation of a road or rail plan involves five steps:

- Consultation basis.
- Consultation document prior to choice of alternative.
- Consultation document.
- Appraisal document.
- Decision document.

The Swedish system has a strong focus on choice of concept, collaboration, economics and environmental (required environmental approval from the County Administrative Board) aspects. In case of economics, more weight is attached to economic profitability than to cost estimation while planning process (Samset et al., 2015).

There is no general quality assurance system in Sweden, but every individual government agency has its own scheme. In the Ministry of Enterprise and Innovation, a Transport Analysis follows up on economic calculations and methods. Transport Analysis is charged with reviewing the basis for decision making, carrying out evaluations and compiling statistics within transport and communications. Every project need Government approval, which checks if the project complies with environmental requirements in the environmental legislation, as well as in the planning and zoning legislation, including municipal planning requirements. Such process takes on average 15 months (Samset et al., 2015).

5.5. Denmark

Denmark scheme for large public investments establishing a joint model for road and rail sector, which involves external quality assurance. Appraisal is divided into two decision points. At Decision Level 1, it is decided which concepts will be taken forward, and at Decision Level 2, it is decided whether the project shall be implemented (Samset et al., 2015). The model is intended to provide quality assurance for the Parliament's prioritisation of investments, in connection with Government's preparation of investment plans and transport policy solutions. After preparation the basis for decision making is subjected to quality assurance by an external consultancy firm, with relevant expertise, appointed by the Ministry of Transport and Building. The quality assurance recommendation are taken under consideration by agency and then submitted to the Ministry of Transport and Building, which forwards it to the Government and finally to the Parliament (Samset et al., 2015).

In Denmark every investment project is required to provide two resolutions from the Parliament in order to come to fruition. First one adopting "*construction statue*" and second one adopting a "*funding statue*".

Investment project in Denmark comprises five phases with two decision points (Level 1 and Level 2). Each decision level shall be subjected to external quality assurance and the investment cost shall be increased by an experience-based correction supplement following such quality assurance (Samset et al., 2015).

The external quality assurance report at level 1 shall include:

- Summary.
- Review of the assumptions and calculations in the transport analysis.
- Review of the financial calculations and assumptions.
- General review of the economic analysis of the project proposal, as well as alternatives to the project, and a review of the planning authorities' analysis of needs, goals and risks for the project, as well as assessment and audit of the alternatives, the zero option and potential postponement.

The external quality assurance report at Level 2 shall include:

- Summary.
- Review and assessment of the assumptions, calculations and capacity in the transport analysis.
- Review and assessment of the possibilities examined in the environmental impact assessment.
- Assessment of the costs and associated assumptions, including safety assessment, risk management plans and the project time schedule.
- Assessment of the economic analysis.
- Assessment of plans for the organisation of the project.
- Assessment of potential reductions, simplifications and savings, which may be used if the assumptions underpinning the project change.

There is so-called Experience-based correction supplement, which should be added at both decision levels after the external quality assurance has been completed (to prevent the cost estimate from being unrealistically low). In the first decision phase a correction supplement (C1) is added and is usually 50% of the quality-assured cost estimate. C1 is used to improve the basis for determining which projects should be accorded priority when it comes to preparing an improved basis for decision making. In the second decision phase a correction supplement (C2) is added and helps with decision whether the project shall be implemented, with its budget comprising a base estimate plus the correction supplement C2. After choosing concept of investment, the project moves into Phase 2. In this Phase a proposal is submitted to the Parliament, which makes decision whether the project shall be implemented, as well as the appropriation, if any, to be made for such project (Samset et al., 2015).

Afterwards Phases 3, 4 and 5 are performed. In fact it is no clear distinction between them. The status shall be reported to the Ministry every six months, with an update of the budget and the risk register. In Phases 3 and 4, financial management consists of updating the forecasted project cost estimate accordingly as and when planning is clarified, detailed and specified, as well as on focusing on not exceeding the basic estimate and the appropriation. In Phase 5, the focus is on monitoring and identifying deviations, as well as on ensuring that the financial implications of any deviations are incorporated into the forecast (Samset et al., 2015).

6. Possible ways to improve Polish road investment projects on front-end and planning phase

This chapter's aim is to present subjectively drawbacks, which are based on findings of this thesis presented in former chapters. The intention is also to suggest a possible ways to improve whole investment process from the very beginning to the implementation phase. This suggestions will be based on investment practise from other countries, information got from Regional Directorate of National Roads and Motorways in Gdańsk, and own conclusions presented in good faith and hope that can give a new look at problems with road investment project scheme.

In case of particular project described in chapter 3 few general problems with investment process showed up. First of them was a legislation change. It is not eligible situation when during the investment process the law or guidelines are changing. The project of S-7 expressway on section between Koszwały-Kazimierzowo was started in 22.06.2006 when Regional Directorate of National Roads and Motorways in Gdańsk signed contract with Transprojekt Gdański Company to performed a Technical-Economic-Environmental Study. At that time the STEŚ was divided into two stages and first of them was done until 2008. The problem appeared in 16.06.2008 when the organisational structure of General Directorate of National Roads and Motorways has changed and the scope of STEŚ has changed too (Network Study appeared as primary study to perform in investment process). This change took some extra time of the whole investment process of this particular project and number of others proceeding at that time. The problem with time needed from the launch of new road investment project in Poland to Implementation phase start is basically too long without any scheme changing. There is no doubt that changing guidelines is as important as stable law order to improve whole investment process. The problem appears when such guidelines and law order are changing too often and without a coherent strategy what Polish authorities could be accused of. This problem was mentioned by Suwara the CEO of Transprojekt Warszawa Company in his paper (Suwara, 2011) where table with number of selected law acts that were changed in last decade was presented:

