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International Business – Central European Business Realities

Potential use of PPP at the reconstruction of prison in Uherské Hradiště

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Declaration:

I hereby declare that I am the sole author of the thesis entitled "Potential use of PPP at the reconstruction of prison in Uherské Hradiště". I have duly marked out all quotations. The used literature and sources are stated in the attached list of references.

In Prague on September 27th, 2012

Kateřina Gracová

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Contents

Introduction

The term PPP – Public Private Partnership has been in general use since the 1990s and currently represents a widespread and commonly used term in nearly all developed countries around the world. During the last few years, it has also become more frequently used in the countries of Central and Eastern Europe, including the Czech Republic (CR). The term PPP covers range of different structures with one common feature – a partnership of the involved entities, i.e. a contractual relationship between representatives of the public and private sector. The main purpose is to use the experience of both spheres and thereby ensure higher effectiveness of the allocated scarce resources that must be used when public goods and services are ensured. Tasks are divided so that each party is in charge of what it is able to manage better with higher efficiency. Different forms of public private partnerships develop depending on the specific needs of the concrete project.

Like other countries in the present time of financial crisis, the Czech public sector is also dealing with the problem of how to finance investment needs so as not to further encumber the state budget. PPP represents an alternative way of implementing demanding infrastructure projects and gives the private sector a greater opportunity to apply its experience and skills in the realization of public contracts. With the PPP method, the public sector can attain the increased quality of provided services for inhabitants of the Czech Republic. On the other hand, PPP also has lot of opponents that are negatively influenced by poor experiences with the bad choice of supplier, with the corruption that is linked to the poor legislative environment, or the relatively high cost of the preparation phase. The PPP method cannot be used in all cases and it is necessary always to consider its suitability for a particular public investment. Nevertheless, provided that PPP is suitable for given project, that all processes and principles are observed and that the concessionaire contract is settled in a comprehensible and clear way, PPP brings the public sector value for money.

In the Czech Republic, experience with the use of PPP method is very scarce. To date, not a single project has been implemented on a national level. The primary aim of this thesis is to consider the usage of PPP method by the reconstruction of the object of former prison in town Uherské Hradiště using the methodology of the Ministry of finance CR. The outcomes of the model should be taken as the basic source for making decision if PPP method is the most efficient for this project. Although the said facility urgently needs reconstruction, the owner – public sector – does not have enough funds at its disposal. In my thesis, I am going to analyse

whether a partnership of the public and public sectors would be the best option for its reconstruction.

The diploma thesis is divided into three main parts.

The aim of the first chapter is to explain PPP and other basic terms that are closely related to it, to describe the different types of PPP, the project cycle, possible means of financing PPP projects and to define the chief advantages and disadvantages of PPP. Furthermore, the institutional and legal frameworks will be described, as they represent an important condition for the realization of PPP projects. Finally, the current state of PPP projects in the Czech Republic will be described and reference projects in the judicial sphere will be presented.

In the second chapter, the methodical tools for PPP evaluation are described. The focus of this chapter is to provide a basic overview of the evaluation method that will be used in last practical part of the thesis. First, evaluation methods from the public and private perspective are described. In the second part, the financial model developed by the Ministry of Finance of the Czech Republic is briefly presented and the concept of a public sector comparator (PSC) is introduced.

The third – practical part is devoted to the project for reconstruction of the former prison compound in Uherské Hradiště. Main aim of this chapter is to compile a basic financial model that will be used to compare project realization through traditional public procurement and through PPP. Regarding public procurement, two possibilities will be considered – financing from the state budget and financing by means of a bond issue. The result should be an assessment of the suitability of using PPP and, if affirmed, a calculation of the value for money.

1. Definition of basic terms

The partnership of public and private sector represents very complex and extensive term that can change depending on the type of project. A detailed description of terms is not the main purpose of this thesis, but some of them should be described for a better understanding of the whole issue.

1.1 Definition of PPP

Currently, there is no single definition of a public private partnership. One could say that the only widespread and commonly used term is the PPP abbreviation. This is also illustrated by the statement of Frits Bolkenstein, EU Commissioner for the Internal Market:
"There is no overarching definition for public private partnerships. PPP is an umbrella notion covering a wide range of economic activity and is in constant evolution."
Nevertheless, PPP is commonly used term that describes the cooperation between the public and private sectors participating in a common project that is usually provided by the public sector itself. Very often, this cooperation involves the financing, building, renovation, management or maintenance of public infrastructure or providing of public services.
Under the Czech law, there is no given definition. The PPP issue is regulated in many legal acts, for example in Public Procurement Act, acts regulating the responsibilities of ministries and municipalities, protection of creditors, etc.
In his book, Mr. Ostřížek claims that *the term Public Private Partnership (PPP) describes the contractually arranged cooperation of the public and private spheres, which is concluded with a specific objective that is usually guaranteeing of public services or infrastructure*.[1] In the United Kingdom, the term PFI (Private Finance Initiative) that corresponds to the Czech term of availability based PPP is used more often. [2] The Czech term of PPP is used for concessions.
In the European Union at the community level, there is likewise no written definition for a Public Private Partnership. According to the Green Paper on Public Private Partnership presented by the Commission, the term refers to *forms of cooperation between public*

[1] OSTŘÍŽEK, J. a kol.: Public práváte partnership– příležitost a výzva, 1. Vydání, Praha, C.H. Beck pro praxi, 2007
[2] PFI and PPP projects are very similar. PFI is a particular method of financing private investment which requires the private sector to design, build, finance and operate facilities. PPP is a generic term used to describe partnerships which involve more flexible methods of financing and operating facilities and/or services although the end result in terms of privatisation is usually the same. (European Service Strategy Unit: PFI and PPP: What future for public service, [retrieved 12.6.2012], Available on: <http://www.european-services-strategy.org.uk>)

authorities and the world of business which aim to ensure the funding, construction, renovation, management or maintenance of public infrastructure or providing of services. [3] *In the United Kingdom, the term public private partnership (PPP) does not have a legal meaning and can be used to describe a wide variety of arrangements involving public and private sectors working together in some way*.[4]

All these definitions have the two following points in common:

- Cooperation of the public and private sectors
- The aim of this cooperation is funding, construction, renovation, management or maintenance of public infrastructure or service provision

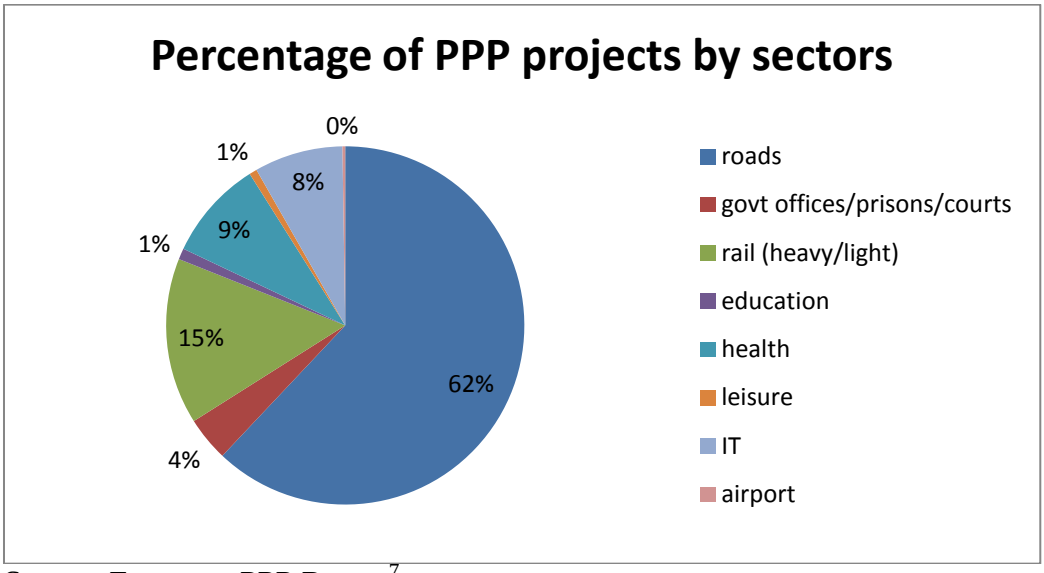
Other characteristics of PPP are the relatively long duration of cooperation between the public and private sectors as divergent aspects of the project are involved; funding of the project provided mainly by the private partner or sometimes divided between the various players[5]; and the distribution of risks between the public and private partner, where the latter takes on the risks that are generally managed by the public sector.
The term infrastructure generally refers to industry, services and equipment, for example roads, water lines, sewage systems, etc.
Typically, PPP is used in the following areas[6]:

- Transport infrastructure - highways, tunnels, bridges, rapid transfer
- Administrative or optionally accommodation capacities – offices, courts, dormitories, administrative areas, prisons
- Health care – hospitals
- Education – university campuses, students dormitories, schools
- Defence – weaponry, special infrastructure
- Utilities – water supply engineering

For better illustration, the graph below shows the use of PPP in the European Union, divided by individual sectors.

[3] GREEN PAPER ON PUBLIC-PRIVATE PARTNERSHIPS AND COMMUNITY LAW ON PUBLIC CONTRACTS AND CONCESSIONS, Commission, Brussel, 2004
[4] The World Bank: Attracting Investors to African Public-Private Partnerships, [retriever 13.6.2012], Available on:< http://www.icafrica.org/fileadmin/documents/guides/Attracting-investors-to-African-PPP.pdf>
[5] More in the chapter PPP financing
[6] VYSKOČIL, V., K., ŠTRUP, O., PAVLÍK, M.: FACILITY MANAGEMENT a Public Private Partnership, 1. vydání, Praha, Professional publishing, 2010

Picture 1: Percentage of PPP projects in European Union by sector



Source: European PPP Report[7]

1.2 History of PPP

In the past few decades, Public Private Partnerships have shown growing potential, at least in a global context. Governments are seeking private partners that would be able to manage the financial, managerial and maintenance aspects of infrastructure to serve public purposes. In many western and overseas countries alike, PPP is becoming an important part of economic policy. PPP projects account for about 15% of infrastructure spending in the United Kingdom and for 8% in Australia (Ernst and Young, 2005). Traditionally, all public possessions were ensured by the public sectors, or better said by the state. It was unimaginable that the private sphere could have any word in the way how public possessions are purchased and to be the party that takes on some risks.

The first changes could be seen in the 1980s in the United Kingdom of Great Britain and Northern Ireland, where the building schools, hospitals, traffic networks, sewerage and plumbing fixtures, public lightning or even prisons with the participation of the private sector had begun.

Actually, cooperation between the public and private spheres reaches much further back into history. We can find similar forms of cooperation even in ancient Rome, where concessions were used when awarding special economic rights. But the rapid development of public contracting was not to be seen until the 18th and 19th Centuries, when there was a boom of American highways and roads built with the use of public contracting. The very concept of

[7] DLA Piper Infrastructure and Project Finance, European PPP Report 2005, [retrieved 15.6.2012], Available on: <backup.transparency.sk/PPP/docs/DLAP%20study.pdf>

PPP can be found first after Second World War in the USA, when it was used as an instrument in the battle against official corruption. However, Europe did not hold back and from the 19th Century, concession models have been used, for instance when building Suez Canal. In the 20th Century, the first PPP projects in Spain were introduced – e.g. roads with the road tax.

The most important country when considering the development of PPP in Europe is the United Kingdom of Great Britain. This is linked to the establishment of Margaret Thatcher as Prime Minister in 1980s, during which period significant changes in the economy were made. Until then, Great Britain had huge problems with high inflation, low employment, structural problems and overall economic recession. One crucial part of the overall changes was represented by privatization, which gave the impulse to create the PPP concept and its further application.

Later on, the idea of PPP spread to more European countries, for instance Portugal, Holland and Ireland, and even overseas to Australia and Canada. Still, Great Britain remains the most experienced country. One of the first projects was the construction of the tunnel under the La Manche Channel, connecting the French town of Calais with the English town of Dover. PPP is also widely used in Ireland (transportation infrastructure, production of electricity from waste, social housing), Holland (high-speed railways, road tunnel, highways), Portugal (highways, road bridge, roads), Italy (energy production from waste), Germany (railways, water infrastructure, transport infrastructure, airport, prisons) and France (highways, railways).

In the Czech Republic, the use of PPP does not have a long history. The effort to interconnect public and private sphere did not appear more than a few years ago, and this was partly linked to the Czech Republic's accession to the European Union and the subsequent searching for ways to decrease public spending, primarily in the field of costly infrastructure projects. Yet as concerns project implementation, PPP is still in its beginning.[8]

[8] The separate chapter is dedicated to the development and current legal environment of PPP in the Czech Republic and also to the institutional cover

1.3 Profile of PPP

There are several characteristic features of PPP. The Green Paper on Public Private Partnership defines these four elements[9]:

• *The relatively long duration of the relationship*, involving cooperation between public partner and private partners on different aspects of a planned project.
• *The method of funding the project*, in part from the private sector, sometimes by means of complex arrangements between the various players. Nonetheless, public funds - in some cases rather substantial - may be added to the private funds.
• *The important role of the economic operator*, who participates at different stages in the project (design, completion, implementation, funding). The public partner primarily concentrates on defining the objectives to be attained in terms of public interest, quality of services provided and pricing policy, and it takes responsibility for monitoring compliance with these objectives.
• *The distribution of risks between the public partner and the private partner*, to whom the risks generally borne by the public sector are transferred. However, PPP does not necessarily mean that the private partner assumes all the risks, or even the major share of the risks linked to the project. The precise distribution of risks is determined case by case, according to the respective ability of the parties concerned to assess, control and cope with this risk.
Together with these characteristics two objectives are consider to be fundamental for the fulfilment of the nature of PPP[10]:

- Achievement of Value for Money for the public sector. The cooperation of public and private sector is to be meaningful only under the condition that it will bring higher value for money than traditional methods of purchasing public goods;
- Achievement of efficiency and quality of public services, or alternatively public infrastructure. The task of the PPP project is therefore maximal usage of the possibilities, skills, experiences and potentials of both public and private partners in a synergy that would not be possible in the case of standard realization of government procurement.

[9] GREEN PAPER ON PUBLIC-PRIVATE PARTNERSHIPS AND COMMUNITY LAW ON PUBLIC CONTRACTS AND CONCESSIONS, Commission, Brussel, 30. 4. 2004
[10] OSTŘÍŽEK, J. a kol.: Public priváte partnership– příležitost a výzva, 1. Vydání, Praha, C.H. Beck pro praxi, 2007

1.4 PPP participants and their relationships

One of the important characteristic of PPP is that the relationships between project's participants (public and private sector) should be built on a clearer and simpler basis. A greater number of contractual parties are expected to participate in major infrastructure projects, and usually the organisational body of the public sector is responsible for organising multilateral contracts among huge number of private sector representatives.
In contrast to this traditional method, another entity is involved in PPP projects, called the SPV (special purpose vehicle)[11], which plays a fundamental role. *The SPV is separate, generally ad hoc created entity – a company that represents the consortium of private companies involved in the implementation of the project and its task is to act as the private sector representative when the contract with the public sector representative is signed.*[12] Therefore, there are only two contractual parties to the contract and no doubt can arise as to who takes what risks.

Therefore, the overall aim of PPPs is to structure the relationship between the parties, so that risks are borne by those best able to control them and increased value is achieved through the exploitation of private sector skills and competencies.

Although the list of participants involved differs from project to project, four key parties are usually involved:

- *The local government department/public sector – grantor*
  The grantor is always a representative of the public sector, that is to say a state authority (e.g. government, ministry) or government unit (municipalities). Setting the objectives, project preparation, announcement of the public tender and selection of the best offer are among the main responsibilities of contracting party. It also supervises project implementation and financing throughout the project. In the thesis, it is called the "Grantor" and this title will be used hereinafter.
- *Special Purpose Vehicle (SPV)*
  SPV represents the link between the public sector (contracting party) and the private parties involved. It can be described as consortium of companies involved in project implementation. The SPV signs the contract and also guarantees the realization and maintenance of the project throughout its whole lifecycle. In the Czech Republic, the

[11] Sometimes also term SPE – Special Purpose Entity is used
[12] OSTŘÍŽEK, J. a kol.: Public priváte partnership– příležitost a výzva, 1. Vydání, Praha, C.H. Beck pro praxi, 2007

private entity that is in charge of delivering the project is called the concessionaire. The concessionaire for signing the concession contract is chosen by the grantor in the concession procedure.

- *Advisors*

  Most often, technical, legal or financial advisors are invited to participate in the project and cooperate with the representative of the public sector during the project preparation phase and closing of the contract. Advisors can take the form of special consulting companies or some governmental units dealing with PPP. The use of several advisors is also possible, as the role of advisor is very important and can prove to be crucial mainly during the evaluation of project implementation.

- *Funders*

  Generally there are two types:

  - Investors that contribute their equity into the SPV
  - Banks and other financial institutions that provide debt financing

- *Subcontractors*

  They are bound by the supplier contract in which the services or material that should be delivered are specified. Two types of subcontractors exist:

  - EPC subcontractors - engineering, procurement and construction subcontractor, i.e. the subcontractor designs the installation, procures the necessary materials and builds the project
  - OM subcontractor – operation and management subcontractor, i.e. the subcontractor is in charge of operation and management

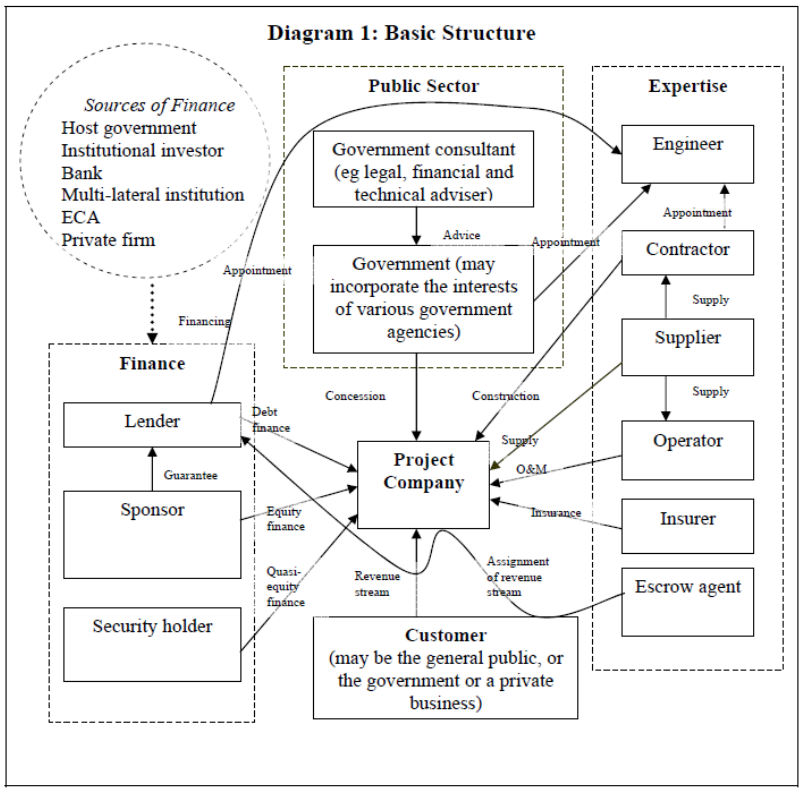
- *Insurance and rating agencies*

  Insurance agencies are involved when economic risks and accidental events are to be covered. The main task of the rating agency is to rate project credit risk and the project's return on investments.