Table 10 Number of changes in selected law acts in last decade in Poland

	Law act applies to:	Number of changes in last decade:	
		All, including changes by other law acts:	Stand alone:
1.	Public roads	20	5
2.	Spatial zoning	22	5
3.	Construction Law	36	7
4.	Environment protection	39	7

Source: (Suwara, 2011)

As showed above it is a real problem with unstable law order in Poland. The obvious results of such doing are not need to be described. Polish governmental authorities should be more consequent in setting a law and more concentrated on strategical welfare in Poland instead of carrying on a current priorities and the influence of lobby groups, or even their own ambitions. As a good example can be mentioned last change in Polish government, the party, which won elections and created Government in November 2015 has totally different approach to most strategical ways of country development. Changes they made are usually performed in rush and do not assume a transition time to implement those changes what results in a big chaos and lack of clear ordinance (results can be predicted).

The duration of road investment projects in Poland are also strongly dependent on the number of members of the process. The necessity of sending a documentation between central institutions (in case of roads investments mostly between General Directorate of National Roads and Motorways, Regional Governor and General Directorate of Environment Protection) takes a lot of time. Time is wasted in preparation of the application sending to other institution and the whole process of cooperation lasts a long time (usual ask for additional documents and distant statutory deadline to state a decision). Importance of controlling the whole process of investment project preparation is unquestionable, but the widely spread a decision making responsibility extends a process duration and final responsibility. The best possible way to improve that aspect of road investment process would be to leave all responsibility for the process to one institution e.g. General Directorate of National Roads and Motorways where all required specializations would be ensured by well qualified agencies as a departments of GDDKiA.

In the S-7 project discussed in this thesis the Regional Directorate of National Roads and Motorways in Gdańsk was responsible not only for contracting external companies with relative expertise, but in some stages was preparing some parts of project analysis itself (in case of STEŚ). That practise may cause some confusions when it comes to evaluate such

analysis. Nowadays it is recommended to avoid by regional GDDKiA to performed any of analysis, their responsibility has been reduced to evaluation role and preparing applications for other institutions. This change seems to be good and rationale. One step further with decision on putting whole responsibility to the one institution could reduce time of investment preparation process significantly.

Another issue that should be improved in scheme of Polish road investments is neglecting an importance of financial aspects of a project. The main concern throughout the whole process of preparing an investment, beginning from front-end phase and ending in the operation phase, is an environmental issue. The point is not to start putting less care of environmental issues, it is about unjustified lack of a reasonable taking responsibility for spending each Polish zloty to uneconomic projects. The range of this problem is representing in Ordinance of General Director of National Roads and Motorways where the necessity of economic evaluations is mentioned only in Technical-Economic-Environmental Study and the only requirement is to present few economic ratios (ENPV, B/C and EIRR).

To make economic assessment composite and relative to economic risk of such projects the feasibility study should be required. In Polish scheme a feasibility study is not mentioned at all. In fact in case of described project S-7 expressway the feasibility study was performed by external company for internal use of Regional Directorate of National Roads and Motorways in Gdańsk. It was ordered by regional GDDKiA as an investment body to evaluate the economic cost and benefits. That is very good practise, which shows a reasonable approach. Instead of good practise in case of this particular project it is still not required. That provides some concerns. At this time accordingly to guidelines even a performed feasibility study is not binding in any respect. Practically such study can be neglected by ordering institution, or the institution can be forced by necessity of fulfilling a mandatory requirements (as environmental one is case of Poland).

Problem with neglecting economic evaluation has become strange, in situation when institution under government noticed the necessity of performing a feasibility study and the decision makers did not respond for such need. As mentioned before any change cannot be made in a rush and randomly, but there is no doubt that financial issues shall be protected with much bigger intensity. The problem will increase when the EU donations will be no longer such big amount (for now approximately half cost of each big project in Poland is funded by EU donations). One reason is to realize that free money will not help Poland forever, and the second is that the already money spend on the projects (half of funding has to

be provided by Polish finances) probably could be spend more effectively with bigger focus on economic issue.

Similar problem occurs when it comes to public hearings while investment preparations. Accordingly to guidelines the first communication with society is required right after application for Decision on Environmental Conditions. At that point most general assumptions about, for example road route or technical solutions are designed. The problem was noticed by General Directorate of National Roads and Motorways and the dialog with society are usually started at earlier stage of preparations. This is a good practise and should be standardized in scheme to avoid situations where this aspect is missed. Such late public hearings bring also some political danger. It allows in some extent to start projects with huge displeasure of society without informing them. Such practise could have taken an advantage to meet the demand of lobbying groups and get personal profits. From that point of view problem with late public hearings seems to be important and becomes another issue to take under consideration.

Last finding of this thesis refers to another reason of extending time of the investment preparation process. The problem lays in contracting process and finding an executor of the project at implementation phase. First of all the tender process wins a company with the lowest price. That practise is stated in Public Procurement Law, where only protection for this highly risky requirement is to avoid “*abnormally low price*”, which is not defined specifically. This leads to lowering price of the investment by the companies wanted to win a tender. Situation with underestimating cost of the project can cause many different dangers. As an example can be presented history when Chinese company won a tender process for building one of Polish motorways. The cost of implementation the project was underestimate by Chinese company for about 1,5 billion PLN then it was estimated by the government. The result of such underestimation was a withdrawing Chinese company while implementation phase without paying subcontractors for their work.