The structures of PPP can look quite different in every case and the entities involved can differ from project to project. Nevertheless, the basic structure of parties involved in the concession[13] can be illustrated by the following diagram:

[13] PPP project in the Czech Republic are realized in the form of the concession by the Act No.139/2006 Coll., on Concession Contracts

Picture 2: Basic structure of parties involved in the concession



Source: A Legal Perspective of Public Private Partnership[14]

1.5 PPP project cycle

Although the process of PPP project preparation and implementation is very complicated and demanding, it can be divided it into four key phases[15]:

- Project identification
    - project selection - to ensure that the investment offers value for money, that is to say the best available outcome for society, taking into account all the benefits, costs and risks over the entire life of the project, whereby the benefits derived from the project outweigh the costs

[14]United Nations Economic and Social Commission for Asia and the Pacific, Transport and Tourism Division: A Legal Perspective of Public Private Partnership, [retrieved 20.6.2012], Available on: <www.unescap.org/ttdw/ppp/.../PPPs_Legal_Perspective.pdf>

[15]The European Investment Bank: The guide to Guyance – How to Prepare, Procure and Deliver PPP Projects, [retrieved 20.6.2012], Available on <http://www.eib.org/epec/resources/guide-to-guidance-en.pdf>

    - assessment of the PPP option – the questions of whether the project is affordable and bankable, what are the key risks, does it provide value for money and others must be answered
- Detailed preparation
    - Getting organised – selecting the right project and advisory team and scheduling the plan and timetable
    - Before launching the project - further studies, detailed PPP design, selecting the procurement method, bid evaluation criteria and draft PPP contract
- Procurement
    - bidding process – the main goal is to create a competitive process with the use of appropriate incentives so that value for money is maximized
    - concluding the PPP contract and financial close – usually experienced advisors are used for careful planning
- Project implementation
    - PPP management - the manner in which the PPP contract is overseen and managed during implementation is critical to its success or failure and to its actual ability to deliver the value for money expected at the procurement stage.
    - ex post evaluation – required to define the institutional framework and develop the analytical framework

1.6 Financing of PPP

Most of the projects that public sector is realizing represent a huge financial burden for the government. The question of suitable funding is considered to be very important, as the public sector should consider the allocation of its scarce sources thoroughly. Project financing can be realized in two basic forms: using own or external sources. Own resources cover not only equity but also the contractor's budget. Debt financing is among external sources. Generally the projects realized by the public sector are financed in these ways[16]:

- taxes
- state bonds and bills
- EU and other funds
- Multilateral debt (EIB, EBRD, WB, …)
- Commercial bank debt

[16] PPP versus Veřejná zakázka – sektorová studie, [retriever 23.6.2012], Available on <http://www.asociaceppp.cz/cnt/sektorove_studie/>

- Private investments
- A combination of different possibilities

PPP financing follows from the rules for project financing that should be stated within each project. Unfortunately until today there are no general rules for project financing on national level. The very specific task is to decide who will finance which project stage in advance. Every phase and its financing must be described, namely the preparation, investing, operation but also the last phase enclosing the project. All project collateral should be given before the project is started.

Projects financed by the public partner

Although this solution may seem very beneficial as the public sector has an access to cheaper capital, it also means that the main advantage of PPP, i.e. the possibility of other financing sources.

Normally the state budget is used. In the Czech Republic, the project can be financed from normal resources, special funds or state bonds. Since 2003, there is also the possibility of using European Union funds – the European Regional Development Fund (ERDF), European Social Fund (ESF) and Cohesion Fund (CF). After 2013 it will also be possible to use other funds like JESSICA, JASPER or JEREMIE. With these funds, a high rate of co-financing can be seen as problematic and they are intended only for particular type of projects.

The European Investment Bank can also be the provider of funds but again, these resources are designated only for particular types of projects and the total amount is restricted.

Projects financed by the private sector

As the cost of private capital is clearly more expensive, these additional costs must be compensated in some way. In the case of PPP, this can be done through better risk management, motivation towards economical long-term operation and the budget plan for the entire project lifecycle. Also, the private partner provides higher efficiency, experience, faster implementation or better quality of services.

There is also the opportunity to use a combination of these methods. Still, there is a lack of concept as to how to link e.g. European funds and private financing for PPP purposes.

Therefore, in most cases financing is provided by the private sector. The possible options are:

- Equity capital

- from the project owners (construction companies, infrastructure funds, government, etc…)

- Funds
  - national, regional (differ every year)
  - EU funds – PPP projects can use funding from the Cohesion Fund, European Social Fund and European Regional Development Fund, EEA and Norway funds
  - Recently, the new funds JEREMIE, JESSICA and JASPERS have appeared on the field of EU funds that can be used for PPP financing. Their use is still complicated as they are established only for particular projects.[17]

- Debt

  In the Czech Republic, credit is most often provided by commercial banks, insurance companies, pension funds and the European Investment Bank (EIB)
  - Senior debt - a debt financing obligation issued by a bank or similar financial institution to a company or individual that holds legal claim to the borrower's assets above all other debt obligations
    - Operational debt – is used to finance operating needs such as the purchase of goods, materials, smaller investment property, receivables, etc.
    - Construction debt – is used to cover the cost of land development and building construction (also called a building loan)
  - Junior debt - its repayment has lower priority than senior debt repayment, but higher than payment of dividends
  - Bridge debt – is short-term debt that enables the company to meet current obligations by providing immediate cash flow
  - Subordinated debt – ranks among other debts with regards to claims on assets or earnings

- Public and non-public bonds – publicly issued bonds usually have more attractive interests (from the concessionaire's point of view) than bank loans. Privately issued bonds are less beneficial for the concessionaire but they provide the possibility to extend the spectrum of project finance structure[18]

[17] More information on: <http://ec.europa.eu/regional_policy/thefunds/instruments/index_en.cfm>
[18] Ministerstvo vnitra České republicky, Financování PPP projektů, [Retrieved 28.6.2012], Available on: < http://www.mvcr.cz/docDetail.aspx?docid=21300515&doctype=ART&>

Based on the PPP structure of the concessionaire, the payment may be based on[19]:

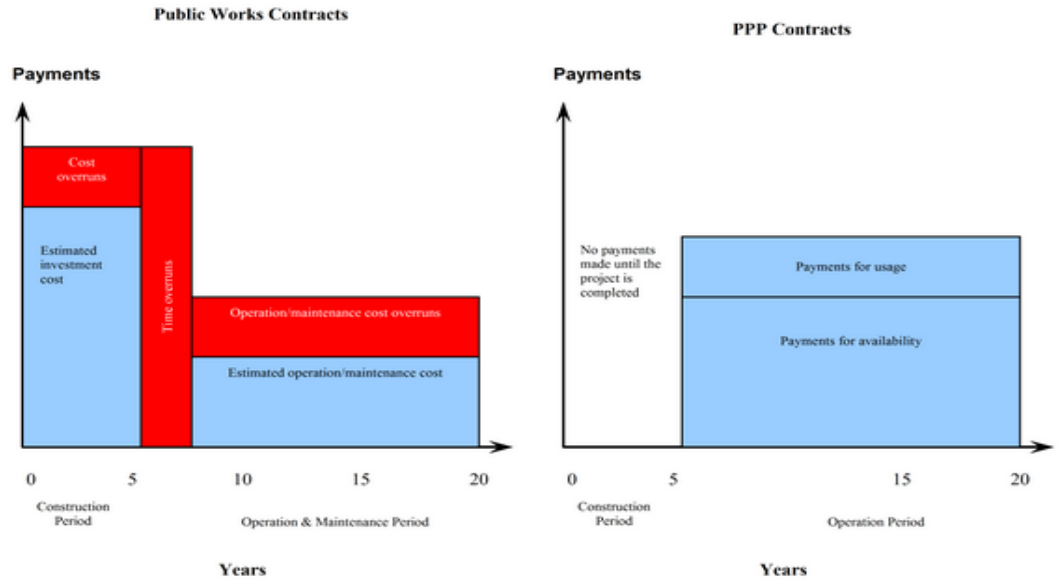
- **Availability of the service –** the availability payments are launched when the capacities or facilities are made available at the specified level and are ready to use
- **Performance quality of the service –** performance payments are used mainly for auxiliary services such as cleaning or security, when the payment can be reduced by penalties for bad service provision
- **Usage of the service** – usage payments depend on the extent to which the service is used, e.g. number of accommodations

  The availability payment represents the most commonly used means of the contracting authority's payment to the supplier so that the infrastructure is available in the required quality and quantity. Under the availability basis of payment, the public agency will pay the private provider an amount for each unit of service/facility that is made available, i.e. the service at the specified performance standard is ready for use up to an agreed quantity regardless of the extent to which the service/facility is used. The availability payments are defined as the total cost of the private sector increased by required internal rate of return minus all incomes that the project will generate for the private sector.