The problem referring to exceeding time of tendering process occurs because of an ability to see offers made by others competitors. That provides number of appeals against chosen offer. The example of such practise was described by Suwara in his paper, one of tendering process was presented in the table (Suwara, 2011):

Table 11 Example of tendering process for conception of North Bridge route in Warsaw

	Date	Action
1.	November 2004	Announcement of the competition
2.	December 2004	Pre-qualification of tenderers
3.	March 2005	Submission of competition works
4.	April 2005	Announcement of the results of the competition
5.	Mai 2005	Protests
6.	September 2005	The first judgment of the Regional Court – to re-evaluation by the contracting authority
7.	October 2005	Second evaluation of competition works
8.	November 2005	Protests
9.	March 2006	The second judgment of the Regional Court – to the re-evaluation by the contracting authority
10.	July 2006	Cancellation of the competition

Source: (Suwara, 2011)

Every single problem mentioned above can be fixed in many ways with better or worse result. Specific of nationality conditions associated with investment projects makes it difficult and complex issue. With awareness of conditions diversity it is possible to try implement some best practise working well in other countries. Good example of handling legislation changes is a system that works in the Netherlands. MIRT (Multi-year Plan for Infrastructure, Spatial Planning and Transport) is a well-defined scheme, which implementation resulted in 50 percent faster investment process. That was possible after analysing number of projects and rearranging the whole system. In case of quality assurance of the investment process a use of an external companies to prepare documentation seems to be best alternative. Good example of such doing is Denmark practise. At both Levels of the scheme the external analysis is a key. When it comes to the weakest point in Polish scheme, an economic issue, the example of a good practise can be the Norwegian scheme. Ministry of finance supervises a Norwegian scheme what results in big focus on economic issues. The quality assurances QA1 and QA2 are prioritized in securing financials. This is a missing part in Polish scheme that should be considered and the reference to Norwegian scheme would possibly bring a good solution.

7. Conclusion

This thesis is a result of many talks with Professor Tore Haavaldsen, who made me interested in front-end phase of investment projects. The commonness of big projects failure caused by different factors (cost overruns, delays, not meeting strategical goals, etc.) despite numerous years, or decades of experience in the entire world, is still a big concern. It does not mean that throughout all this years of experience a big projects process has not been improved. Such investments have almost no secrets when it comes to operational, or tactical level of the project. The problem shows up while looking at the project from strategical level perspective. At strategical level the perspective of concerns extends to even 100 years ahead. It is all about to possibly best, prediction of the costs and benefits of a project in such long-term. That leads to the front-end phase of the project where should be a place for such “debate”.

Time to write this thesis was extremely limited. From decision about the subject of this thesis to due to time was about 5 months. Study of the literature revealed the complexity of the front-end issue and accordingly to the will of describing own national scheme, it became necessary to narrow the research to only road sector. Main reason was a lack of general scheme for all kinds of investment projects in Poland, what requires study every sector separately because of their own schemes.

Road sector was chosen because of few factors. Road sector in Poland is probably most developed one (thanks to EU funds in last decade Poland developed road network more than any country in Europe). Road sector is quite easy to compare between different countries (except politics, the challenges are similar). Many studies among Europe allows easy access to information about schemes in other countries. And finally it is probably the most accessible sector in Poland to receive any data about particular project or general scheme.

All this components resulted in the final image of this thesis where Polish scheme and its exemplary procedure was described. To make this research more valuable and better showing reality of Polish scheme in road investments, more projects should be analysed and compare. In case of this research it is possible to noticed only general problems that seems to be weaknesses in the whole process of investment procedure. Every of findings presented in chapter 5, should be examined more detailed to draw final conclusions and propose possible solutions, or ways to improvement.

7.1. Final findings – answers to research questions

The entire thesis would not have any sense without trying to answer questions that leads the research to some conclusions and knowledge that possibly allow to extend the research in directions unreachable before. In this case 3 research questions was formulated and the whole thesis was mentioned to provide answers.

- What is a quality assurance scheme in Polish road sector? How the structure of the scheme looks like?

The answer is presented in chapter 2 where the whole procedure of Polish road investment process was described. It is based on strategic development of the country and road sector appointed by government and ministry of infrastructure, and then by following the ordinance of General Director of National Roads and Motorways. Its quality is assured by control stages where external institutions evaluates documentation of the particular project. The quality is also examined by Regional Directorate of National Roads and Motorways, which is responsible for the particular project and commissioning a documentation performance to external companies, and assess their work up to date.

- How Polish scheme looks on the background of European practice, comparing to more developed countries?

To answer this question in detail further research is needed. Based on this thesis the answer can be only facilely. Nevertheless the road sector scheme in Poland seems to be useable with protecting many elements during the investment process. Accordingly to this research the environmental issues are prioritized in Poland and the biggest concern is put on it. Despite importance of environmental issues in such scheme, the prioritization is questionable. In general an European practise focuses on economic issues of the investment projects. That neglecting of economic issues seems to be unreasonable and should be examined with much bigger concern.

- What are the strengths and weaknesses of the scheme in Polish road sector? Which European practice could work in Poland?

As described in chapter 5 there was found some weaknesses in proceeding the existing scheme and in the scheme itself. The weaknesses were formulated as follows. The problem with often change of law acts. The politicians cannot state one consistent strategy, which would be basis for stable scheme. Second problem is a number of members of the process, too

much institutions are involved in the scheme what makes entire process long and complicated. Neglecting economic issue, the expenses should be much more under consideration. Underestimation of social voice, which can cause a lot of complaints during investment process. And finally bad working tendering process where appeals against a decision can cause cancellation of the process and necessity of proceeding another one.

7.2. Suggestions for further work

Further work can go into two ways. First possibility is to better examined a road investment process with focus on weaknesses stated in this thesis. It would be possible by analysis more projects on national level (expressways or motorways). Such research should be based on interviews to know better the problems from inside of the process. That kind of research could possibly get knowledge what existing problems could solve best by asking people responsible for each aspect. Second possibility is to get knowledge about other sectors in Poland and their schemes of investment projects. Extensive knowledge of such schemes could possibly lead to take best practise of each one and propose general scheme for all kind of investment projects in Poland. Such scheme could be effective from economical point of view, especially when it comes to budget expenses what shown in the road sector does not secure investments economic enough.

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Appendix

Project governance in Polish road sector: presentation and comparison with European countries.

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Key words: project governance, road project governance, polish road sector, public project scheme.

Abstract

This paper reports on an investigation on the project governance scheme in the Polish road sector. It is based on the case study of the project of the expressway S-7 realized in northern Poland. The aim of this research was to present Polish road sector scheme and to analyse it with basis on the implemented project. To provide investigation properly, a literature study was performed as well as a definition of the road sector scheme based on guidelines and law acts. Based on the research, significant strengths and weaknesses were identified. The most important weaknesses were found to be, firstly, a too large number of actors in decision-making process, and secondly, slighting of the economic values. The most important strengths were found to be, firstly, a very accurate supervision of environmental impact, and secondly, the self-control of the General Directorate of National Roads and Motorways (GDDKiA). The paper had many limitations what encourages to further research. The biggest limitation was difficulties with obtaining accurate data adopted to the analysis for project. The paper offers two main possible ways for further research. The first consist in advancing deeper into an analysis of the road sector. The other consist in the possibility of an analysis of other sectors and, based on a comparative approach, trying to propose measures with the intention of creating a general national project governance scheme for Poland. On basis of the paper, some suggestions were formulated based on identified European practices. Examples of these are, reducing the number of participants involved into the scheme, and addressing economic issues in more detail. This paper should contribute real value for Polish scientists, who are interested in project governance, and international society of scientists by presenting Polish project governance scheme in road sector.

Introduction

Project governance is a term that has been investigated in many publications (Bent Flyvbjerg et al., 2003, Miller and Hobbs, 2005, Muller, 2009). Its complexity and significance especially in major project investments are challenging. Despite of a large knowledge about process of investment projects, there are still some issues that make scientists being concerned. The biggest interest focuses on front-end and planning phases. Those stages of the project's process cause most difficulties when it comes to considering a long-term

perspective. Problems with project governance are investigated by Concept Program founded at Norwegian University of Science and Technology where many publications studied related issues (Samset et al., 2006), (Christensen, 2009), and (Samset and Volden, 2016). The most important components identified as essential for providing proper front-end and planning phase were formulated into three main issues: sustainability, accountability and transparency (OECD, 2014). The practice shows that sustainability is the most difficult to provide (Volden et al., 2015).

The research is divided into three main parts. The first one describes the scheme of the Polish road sector, the second one is a case study of the expressway S-7 project. The third one describes briefly other schemes in Europe with the aim to compare them to Polish system and finally make some conclusions and proposals. To provide this research valuable, a lot of literature study was performed. Guidelines, acts of law and project documentation were studied. Additionally, a personal discourse with people being put in charge of preparation of the road projects in Poland.

The aim of this research is to present the governance scheme in the Polish road sector, notably by 1) presenting the Polish practice and extend knowledge about the system in the country (scarcely described at an international scene) and 2) to make evaluation of the scheme in Polish road sector.

Investigation has been based on the following research questions:

1. How the project governance scheme is structured in the Polish road sector?
2. What are the strengths and weaknesses of the scheme in the Polish road sector?
3. How Polish scheme can be improved based on European practice?

On basis of findings and analyses, conclusions and proposals are formulated.

Methodology

This study was carried out through the analysis of a single case study; The project of expressway S-7 in northern Poland. The rationale for investigation on the road project in Poland was to present the Polish scheme at international scene, and make its evaluation. The case study was conducted by converging four sources of evidence, a documentation study (Transprojekt Gdański, 2008, WYG International, 2010), acts of law research (Generalny Dyrektor Dróg Krajowych i Autostrad, 2009, Parlament, 1994, Rada Ministrów, 2015),

international scene review (Christensen, 2009, Samset et al., 2015), and interviews with people being put in charge of preparation of the road projects in Poland. The documentation study includes the documents performed on different stages of the project (Technical-Economic-Environmental Study and Concept Program Study). Acts of law were selected by the relation with the road sector scheme. The international scene was set among countries investigated by the Concept Program scientists at NTNU. The interviews were performed in regional directorate of GDDKiA in Gdańsk, which was responsible for the northern part of the expressway S-7 project. After collecting data the description and evaluation was possible to be performed.

Theoretical framework

The public sector projects, including roads, are the outcome of a political compromise between stakeholders. The authorities at different administrative levels are involved, both centrally and locally. Participants as the general public, the media, as well as private sector advisors and contractors makes that processes are often complex, and partly opaque. Such complexity leads to not always predictable outcomes. Good illustrations of this provides (Miller and Lessard, 2000). Moreover, such processes may also be characterised by repudiation of liability and hidden agendas, rather than transparency, altruism and social responsibility (Bent Flyvbjerg et al., 2003, Miller and Hobbs, 2005).

A governance regime for large investment project is understood, at this point, as the processes and systems involved by the founding party to provide successful investment. Achievement of the succeeded investment is possible by regulatory measures that intend to secure quality of the basis for decision making at an early stage; that the financial framework is realistic, that the goals are clearly defined, that responsibilities are allocated in such a manner that any problems that may arise can be resolved along the way, that the quality of the basis for decision making is sound, etc.

Earlier studies show that it often works best to impose *overarching requirements* with regard to structures, processes, outcomes, etc., but not to intervene in actual project implementation (Samset et al., 2006).