The main opportunity of this form of payment is its use as an incentive to encourage outstanding performance from the private partner; from the owner's perspective there is a guarantee of stable payment fees. On the other hand, this system also comprises threats, e.g. penalties can be insufficient to motivate the private sector or on the contrary, excessive penalties can represent a major strain on the private operator.[20]

[19] Ministry of Finance, Singapore, Public Private Partnership Handbook, [Retrieved 8.9.2012], Available on <http://app.mof.gov.sg/data/cmsresource/PPP/Public%20Private%20Partnership%20Handbook%20.pdf>
[20] Organisation from economic cooperation and development: Financial arrangements inPPP, [retrieved: 30.6.2012], Available on: <http://www.oecd.org/dataoecd/4/12/39314377.pdf>

Picture 3: Differences when the project is implemented through traditional public procurement and the PPP method



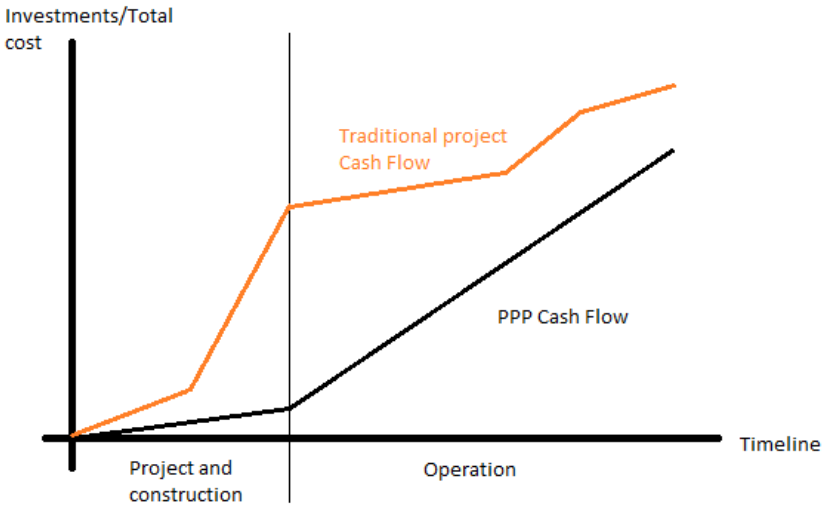
Source: Public procurement best practice guide[21]

1.7Project cash flow

There is a huge difference in cash flows when realizing the project through PPP and through conventional public procurement. In the following figure, the different development of cash flows for the public sector is depicted. In the conventional investment model, a vast amount of expenditure is accumulated in the construction phase (payments to the provider of construction, material and technologies). After launching the operation phase, the increase in cost is minimal with the exception of expenditures for reconstruction in a later period.
For PPP the situation is rather different. In the beginning of the project, expenditures for the public sector are minimal. The regular payments in the form of availability payments start with the operational phase. It must also be noted that the private sector is often able to achieve savings during the construction phase that will later be reflected in a lower rate of total expenditures. Other savings can also emerge during the operational phase, as the private sector is able to manage it more efficiently.

[21] Republic of Cyprus, Treasury of the republic: Public Procurement Best Practise Guide, [retriever 30.06.2012], Available on: < http://www.publicprocurementguides.treasury.gov.cy/OHS-EN/HTML/index.html?annex_5_2.htm>

Picture 4: Investment lifecycle – cash flow of traditional public procurement and PPP from the grantor's point of view



Source: Úvod do metodiky řešení PPP projektů v České republice[22]

For traditional public procurement, it is typical that expenses are accumulated into the first years of building (as invoices are paid to the suppliers). After launching use, the operation costs are lower with growth in later years that is connected to modernization and repairs. On the other hand, PPP represents only low expenses for the public sector that are also influenced by the private sector's ability to generate savings in the building stage. After the start of use of the project, the cash flows represent a linear curve.

1.8 PPP categories and types

1.8.1 PPP categories

PPP models can be classified into five categories so that the private sector is more involved in sharing the risk. These five categories are:

- *Supply and management contracts*

  A management contract is a contractual arrangement for the management of a part or entire public enterprise (for example, a specialized port terminal for container handling at

[22] Asociace PPP: Úvod do metodiky řešení PPP projektů v České republice, [retrieved 10.7.2012], Available on: < www.asociaceppp.cz/cnt/ppp_u_nas/?>

a port or a facility) by the private sector.[23] The skills of the private sector are used in service design and delivery, labour management, operational control and equipment procurement, but generally the private sector is not involved in the commercial risk. The ownership of the facility and equipment is in hands of the public sector. The private party is paid a fee for its services usually on a performance basis. The typical contractual term is three to five years but can be longer for larger operational facilities.

The main variants are outsourcing, maintenance management and operational management.

- *Turnkey*

Turnkey presents a traditional model for infrastructure facilities, also known as Design-Build. A private contractor must be chosen in the bidding process and it designs and builds the facility for a fixed fee, rate or total cost - usually the key criteria for selection of the winner. This contractor assumes the design and construction risks and its involvement in investing is generally low and short-term.

- *Affermage/Lease*

The operator (the leaseholder) is responsible for operating and maintaining the already existing infrastructure facility, but generally does not need to make any major investments. Very often, this is combined with another model, e.g. build-rehabilitate-operate-transfer.

These two models are very similar, the only difference is technical. Under an affermage, the revenues are shared between the operator and the contracting authority, whereas under a lease the revenues that are collected from customers/users are retained by the operator who pays a specified fee to the contracting authority.

Usually, the time constrains of the lease are defined in the contract. The government bears the investment risks and the operator bears the operational risks.

The main variants are lease and affermage.

- *Concession*

A concession is an agreement between the government (grantor/contracting authority) and the project company. Its role is to define the requirements of the project and to grant licenses for construction/operation/maintenance. The concession agreement must clearly set out the scope of work for the concessionaire, including their obligations and rights,

[23] United Nations: A guidebook on public private partnership in infrastructure,[retrieved 30.6.2012], Available on: <http://www.unescap.org/ttdw/common/TPT/PPP/text/ppp_guidebook.pdf>

and the duration for which this is granted.[24] Typically, they are agreed for 5 to 50 years. The payments can be made in both ways, to governments for the concession rights and to the concessionaire so that it is able to meet certain specific agreed conditions.

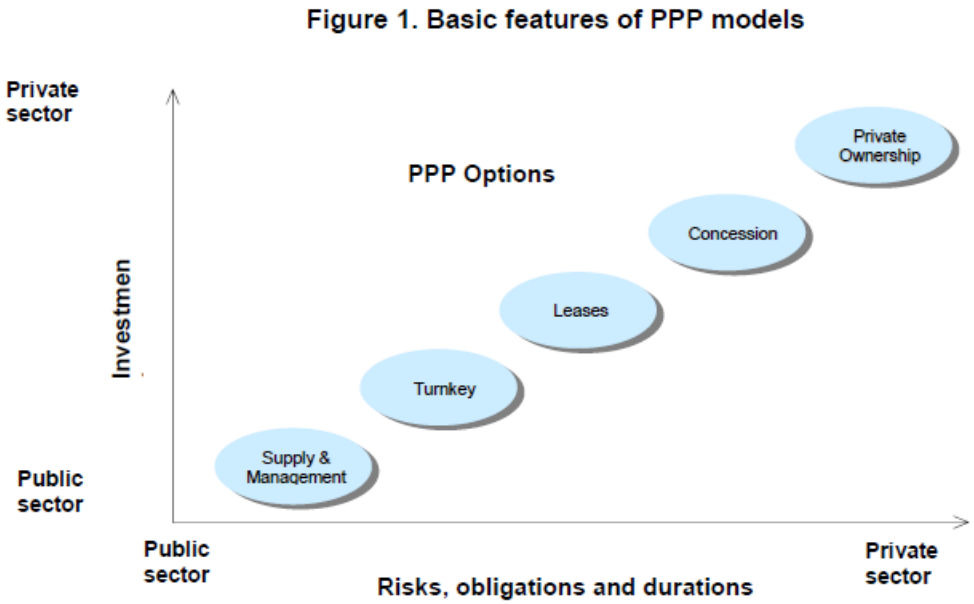
The main variants of concessions are a franchise and Build-Operate-Transfer (BOT)[25].

- *Private ownership of assets and PFI type*

Private Finance Initiative (PFI) requires private sector consortia to raise private finance to fund projects, which must involve investment in assets and the long-term delivery of services to the public sector.[26] The public sector purchases services from the private sector through a long-term agreement. Generally, the ownership of assets is transferred to the public sector at the end of the contractual term. As PFI can be awarded to existing companies, a Special Purpose Vehicle does not have to be established.

The main variants are Build-Own-Operate (BOO), Design-Build-Finance-Operate (DBFO), Private Finance Initiative (PFI) and Divestiture.