Polish background of public investments is meagre. After political transformation in 90's the entire way of proceeding public projects have changed. The short experience with capitalist economy still keep Poland one step behind the best developed countries in Europe. Strong

will of performing world class projects does not covers the lack of experience, and as the consequence lack of scientific publications. Nevertheless there are some literature that describes the Polish scene and its complexity with law background (Błachut et al., 2007).

The lack of scientific publications is compensated by guidelines published on governmental order with links to existing law and ordinances (Adamczyk et al., 2010).

Case study of the expressway S-7 as an example of the Polish road project governance in practice.

The expressway S-7 project was launched in 2006 when the Ordinance of General Director of National Roads and Motorways was a bit different, this is the reason why the stages of the project were quite different. In fact, the biggest difference was in the division of the project parts, and the main studies were examined similarly.

- Technical-Economic-Environmental Study
- Documentation for Decision on Environmental Conditions
- Concept Program
- Construction Project
- Permission for Investment Implementation

The technical-Economic-Environmental Study was contracted to Transprojekt Gdański Company on 22.06.2006. The aim of this study was to elaborate an optimal road route based on comparative analysis in order to (Transprojekt Gdański, 2008):

- Environment protection.
- Social issues.
- Technical issues.
- Economic issues.

Technical-Economic-Environmental Study has two stages where in Stage I investment preparation consists of preliminary road route study and preliminary agreements. Stage II consists of variants development, statement of material and financial scope, traffic analysis, economic analysis, environmental analysis, agreements and opinions.

Decision on Environmental Conditions was stated after elaboration of Technical-Economic-Environmental Study and its corrections accordingly to disclaimers of auditing institutions.

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The Decision was made accordingly to acceptance of General Director of Environmental Protection and Regional Sanitary Inspector. After consideration of every complain application referring to route localization, the recommended variant was proposed:

- Variant “Basic” with options “Rakowiska” and “Southern”, additionally considering options “Dworek” and “Ryki”.

Concept Program made on order of Regional Directorate of National Roads and Motorways in Gdańsk by WYG International Company was delivered in July of 2010 (WYG International, 2010). Analysis of the report included:

- Visibility analysis
- Multi-criteria comparative analysis of detours while implementation of the investment (the object of analysis, a description of embodiments, the method of calculation and weights criteria, evaluation of the options, recommendations)
- Inter-professional agreement sheet

Received document was evaluated and checked by, firstly, Evaluation Team of Investment in Regional Directorate and then by Evaluation Committee of Investment in General Directorate. Accordingly to accepted Concept Program a Construction Project was allowed to be launched.

Construction project was performed as a more detail document. It presents parameters that enable to plan implementation phase and technology of building works. This is also required to application on Permission for Investment Implementation.

The application (submitted in 30.05.2014 after construction project acceptance) elaboration process took more than one year and become validity depending on part of the project (construction project was divided into two parts in case of contracting two different building companies). First part obtained Permission for Investment Implementation in 18.08.2015 and the second 6.08.2015. In both cases the appeal against the decision was submitted by property owners or other stakeholders. Such appeals are considered by Ministry of Infrastructure and its decision is final and unquestionable. Such decision was made in 28.08.2015 and 13.08.2015 respectively to part 1 and 2 of the construction project.

Regional Directorate of National Roads and Motorways in Gdańsk did not wait for the final decision of Permission for Investment Implementation and during this process started tendering procedure to find contractors for project implementation. This helped to save about a year of tendering procedure process in case of starting it after Permission for Investment

Implementation obtaining. As a result the contractors were chosen before the permission and the implementation process could start right after permission obtaining, the contracts were signed in 9.10.2015 and the implementation process started in 15.10.2015 (both contractors at the same time).

European practice in project governance schemes

The Concept investigations have been used as reference to the comparison between Polish and European practice. Five countries were chosen: Norway, The Netherlands, The United Kingdom, Sweden, and Denmark. Brief literature study on this topic revealed some strengths of each governance scheme in those countries. The strengths were the main focus of the study in order to propose some possible improvements in Polish road sector scheme.

The Norwegian schemes are mainly focused on costs issues. Common cost overruns of the projects moved them to set it at the first place of prioritization. There are two main stages where quality assurance is secured QA1 and QA2. Those two stages apply only to the front-end phase (from project idea to final funding decision). The whole process is supervised by Ministry of Finance, which is in fact responsible for every public project exceeding the amount of 750 million NOK (Samset et al., 2015).

In the Netherlands there is no central governmental scheme that generally concerns every sector of public investment projects. Each ministry has its own processes and procedures for planning, prioritisation and decision making (Shiferaw, 2013). The Infrastructure sector scheme is based on the recommendations of the Government-appointed commission and introducing a programming and budgeting system called MIRT (Multi-year Plan for Infrastructure, Spatial Planning and Transport). (Samset et al., 2015). The MIRT process consists three phases and four reviews/decision gates. The first decision gate MIRT1 is a technical/political issue to identify the solution to a given problem (Klakegg, 2016). In the second phase MIRT2 the chosen alternative is identifying and leads to administrative decision. Next phase follows the decision to commence planning, chosen alternative is studied more detailed, which results in the documentation of the project that is to be presented to the ICRE. Then subjected to political deliberation based on feedback from external independent bodies (CPB, PBL, etc.), and finally submitted to the Government for final prioritisation among other investment projects (Samset et al., 2015).

In the UK scheme of quality assurance refers to important transitions between project phases. It applies to the largest and most risky central government investment projects – across

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sectors. Responsibility of the scheme is spread to HM Treasury and Cabinet Office, and it is managed by the Major Projects Authority (MPA), which is a unit placed within the Cabinet Office. The scheme is additional to the requirements and processes applied by individual ministries and agencies. In 2011 Government established the Major Projects Authority, which responsibility is to ensure independent quality assurance of the largest projects, as well as to report on, support and develop expertise in the management of large projects within the public administration. The MPA responsibility is to gather and publish data on the projects in its portfolio; the Government Major Projects Portfolio (GMPP). The main cause is to achieve disciplining effect by transparency, and make easier choice for HM Treasury (Samset et al., 2015).

In Sweden there is no central system for large investment project. Each sector has its own processes for the planning and implementation of investments. The biggest central government agency is the Swedish Transport Administration, which accounts for more than 50% of the value of central government investments. To choose most effective concept the application of a four-step model is elaborated. It is performed in the front-end phase of potential investments, before choosing measures (Samset et al., 2015). The Swedish system has a strong focus on choice of concept, collaboration, economics and environmental (required environmental approval from the County Administrative Board) aspects. In case of economics, more weight is attached to economic profitability than to cost estimation while planning process (Samset et al., 2015).

Denmark scheme for large public investments establishing a joint model for road and rail sector, which involves external quality assurance. Appraisal is divided into two decision points. At Decision Level 1, it is decided which concepts will be taken forward, and at Decision Level 2, it is decided whether the project shall be implemented (Samset et al., 2015). Investment project in Denmark comprises five phases with two decision points (Level 1 and Level 2). Each decision level shall be subjected to external quality assurance and the investment cost shall be increased by an experience-based correction supplement following such quality assurance. There is so-called Experience-based correction supplement, which should be added at both decision levels after the external quality assurance has been completed (to prevent the cost estimate from being unrealistically low) (Samset et al., 2015).

Findings of the research

The project governance in the Polish road sector is based on guidelines and acts of law. The most general document that refers to the road system is the National Development Strategy 2020 (Ministerstwo Rozwoju, 2012), which is stated by ministry of development with the acceptance of the Council of Ministries. A more itemized document is provided by Ministry of Infrastructure, named Transport Development Strategy (Ministerstwo Infrastruktury i Budownictwa, 2013). Based on Transport Development Strategy, the Government is obliged to formulate the National Roads Building Program 2014-2023 (Rada Ministrów, 2015). The National Roads Building Program specifies the roads which are planned to be built in the prescribed period. For performing projects and preparing investments the General Directorate of National Roads and Motorways is responsible. This institution is ought to provide the road project from the very beginning to the operational phase. The phase stages are shown in the figure below.

Figure 1 Phase stages in the scheme of the Polish road sector.



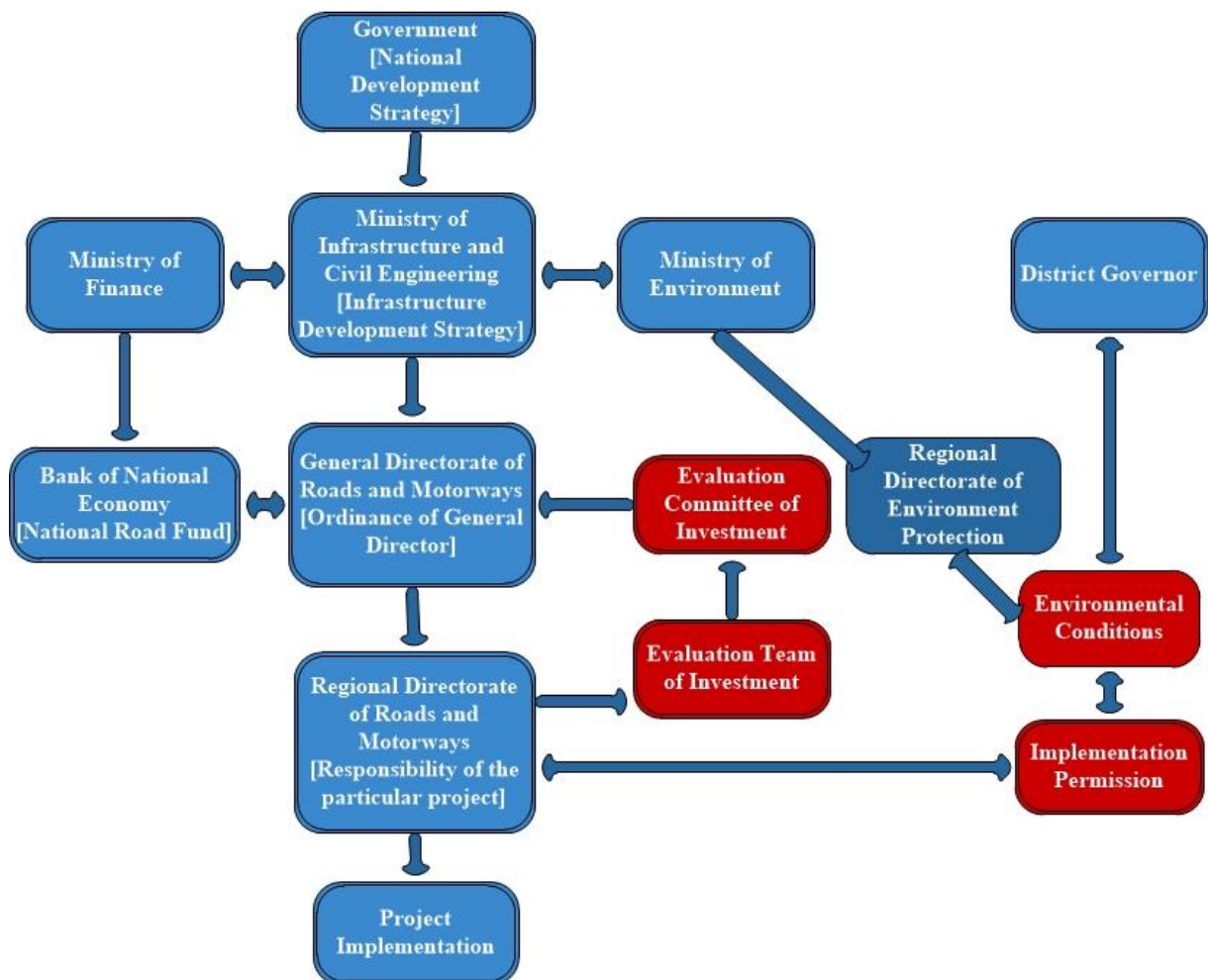
The Idea Phase contains the first concept of the potential project. The idea is formulated in governmental documents as Transport Development Strategy and National Roads Building Program. In this phase, projects are only a vision of the authorities. This is the first moment when General Directorate of National Roads and Motorways (GDDKiA) learn that some road projects will be needed to perform. Preliminary design is a phase where the responsibility goes to GDDKiA. This stage consists of Network Study, Corridor Study, and Technical-Economic-Environmental Study. Each of them discusses further details of the project and ends with an evaluation. The Administrative phase involves the Decision on Environmental Conditions process. It is the first stage where other institutions, instead of GDDKiA, get involved into the process. The General Directorate of Environment is responsible for evaluation of the application from GDDKiA and issue the Decision on Environmental Conditions. Having obtained the decision from General Directorate of Environment, the Detail phase begins. At this stage the Concept Program and the Construction Project needs to be performed. Those two studies allow to apply for the Permission for Road Investment Implementation. Application is submitted to District Governor, who issues a decision after consultations with Ministry of Environment and Regional Sanitary Inspector. The