Picture 5: Basic features of PPP models



Source: A Guidebook on Public-Private Partnership in Infrastructure[27]

[24] CEPA, Description of the concession agreement, [retrieved 30.6.2012], Available on: <http://www.sbp.org.pk/departments/ihfd/days/Day4-04-P14.pdf>

[25] BOT has many other variants, e.g. Build-Transfer-Operate (BTO), Build-Own-Operate-Transfer (BOOT) and Build-Rehabilitate-Operate-Transfer (BROT) that are described later

[26] Local Government Improvement and Development, Private Finance Initiative, [retriever 30.6.2012], Available on: <http://www.idea.gov.uk/>

[27] United Nations, A Guidebook on Public-Private Partnership in Infrastructure, [retrieved 1.7.2012], Available on: < www.unescap.org/ttdw/common/TPT/PPP/text/ppp_guidebook.pdf>

1.8.2 PPP types

As we can see, there are many types of PPP used around the world. Most of them are based on the same operational basis and differ only by the name that varies from country to country. The most commonly used types of PPP have been listed as follows:

- *Build-Operate-Transfer (BOT)*

  BOT is one of the most traditional types of PPP contracts. The private partner is responsible for construction of the facility as well as its operation. At the end of the contractual term the facility is transferred to the public sector.
  Very similar is the *Built-Transfer-Operate (BTO)* model, the difference being that ownership is transferred before completion of the project.
- *Design-Build-Finance-Operate (DBFO)*

  Similar to BTO, the government will retain the title on the land and lease it to the private consortium over the lifetime of the concession agreement[28]
- *Operation and Maintenance (O&M)*

  The public sector enters into a contract with the private sector to provide and/or maintain a specified service. The public service has the ownership and management of the contracted facility or system.
- *Build-Own-Operate (BOO)*

  The private sector builds and operates the facility and also retains ownership. The public sector is not obliged to purchase the facility or take the title.
- *Buy-Build-Operate (BBO)*

  The private sector purchases the assets from the public sector and then makes improvements so that it can be used in a profitable manner.

The list of PPP types is not complete; there are other variations of these contracts but their description is not the aim of this thesis. In the Czech Republic, the most commonly considered options are BOT and DBFO.

1.9 Characteristics of PPP

[28] LEVY, S.M.: Build Operate Transfer, John Wileys and Sons, New York, 1996

The use of PPP can bring a lot of benefits to both public and private sector. But on the other hand, a lot of difficulties and risks can appear during the preparation or implementation of PPP projects. This chapter gives a brief list of the reasons why the public sector chooses the PPP method to acquire infrastructure.

1.9.1 Criteria for choosing PPP

The following reasons are generally given to explain why the public sector chooses the PPP model:

- *Makes the project affordable* – the private sector provides the financing of construction and is repaid by some sort of fee from the authority over time, by revenues from the project or by a combination of both. When the public sector is unable or unwilling to finance the project from its own resources or increase its direct level of borrowing, PPP makes the project affordable.
- *Maximize the use of private partner skills* – in PPP, the private sector is responsible not only for delivering an asset to time and budget, but also for ensuring that the project aspects will be delivered on the level required by the public sector and to maintain and repair assets on an effective basis, making sure the services are delivered at satisfactory levels over the long term. Because of these additional requirements, PPP offers significant benefits for the public sector.
- *Risk transfer* – the risk will be transferred to the party that is best able to manage the risk and at the lowest cost. This also ensures that the parties will have appropriate expectations of benefits and costs.
- *Delivers budgetary certainty* – when the transaction is financially closed, the future cost of PPP is known, meaning that public sector will receive known outputs for known costs. In traditional procurement, the public sector is responsible for the costs of project completion and its future maintenance.
- *Long-term nature of contracts* (including total lifetime costs) – when investing only in the capital assets, low cost is a key decisive criterion that leads to high maintenance costs after a short period of time. The long-term nature of PPP projects allows providers to spread and recover the investment in more efficient manner. Because of possible early termination of the contract and related defaults, the embodiment of performance measures and payment systems is crucial.

- *Performance measurement and incentives* – the service providers are forced to deliver the best standards that are defined in the output specification, because performance is linked to payment.
- *Private sector management skills* – can lead to earlier delivery of the project. The government can use new skills, and acquire significant research and development.
- *Competition* – lower prices, increased innovation and better services are the results of competition in an area normally dominated by public sector monopolies. Still, the appropriate trade-off between competition and the length and cost of negotiation must be ensured.
- *Cost efficiencies* – in the long run, significant savings can be obtained by integrating capital investment and the delivery of services (i.e. servicing the asset) that will be maintained in a way to maximize efficiency.
- *Time-to-delivery savings* – the private partner aims to generate revenue as soon as possible and this can lead to time-to-delivery savings. The private sector's main motive is profit and they are aware of losses from delays in project completion.
- *Reduce pressure on the public treasury* – the capital demands on the public treasury for infrastructure development are reduced and the government can spend more on non-infrastructure projects in the short term. In the long term, the public sector must be aware of the transfer and connected costs.
- *Broad support* – PPP are generally supported by the European government, national, regional and local governments and by the private sector, because of its efficient use of resources.[29] E.g. in the UK, 73% of senior decision-makers believe that "PFI projects are delivering value for money for the public sector".
- *Improved cost calculation* –caused by the public private comparator or the public sector comparator. The immersed costs (costs for civil servants, maintenance costs during the economic lifecycle of the project and overhead costs) will become visible. Moreover, the real cost of assets including internal management costs, self-insurance costs, future maintenance costs and technical obsolescence will become more transparent.
- *The possibility of non-including the PPP commitment in public debt* – when a significant part of the risk is transferred to the private sector, these projects are considered payment for services, and do not have to be reported as debt.

[29] Unfortunately this doesn't count for the Czech Republic, where the government support is minimal and citizens see it as a highly suspicious topic connected with bribery.

1.9.2 Criteria for not using PPP

On the other hand, PPP can also bring some disadvantages. Among those most often stated are:

- *Higher transaction costs* – although the use of PPP can reduce total project costs, tendering and development costs can be much higher than under conventional procurement and they also require more time, effort, complexity of contractual form and additional experts. Moreover, with the complexity of relations and the duration of such relations, the transaction costs will increase.
- *Higher capital costs* – resulting from the higher cost of private borrowing (generally plus 1% to 2%)
- *Insecurity* – the contractual parties can be frustrated by a lack of cooperation on the part of the other party(s). Furthermore, the tender proceedings and their result are very uncertain whereas the costs are very high for bidders. They may be reluctant to enter the tender. which causes reduced competitiveness of the tender process.
- *Inefficiencies* – with long- term operating contracts, inefficiencies can be caused by a lack of contestability and competition and therefore the terms of contract are very important.
- *Culture gap* – appears between the private and public sector and may cause loss of confidence. For example, the motive of the private sector is primarily profit-making or image-building, whereas for the public sector it is social attractiveness.
- *Short-term rigidities* – because PPP can be compared to a network that is stable and placates the uncertainty of its actors, rigidities, dependencies and the inability to adapt to changed conditions can also appear.
- *Public sector staff concern* – an existing public facility may be replaced and therefore the public sector staff's terms and conditions are unsecured.

Table 1: Report from the National Audit Office of the United Kingdom

Projects, that:	Conventional procurement	PPP
Overrun the budget	73%	20%
Were finished with delay	70%	24%

Source: Financing PFI projects in the credit crisis and the Treasury's response[30]

[30] National Audit Office of the United Kingdom, Financing PFI projects in the credit crisis and the Treasury's response, [retrieved 3.7.2012], Available on: < http://www.nao.org.uk/Recommendation/>

1.9.3 Comparison of PPP and public procurement without PPP features

As stated above, there are several methods of financing public projects. The basic scenario is the financing of the project by the public partner and private partner. Usually, public procurement is used in the case of a public partner and PPP projects are use in case of a private partner.

When comparing these two options (PPP and public procurement without PPP features), it must be noted that they are essentially very similar. Czech legislation regulates them under two different laws, which both serve to satisfy public needs. When looking at the economical aspect of the matter, we can describe the differences in the methods as follows[31]:

Standard public procurement (without PPP features):

- Investment costs are covered by the contracting authority
- User fees are income for the public sphere
- The contracting authority bears most of the risks (usually all of them)
- The supplier bears only the risks connected with the contract for work

PPP

- Investment costs are covered by the concessionaire
- The concessionaire takes the benefits that arise from operating the service
- The concessionaire's incomes can also arise directly from service users
- The concessionaire bears most of the risks connected with the project

Nevertheless, before any decision about the method of implementing a public project can be made, an analysis of value for money must be conducted. This indicator enables a comparison of whether PPP or public procurement represents the better means of project implementation.

1.10 Legal framework

1.10.1 Legal framework on the EU level

Within the European Union, the basis for PPP is defined by the Green Paper on Public Private Partnerships and Community law on public contracts and concessions, Directive 2004/18/EC of the European Parliament and Council of 31 March 2004 on the coordination of procedures for the awarding of public works contracts, public supply contracts and public service contracts, as subsequently amended, and Directive 2004/17/EC of the European Parliament

[31] Asociace PPP: PPP versus veřejná zakázka, [retriever 3.7.2012], Available on: www.asociaceppp.cz

and Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, as subsequently amended.

1.10.2 Legal framework in the Czech Republic

The PPP instrument was incorporated into legal acts by the government for the first time in 2003 within the reform of public finance. In January 2004, the governmental politic of the Czech Republic in the area of public private partnerships was defined by Government Resolution No. 7. This was the basis for the creation of an environment for the systematic and programmed use of PPP as standard tool for providing public needs in the CR. The government has declared in this resolution its persuasion that the use of PPP will contribute to:[33]

- more effective allocation of public sources,
- ensuring the quality of public services,
- economic growth and growth of foreign direct investment by stimulating private investments into public infrastructure and public services,
- efficient control of creating long-term liabilities of the public sector,
- limitation of negative impacts of non-systemic projects in the PPP sphere,
- strengthening of the possibility to draw EU funds by increasing the share of private co-funding in public projects.