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Implementation phase starts after obtaining the Permission for Road Investment Implementation. The Regional Directorate of National Roads and Motorways, which in fact is responsible for a particular project, arrange for the performance of the project on the basis of tender. Operation phase starts when the road is ready to use.

Based on guidelines and acts of law the actors of decision-making process were identified. To illustrate the actors and relations between them the interrelation tree was developed.

Figure 2. Actors of decision-making process in the Polish road sector.



The decision tree above contains institutions which are illustrated on the blue spots whereas the red spots show quality assurance stages where the evaluations and decisions are provided. The whole figure presents a process that can be divided into a few stages, which have to be performed in sequence. In fact, each stage ends with some evaluation and assurance of fulfilling a number of guidelines.

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Government role is limited to securing the quality and rationale of the strategic documents, and state the National Roads Building Program. Nevertheless in extraordinary situations, its role can be extended in case of exceeded funds secured in National Roads Building Program. To use extra funds the acceptance of the government is required.

The role of the Ministry of Finance is to control Polish national budget and expenses. In case of road investments there are two main sources of funding, and both are under the Ministry of Finance. Expenses coming from budget are stated directly by Ministry and are analysed every year. Other and the biggest source of funding, which is intended to provide road investments, come from National Road Fund which is supplied by the Bank of National Economy. The Fund responsible for roads investments was founded in order to improve and develop the investment process of building roads and improving the efficiency of public resources use. The National Road Fund enables the implementation of National Roads Building Program.

The Ministry of Infrastructure and Civil Engineering is an institution that General Directorate of National Roads and Motorways is subordinated. Ministry is responsible for preparing Transport Development Strategy and more detailed document Transport Development Implementation Strategy. General Directorate of National Roads and Motorways is obligated to follow aims and priorities stated in these two documents what makes a proper preparation of them very important.

General Directorate of National Roads and Motorways is the main body responsible for maintenance and developing Polish national roads network. On the one side, the GDDKiA is a central governmental institution which has administrative functions (makes administrative decisions). On the other side, the GDDKiA is a body responsible for preparation and realization of road investments. In the process of road project preparation, only few departments of General Directorate take part, most work is done by Regional Directorates. Which Regional Directorate is responsible for particular project depends on the area where the biggest part of the specific investment will be situated.

Regional Directorate of Roads and Motorways is the one fully responsible for planning and preparation of the investment and afterwards realization. To do this effectively the Ordinance no 17 of General Director is followed (Generalny Dyrektor Dróg Krajowych i Autostrad, 2009). Key issues that secure quality of prepared investment are Evaluation Team at regional level and Evaluation Committee at general level. These are two tools stated by General

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Directorate of National Roads and Motorways to secure its own process of preparing road investment.

The Evaluation Team of Investment after Network Study and Technical-Economic-Environmental Study: authorize Regional Director to send an application to Evaluation Committee of Investment in General Directorate, or resend documentation to responsible departments in case of required corrections. In case of evaluation on documents required to obtain decision on permission of investment implementation ETI: authorize Regional Director to send an application to General Director for acceptance, or resend documentation to responsible departments in case of required corrections, or send request to Evaluation Committee of Investment for advice.

The Evaluation Committee of Investment session can be organized in case of need to analyse system solutions or guidelines for designing proceedings. Session concerning the Technical-Economic-Environmental Study can be set by application of Regional Director. In case of Concept Program the session of ECI can be set by application of General Director, Vice-General Director, Director of Organization Body in General Directorate, or Regional Director. The Evaluation Committee of Investment decision needs to be signed by General Director and then becomes generally binding.

The main role of Ministry of Environment is to make sure that environmental issues are secured at governmental level. It gives advice and recommendations to District Governor during Road Investment Process.

Regional Directorate of Environment Protection is responsible for Decision on Environmental Conditions. They analyse the primary environmental decision and points the necessity of animals passing or the need of acoustic screens installation. In fact, without this decision District Governor cannot proceed to the Permission for Investment Implementation process. That makes the Decision on Environmental Conditions one of key evaluation of the investment.

District Governor's role in Road Investment Process is very important. It is only a part of the process where decisions are made out of General Directorate of National Roads and Motorways. There are two stages where District Governor decision allows General Directorate to elaborate investment further:

- Decision on Environment Conditions

- Decision on Permission of Investment Implementation

Those two stages are an external audit of work provided by General Directorate of National Roads and Motorways, where many institutions are involved. Throughout these stages different institutions analysing documentation prepared by GDDKiA give acceptance or rejection for every single project. Accordingly to analysis District Governor issue a decision.

As a result of the Polish road sector study with expressway S-7 example some general problems with investment process showed up. First of them was a legislation change. It is not eligible situation when during the investment process the law or guidelines are changing. The project of S-7 expressway on section between Koszwały-Kazimierzowo was started in 22.06.2006 when Regional Directorate of National Roads and Motorways in Gdansk signed the contract with Transprojekt Gdanski Company to performe a Technical-Economic-Environmental Study (STEŚ – Studium Techniczno-Ekonomiczno-Środowiskowe). At that time the STEŚ Study was divided into two stages and the first of them was done until 2008. The problem appeared in 16.06.2008 when the organisational structure of General Directorate of National Roads and Motorways has changed and the scope of STEŚ Study has changed too (Network Study appeared as primary study to perform in investment process). This change took some extra time of the whole investment process of this particular project and a number of other proceedings at that time. The problem with time needed from the launch of a new road investment project in Poland to Implementation phase start is basically to long without any scheme changing. There is no doubt that changing guidelines is as important as stable law order to improve the whole investment process. The problem appears when such guidelines and law order are changed too often and without a coherent strategy what Polish authorities could be accused of.

The duration of road investment projects in Poland are also strongly dependent on the number of members of the process. The necessity of sending a documentation between central institutions (in case of roads investments mostly between General Directorate of National Roads and Motorways, Regional Governor and General Directorate of Environment Protection) takes a lot of time. Time is wasted in preparation of the application sending to other institutions and the whole process of cooperation lasts a long time (usual ask for additional documents and distant statutory deadline to state a decision).

Another issue that should be improved in scheme of Polish road investments is slighting an importance of financial aspects of a project. The main concern throughout the whole process

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of preparing an investment, beginning from front-end phase and ending in the operation phase, is an environmental issue. The point is not to start putting less care of environmental issues, it is about unjustified lack of a reasonable taking responsibility for spending each Polish zloty on uneconomic projects. The range of this problem is representing in Ordinance of General Director of National Roads and Motorways where the necessity of economic evaluations is mentioned only in Technical-Economic-Environmental Study and the only requirement is to present few economic ratios (ENPV, B/C and EIRR).

Similar problem occurs when it comes to public hearings while investment preparations. Accordingly to guidelines, the first communication with society is required right after application for Decision on Environmental Conditions. At that point, most general assumptions about, for example road route or technical solutions are designed. The problem was noticed by General Directorate of National Roads and Motorways and the dialog with society are usually started at earlier stage of preparations. This is a good practise and should be standardized in the scheme to avoid situations where this aspect is missed. Such late public hearings bring also some political danger. It allows, in some extent, to start projects with huge displeasure of society without informing them. Such practise could have taken an advantage to meet the demand of lobbying groups and get personal profits. From that point of view problem with late public hearings seems to be important and becomes another issue to take under consideration.

Conclusion

1. How the project governance scheme is structured in the Polish road sector?

The procedure of the Polish road investment process is based on strategic development of the country and road sector appointed by government and ministry of infrastructure, and then by following the ordinance of General Director of National Roads and Motorways. Its quality is assured by control stages where external institutions evaluate documentation of the particular project. The quality is also examined by Regional Directorate of National Roads and Motorways, which is responsible for the particular project and commissioning a documentation performance to external companies, and assess their work up to date.

2. What are the strengths and weaknesses of the scheme in the Polish road sector?

There was found some weaknesses in proceeding the existing scheme and in the scheme itself. The weaknesses were formulated as follows. The problem with the frequent change of law

acts. The politicians cannot state one consistent strategy, which would be the basis for the stable scheme. The second problem is a number of members of the process, too many institutions are involved in the scheme what makes the entire process long and complicated. The slighting economic issue- the expenses should be under closer consideration. The underestimation of social voice, which, undoubtedly, can lead to a great deal of complaints during the investment process. And, eventually- bad working tendering process where appeals against a decision can cause cancellation of the process and the necessity of proceeding another one.

3. How Polish scheme can be improved based on European practice?

The road sector scheme in Poland seems to be useable with protecting many elements during the investment process. Accordingly to this research the environmental issues are prioritized in Poland and it is the biggest concern. Despite importance of environmental issues in such scheme, the prioritization is questionable. In general the European practice focuses on economic issues of the investment projects. That slighting of economic issues seems to be unreasonable and should be examined much closer.

Further work can go into two ways.

1. The first possibility is to examine a road investment process better with the focus on weaknesses stated in this paper. It would be possible by analysing more projects on national level (expressways or motorways). Such research should be based on interviews to get to know the problems better from the inside of the process. That kind of research could possibly acquire knowledge of what existing problems could solve best by asking people responsible for each aspect.
2. The second option is to gain the knowledge about other sectors in Poland and their schemes of investment projects. Extensive knowledge of such schemes could possibly lead to take best practise of each one and propose general scheme for all kind of investment projects in Poland. Such scheme could be effective from economical point of view, especially when it comes to budget expenses what is shown in the road sector does not secure economic investments enough.

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