Nowadays in the Czech legal environment, PPP are realized in the form of concession contracts (concessions). The two main laws regulating PPP are the consolidated text of Act No. 139 of 14 March 2006 on Concession Contracts and Concession Procedure (hereinafter the Concession Act), as amended, and the consolidated text of Act No. 137/2006 Coll., on Public Contracts as Amended (Act No. 138/2006 Coll., amending certain other acts in conjunction with adoption of the Public Procurement Act and Act No. 140/2006 Coll., amending certain acts in relation to the adoption of the Concession Act are also related to these acts).[34]

[33] Ministerstvo financí ČR: Politika vlády ČR v oblasti partnerství veřejného a soukromého sektoru, 2010, [retrieved 3.7.2012], Available on: <http://www.mfcr.cz/cps/rde/xchg/mfcr/xsl/vize_part.html>

[34] ŘEŽUCHOVÁ, M., HYÁNEK, V.: Role soukromého sektoru v poskytování veřejných služeb, 1. Vydání, Brno, Masarykova univerzita, 2009

Beside *Act No.139/2006* Coll., on Concession Contracts and Act No. *137/2006* Coll., on Public Contracts, there are also the following laws concerning the preparation and implementation of PPP projects:

- *Act No. 250/2000* Coll., on Budgetary Rules for Local Governments
- *Act No.218/2000* on Budgetary Rules and on the amendment of certain related acts (budgetary rules)
- *Act No. 320/2001* Coll., on Financial Control in Public Administration, as amended

Some enactments that have a logical connection to the described concept are to be found in all these acts.

For example, Act No. 218/2000 Coll., Section 39(3), calls for the most economic, efficient and functional use of expenses that is in line with the definition of value for money, when the public sector acquires the highest possible and usable value for the expended money.
Act No. 320/2001 Coll., on financial control in Section 2(l) through (o) and Sections 4 and 25(1) deals with the achievement of an optimal relationship between economy, effectiveness and efficiency, namely the 3E concept that is in line with the principle of value for money.
The next governmental step was Resolution No. 791 dated 25 August 2004, under which the government passed the bills that necessary for the systematic implementation of PPP, mainly the bill on concessionary contract law and the bill on public contracts and other related acts. This resolution also has stipulated the time schedule of PPP pilot project management and criteria for putting their proposals forward.[35]

The main goal of this resolution was especially the effort to:[36]
- ensure the process of management of PPP project preparation and implementation according to the given rules,
- certification of the methodology of setting and preparing the necessary legislation,
- creation and improvement of processes and procedures and subsequent standardization based on gained experiences,

[35] Usnesení vlády České republiky ze dne 25. srpna 2004 č. 791 k Informaci o stavu systémové implementace Partnerství veřejného a soukromého sektoru.
[36] Asociace PPP: Analýza pilotních PPP projektů provedená MFČR, [retrieved 3.7.2012], Available on: <http://www.asociaceppp.cz/cnt/implementace/>

- finding the weaknesses and selecting possible further changes to legal acts that are necessary for PPP realization.

Concession act

Concession contracts are among the most commonly used means of implementing PPP projects. These contracts are concluded for long term (usually 15 – 25 years). The contractual part gives the concessionaire the right based on the concession to realize a particular project at his own expense and to operate and maintain this project during the concession term and collect income from the third party. The concession itself is granted in the concession procedure (by concluding the concession contract) and is non-transferable. It is very important that the private partner bears a significant part of the risks related to the benefits of the PPP project. The diversification of other risks between the contractor and concessionaire is defined in the concession contract.

1.11 Institutional framework

The institutional framework in the Czech Republic is formed mainly by the following entities:

Ministry of Finance

Under the Government Declaration No. 7 dated 7 January 2004, the Ministry of Finance is considered to be the government of this area.[37] Its main responsibility is to supervise whether the general valid standards for PPP are obtained and to control the entire process of PPP project preparation and implementation, including their subsequent monitoring. The separate department is mainly responsible for creating and maintaining the conditions for regulation of the budgetary impacts of PPP projects and the facilitation of project implementation.

The main areas where the Ministry of Finance acts as regulator are[38]:

- Fiscal discipline
    - It prepares and applies the rules and processes in close cooperation with the Czech Statistical Office and Eurostat, it suggests projects that should be regulated, methods of monitoring and regulation of future commitments of the public budget caused by PPP

[37] Separate departement for methodology and regulation of PPP projects was settled down on 1st May 2004 by minister Bohuslav Sobotka.

[38] Ministerstvo Financí ČR: Informace o stavu systémové implementace Partnerství veřejného a soukromého sektoru, [retrieved 3.7.2012], Available on: <http://www.mfcr.cz/cps/rde/xchg/mfcr/xsl/pub_priv_part_10272.html?year=2004>

- Process of project preparation and implementation
    - It cooperates with the ministries and other central bodies when processing methodologies for the preparation, assessment and approval of projects, suggests how to reflect these methodologies in legal acts, applies these prescriptions, coordinates and manages the preparation of standard contractual conditions.
- Use of European Union funds in PPP projects
    - It cooperates with other central bodies and other partners within the Czech Republic as well as EU bodies and international organisations when analysing, formulating and applying processes for the use of EU funds
- Legislative initiatives
    - The regulator submits proposals of legal amendments that will lead to the facilitation of project preparation and implementation, initiates new legal regulation in other departments where they should lead to project facilitation (e.g. public contract procurement)

PPP Centrum of the Czech Republic[39]

PPP Centrum a.s. (joint-stock company) was formed on 1 July 2004 under authority of the government decree. The only shareholder in PPP Centrum is the Ministry of Finance of the Czech Republic (MF CR).

The main purpose of its establishment was to speed up the preparation of the legal environment and methodological procedures connected to PPP in the Czech Republic. Nowadays, the PPP Centrum aims to apply the best practice and it acts as a knowledge centre for PPP project implementation.

According to its mission, it will work only for the public sector and its financial income will be from the Ministry of Finance and public sector sponsors.
The PPP Centrum can be considered the fulfilment of the World Bank's recommendation to create an individual unit to take care of the fiscally safe implementation of PPP.

[39] PPP Centru, [retrieved 5.7.2012], Source: <http://www.pppcentrum.cz>

Based on a decision by the sole shareholder (the Ministry of Finance) from the start of this year (2012), all activities of the PPP Centrum in the field of PPP have been reduced.

PPP Association[40]

The association for the support of public and private sector partnerships was established in 2004 in the Czech Republic with the aim to support and develop investments and services by means of PPP in the Czech Republic.

The PPP association aims to help its members and the public sector to create a set of rules, principles and steps that will lead to the successful implementation of PPP projects. The main motto is the transparency and predictability of investments and services connected with PPP.

The PPP association's main activities are to supply up-to-date information about PPP legislation and methods, to promote PPP in the media, to cooperate with the central bodies of the state administration and Czech Parliament, to actively participate in the preparation, elaboration and evaluation of draft pilot PPP projects, to exchange knowledge and experience with the public sector, to help municipalities with the preparation of regional projects, to organise PPP conferences and seminars and to distribute PPP materials, to support its members in relation to national, foreign and international bodies, institutions and associations and to be of general help to subjects wanting to become involved in PPP in any way.

Ministry of Regional Development of the CR[41]

The Ministry of Regional Development is the administrator of important actions within the framework of the National Plan of electronic public procurement. It also participates in the creation of a nation-wide concept in the field of public private partnerships. The ministry is the administrator of the "Information system about public procurement" and the Portal for public procurement and concessions.[42]

1.12 PPP projects in CR

To date, no PPP on a national level has been implemented in the Czech Republic. Nevertheless, on a municipal level there are dozens of project amounting to billions of Czech crowns.

[40] Asociace PPP, [retrieved 5.7.2012], Source:<http:// www.asociaceppp.cz>
[41] Ministerstvo pro Místní Rozvoj, [retrieved 5.7.2012],.Source:< http://www.mmr.cz>
[42] Ministerstvo Spravedlnosti ČR, [retrieved 5.7.2012], Source: <http://www.portal-vz.cz>

As of 12 April 2012, the assumed value of the parties to concession contracts that were concluded by municipalities was 52 billion CZK at nominal value.

The Ministry of Finance has records of 82 projects. Most of them are from the water management sector.[43]

The chart below provides a better idea of the current state of PPP projects in the Czech Republic. The first pilot projects were approved as early as 2005, but as can be seen from the chart below, only one project is in the initiation phase, the others were cancelled or suspended.

Table 2: Current state of PPP projects in the Czech republic

Project	PPP form	Investment value	Phase	Sector
AirCone – train connection Praha – airport Ruzyně	BOT/DBFO	15 -18 billion CZK	Suspended	Transportation
Highway D3	BOT	11.5 billion CZK	Initiation phase	Transportation
Central Military Hospital	DBFO	2 600 million CZK	Cancelled	Accommodation
Judicial court in Usti nad Labem	BOT/DBFO	1.4 billion CZK	Cancelled	Courts and prison
Prison in Rapotice u Brna	DBFO	2.8 billion CZK	Cancelled	Courts and prison
Regional hospital Pardubice	DBFO	2.3 billion CZK	Cancelled	Healthcare
Sport centre Ponava, Brno	DBFO	2 billion CZK	Suspended	Culture, media and sport

[43] Ministerstvo Financí ČR: State budget 2012, Source: <http://www.mfcr.cz>

The project of highway D3 was revived this year for shorter stretch than was initially planned. The regional projects are more successful as they can flexibly react to the needs of public sector. The PPP projects on regional level are mainly from the area of water management, social services, parking, culture, media and sport, transportation and communications and technical services.

1.13 Foreign PPP reference projects in the field of justice service

PPP projects in the field of courts and prisons are commonly used mainly in Great Britain, France and Germany when considering Europe. The use of PPP in the prison service is also popular in the USA, Austria, Brazil and South Africa.

As an example, I would like to mention two projects from Great Britain: the construction of courts in Avon and Somerset and the court in Laganside.

Table 3: Overview of foreign PPP reference projects

Construction of the courts in Avon and Somerset	
Original name	"Avon and Somerset magistrates courts"
Brief description	The project consists of a complex of buildings in Bristol with 12 courtrooms, offices and an area for the national probations service focused on returning sentences into the community and on the protection of victims. Furthermore, there are five judicial facilities and buildings in town of Worl.
Contract owner	Somerset County Council
Project target	The construction of two courts in Bristol and Worl should boost the judicial system in Avon and Somerset so that a modern and safe environment would be created for all users.
Project description	The project covers not only the latest technology that will be used in the courtrooms, but most importantly it brings together the court and National Probation Service so that the efficiency of both services increases.
Realization status	Contract signed on 23 August 2004.
Investment cost	£ 59 million
PPP form, partners	PFI (Private Financed Initiative) Public sector: Somerset County Council Private sector: Services Support (Avon & Somerset) Ltd – consortium of Amey (20%) and Equion (80%)
Project length	Preparation phase since 2000, implementation phase since 2004. Partner contract for facility operation for 27 years.

Construction of the court in Laganside	
Original name	"Northern Ireland Courts New Court Complex"
Brief description	New court building in Laganside and other facilities including

	parking.
Contract owner	Somerset County Council
Project target	The project target was to replace the old court in Crumlin Roar. The new complex of 16 courtrooms was designed so that the problem of the increasing number of trials and issue of inappropriate entrances into courtrooms were solved.
Project description	The complex of 16 courtrooms in Laganside represents the first important PFI project in Northern Ireland. It emphasises the efficiency, functionality and dignity of the courtroom all at the same time.
Realization status	Since 2001 in the operation phase
Investment cost	£ 35 million
PPP form, partners	PFI (Private Financed Initiative) Public sector: Consul Services (NI) Limited – consortium of Jarvis (33.33%), Karl Construction Limited (33.33%) and JH Turkington & Sons (Contractors) Limited (33.33%)
Project length	Preparation phase since1997, implementation phase since 1999, operational phase since2001. Partner contract for facility operation for 25 years.

Source: **www.partnershipsuk.org.uk**

2. Methodical tools for PPP project evaluation

When evaluating PPP projects, the fact that two parties, private and public are involved simultaneously must be constantly taken into consideration. Private interests interfere with public ones, or better said one asset brings two different values for two different entities. As the project is not only an investment plan, but also a community project, besides investor's own benefits it is also interested in the benefits of other entities. As a consequence, when evaluating PPP projects, financial effects are not the only thing that is considered. Sometimes, they can even have an intangible character. The PPP project should bring two different things: Value for Money (VfM) and sufficient income for the private investor. When comparing PPP with traditional public procurement, the content of the project is more or less the same. Still the main difference is to be found in the ownership and organisational order that arises from the fact that two different entities are involved. Therefore, the project must be evaluated from two different perspectives, from the private and public side.

In this chapter, the socioeconomic evaluation of PPP projects will be introduced first. PPP implementation should lead to increased socioeconomic value and this evaluation represents the optimal way of measuring it. Nevertheless, in this thesis the socioeconomic value will not be measured, as the main purpose is the financial evaluation of using the PPP method. Methods that will be used are described in the second part of this chapter.

2.1 Socioeconomic evaluation from the public sector side[44]

When realizing public procurement, the public sector primarily tries to maximize social welfare and protect public interests (on the other hand, the main target of private partner is to maximize shareholder value). Therefore, the public sector should ensure that the value of all of the project's impacts on all members of society must be still positive. Only after that the link between project value and decision-making criteria is provided. The project should be approved only if its value is positive. If not, further decisions are useless.

Value for Money of the project can be identified by the **Economic Net Present Value** (ENPV).

[44] KISLINGEROVÁ, E., SIEBER, P.: Hodnocení PPP projektů, 2006, [retrieved 10.7.2012], Available on: <http://www.ekf.vsb.cz/miranda2/export/sites-root/ekf/konference/cs/okruhy/rmfr/rocnik-2006/prispevky/dokumenty/Eva.Kislingerova.pdf>

$$ENPV = \sum_{t=0}^{n} \frac{NSB_t}{(1+SDR)^t}$$

NSB_t ..... Net Social Benefits of project in time t, it is the difference between social benefits and social costs of the project

SDR ..... Social Discount Rate

n ..... project lifecycle

t ..... period

If the project is to be realized through PPP, ENPV must be greater than zero. When it equals or is lower than zero, it makes no sense not to implement it entirely in the hands of the public sector. When comparing implementation through PPP and traditional procurement, the option with the higher ENPV should be chosen.

All the costs of NSB are expressed in monetary terms, in so called shadow prices[45], not market prices.

When evaluating the project, the ENPV and CBA methods are the most suitable and complex. However, they are still technical, financial and time consuming means of evaluation. The processor should be an expert in the field and the amount of entry data is enormous. Therefore it is very common for smaller projects to be assessed only by cash flows.

2.2 Evaluation from the private sector side

The private entity decides about the project implementation on the basis of valuation of financial profitability. Their aim is to evaluate the invested financial resources and their returnability and they tend to maximize shareholder value. Private entities assess this by means of different evaluation indicators, of which the main= ones are:

Present value (PV) –the sum of all future cash flows (CF) that arise from the investment during its lifecycle, discounted to the current value.

$$PV_t = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t}$$

CF_t ..... cash flow from period t

[45] The instantaneous change per unit of the constraint in the objective value of the optimal solution of an optimization problem obtained by relaxing the constraint

r..... discount rate

t..... period (year) from 0 to n

Net Present Value (NPV) - the discounted value of a series of future costs, benefits or payments, i.e. the value of future cash flows in today's money.[46] For the private entity, the best option is when the project has the highest Net Present Value. An NPV equal to 0 signifies that the financial benefits of a project are enough to recoup the capital investment. An NPV greater than 0 implies that the project will earn excess returns, which will be distributed to the equity holders. Should the NPV be less than 0, this implies that the financial benefits are not enough to recoup the costs of the project.[47]

$$NPV = \sum_{t=0}^{n} \frac{CF_t}{(1+r)^t}$$

Internal Rate of Return (IRR) - represents the yield of a project, regardless of the financing structure. Unlike the NPV where the discount rate is stated and the NPV is calculated, the IRR is calculated by setting Net Present Value to zero. The higher the IRR for a project the better, though the expected IRR value will vary depending on the project sector as well as the financier's investment mandate.

$$0 = \sum_{t=0}^{n} \frac{CF_t}{(1+IRR)^t}$$

Payback method - The simple payback method measures the number of years it takes before cumulative forecasted cash flow equals the initial investment. The simple payback method does not discount cash flow to a present value.

2.3 Choice of PPP valuation method

Although the aforementioned forms of PPP project valuation represent a valuable means of assessing PPP, the aim of this thesis is to create a financial model and on its basis to evaluate the realization of reconstruction of the former prison through traditional public procurement or PPP. Therefore, the method stated by the Ministry of Finance of the Czech Republic will

[46] PFI/PPP Glossary of Terms and Abbreviations, [retrieved 10. 7. 2012], Available on: <http://www.projectdatafile.co.uk/pfiqa>

[47] United Nations: Public privátе partnership A Financier`s perspective, [retrieved 10. 7. 2012], Available on: <http://www.unescap.org/ttdw/ppp/trainingmaterials/PPPs_A_Financiers_Perspective.pdf>

be used. It presents the practice used to date in the CR, the range within which the entries should remain and it also shows the areas on which the evaluators of the model should focus.

In the financial model, the main evaluation factor is represented by value for money. Value for money refers to the best available outcome for society, account being taken of all benefits, costs and risks over the whole lifetime of the project. Therefore, for simplification when determining the value for money, only cash flows are assessed. Value for Money is defined by comparing the Public Sector Comparator and Referential PPP project. A detailed description of the financial model is given in the next chapter.

2.3.1 Financial model[48]

The PPP financial model represents a basic analytical tool for contractor, so that it can have all necessary information to decide about further preparation and implementation of the project. The analysis of quantitative aspects of the model and comparison of the possible options for project realization are done within the model. Most often, PPP and conventional public procurement are compared.

The conclusions from financial model are then completed by a qualitative analysis of the project and based on the conclusions of the qualitative and quantitative analysis, the best implementation option is chosen.

The financial model is composed during the phase of assessing project feasibility and its conclusions form a part of concession project that must be in compliance with the Act No.139/2006 Coll., on Concession Contracts.

The financial model must include a complex summary of all incomes and expenditures of project implementation for the entire term of implementation. Subsequently, the calculation of financial fulfilment for the PSC and PPP model is conducted based on this summary. The financial model must also include all parameters of all cash flows and the annual incomes and expenditures in one currency at nominal and discounted values.

2.3.2 Public sector comparator PSC

"PSC is developed based on the preferred PPP option to provide a fully costed estimate of delivering the project (to the standards set out in the initial output specification) through

[48] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 11.7.2012], Available on: <http://www.pppcentrum.cz>

traditional public sector procurement, presented in terms of a discounted cash flow analysis."[49]

I.e. it estimates the hypothetical cost of the project if the government undertakes all functions (design, build, operate, etc.) and all risks are involved in this cost.. It represents the most efficient public procurement cost when all capital and operating costs are included. It should be expressed as the Net Present Cost of a projected cash flow based on the specified government discount rate over the required lifetime of the contract. The costs of the project are determined based on similar, previously implemented projects or expert opinions. It is counted using the formula for Net Present Value where the discount rate for public sector discounting[50] is used.

2.3.3 Reference PPP project

One of the keys to constructing a PSC is the identification of the reference project. The reference project is the most likely and efficient form of public sector delivery that could be employed to satisfy all elements of the output specification. It therefore sets the net value of the availability payment for the project's entire lifecycle. It involves investment, capital and operating costs plus the investor's required rate of return.

3. Application of PPP to the project

This chapter evaluates the possible reconstruction of the former prison facility using the PPP method. The aim of this thesis is to show the advantages and disadvantages of PPP based on financial flow and thereby to show the necessity of thorough consideration of this option. The facility was chosen for its type suitability. The former prison compound has been falling into ruins for more than 40 years. There were various attempts to rescue the facility; in particular, the town of Uherské Hradiště carried out numerous actions to gain possession of it and find a decent use for it. Still, the main problem seems to be the funding of the reconstruction. The prison is still owned by the Ministry of Justice that grants the decision about its future to the chairperson of the district court, Ms. Hana Kurfiřtová. As she admits: "*The reconstruction of the facility would require high costs for which the Ministry of Justice currently has*

[49] European Commission, The Guidelines For Successful Public-Private Partnership, [retrieved 10.7.2012], Available on: <http://www.ec.europa.eu/regional_policy/sources/docgener/guides/ppp_en.pdf>

50 Discount rate is further described in the chapter Discount rate and price indexes used in model

insufficient funds." But still it counts on the partial use of the prison as the headquarters of the district court, with one third devoted to a museum of totalitarianism. [51]

For a long time, the town of Uherské Hradiště has aimed to become the owner of the prison and thereby ensure its sustainable condition and dignified use. But every negotiation has always failed on one point, that being the district court's need for new premises and its hope to use the former prison. Hence, the whole matter seems to move in a vicious circle as the prison needs reconstruction, the court needs new premises, the town aims to use the place in the best possible way and to improve the face of town, but nobody has enough resources or capabilities to do anything.

In the practical part of my thesis, I would like to describe the reconstruction of the facility through the PPP method and compare it with traditional public procurement. The aim is to describe the necessary steps based on cash flows when comparing these two methods, to present all the advantages and disadvantages and to show which possibility would be the right choice for the reconstruction.

3.1 Brief history of the prison

During the government of Marie Therese, the new judicial system was introduced and Uherské Hradiště became the seat of county and district court. The construction of the new palace of justice, where both courts were located, was realized from 1891 to 1897. The building included a new prison. In those days, the compound was situated outside the town (nowadays it is part of the centre). During the Second World War, it was used by the German Gestapo for political prisoners who were sent to concentration camps. After the war, collaborators were judged there and public executions were performed in the prison's courtyard.[52]

Cruel abuse and imprisonment continued in Uherské Hradiště until the early 1960s, when public administration was reorganised and the district court and prison were moved to Brno. [53] The whole facility of the former prison is currently a cultural monument. In 1994, the building was transferred to the Ministry of Justice to transform it into the district court and detention prison. Later, this intention was adjusted so that the building would be used only as a district court and public prosecutor's office.

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[51] Slovácký deník: Jak dál s hradišťskou věznicí, řešil premiér Nečas, [retrieved 12.7.2012], Available on: <http://slovacky.denik.cz/zpravy_region/jak-dal-s-hradistskou-veznici-resil-premier-necas.html>

[52] Slovácké slavnosti vína online, [retrieved 12. 7. 2012], Available on: <http://www.slavnostivinauh.cz/pamatky/justicni-palac-veznice-a-umprum>

[53] Slovácké slavnosti vína online, [retrieved 12. 7. 2012], Available on: <http://www.slavnostivinauh.cz/pamatky/justicni-palac-veznice-a-umprum>

3.1.1 Project localization

The prison has a unique position because of its positional attractiveness and accessibility. The complex of buildings lies in the centre of the town agglomeration with 40,000 inhabitants, on the very edge of the historical town centre on Vsehrdova street, next to the bus station, backbones roads and state road I/50. It also adjoins Palackeho Square that forms the logical entrance to the historical town centre.[54]

The exact location is drawn on the attached map.

Picture 7: Location of the prison in Uherské Hradiště

Source: www.maps.google.com

Even after 18 years, no plans have come to fruition. The town hall aimed to become the owner of the prison and accused the Ministry of Justice of neglect of duty and the subsequent poor condition of the building.

Still, the main problem seems to be the funding of the reconstruction. The prison is still owned by the Ministry of Justice, which yields the decision about its future. It still counts on the partial use of the prison as the headquarters of the district court, while one third should be devoted to a museum of totalitarianism. [55]

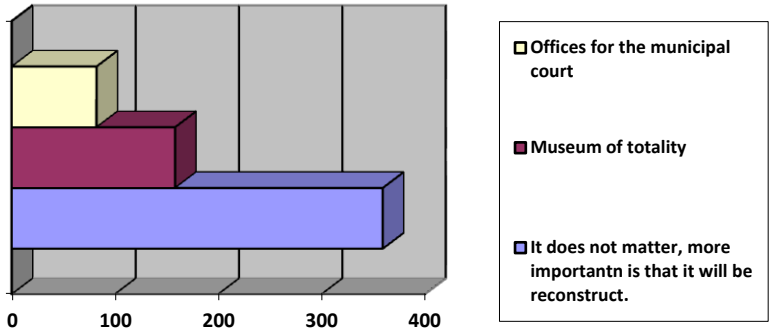
[54] JVM-RPC: Koncepce rozvoje města Uherské Hradiště, [retrieved 12. 7. 2012], Available on: <http://www.knihovnabbb.cz/files/ke_stazeni/koncepce_rozvoje_kultury_v_uh.pdf>

[55] Slovácký deník: Jak dál s hradišťskou věznicí, řešil premiér Nečas, [retrieved 12.7.2012], Available on: <http://slovacky.denik.cz/zpravy_region/jak-dal-s-hradistskou-veznici-resil-premier-necas.html>

For a long time, the town of Uherské Hradiště aimed to become the owner of the prison and thereby ensure its sustainable condition and dignified use. But every negotiation has always failed on one point, that being the district court's need for new premises and its hope to use the former prison. Hence, the whole matter seems to move in a vicious circle as the prison needs reconstruction, the court needs new premises, town aims to use the place in the best possible way and to improve the face of town, but nobody has enough resources or capabilities to do anything.

For better illustration, I would also like to present here the results of a survey that was held among the inhabitants of Uherské Hradiště.

Chart 1: How should be the former prison in Uherské Hradiště be used in the future? (No. of respondents in thousands)



3.2 Project description with the use of PPP

In my thesis, I would like to create a feasible plan for reconstruction of the prison in Uherské Hradiště using PPP. The aim is to reconstruct it and afterwards use it for the needs of the district court: offices, courtrooms, custody cells and archive. In the exterior, precisely at the unused area adjoining the bus station, a new one-storey commercial facility would be built. This would be leased to merchants and service providers, as the location in the centre of town in the proximity of the bus station offers great potential and the income from their lease would contribute to better cash flow for the project. The open spaces in the northern part of the compound would house a parking lot. Half of its capacity would be used for covering the needs of the district court and the second half would serve for visitors or inhabitants of the town as paid parking. Although the parking situation in the town has improved significantly over the last few years, there is still an excess demand for parking places.

The private partner would be in charge of restoring the building and its operation for the next 25 years. The project would be implemented on a DBFO basis with the transfer to state

ownership. The compound will remain in the ownership of the Ministry of Justice for the entire duration of the project and will be leased to the private partner for a symbolic amount. The private partner would bear a substantial part of the project risks, mainly the project, building, financial and operating risks. The contractor would pay regular availability payments for the provided services. Part of the income would be covered by income from additional services (possibility of leasing some premises, e.g. retail or service providers and operation of the parking lot).

The private partner would ensure following services:

• Helpdesk
• Administration of facilities and utilities
• Cleaning and waste management
• Moving and transportation services
• Security – technical part
• Information and communication technologies
• Telecommunications
• Providing IS
• Reception desk and administrative support of judicial activities
• Judicial transportation service
• Parking management
• Interface with delivery services of the contracting authority

The following chart describes main features of the project.

Table 4: Main features of the project

Reconstruction of the former prison facility in Uherské Hradiště	
Project description	The target of this project is to reconstruct the decrepit facility of the former prison using the PPP method. The facility should serve as the headquarters of the district court with custody cells. New built outdoor facilities will be leased for commercial purposes. The private partner should design, build, finance and subsequently operate the facility.
Contract owner	Ministry of Justice of the Czech Republic
Parties involved	Ministry of Justice of the Czech Republic, Town of Uherské Hradiště
PPP form	BDFO
Project length	27 years (2 years of construction, 25 years of operation)
The way of financing	The contractor will pay regular availability payments for provided services. Part of the income can come from free for leasing premises.
Risk transfer	The private partner will bear the key risks – building and availability risks. The public sector will bear demand risk. Project preparation risk will be transferred based on the type of the contract.

Source: own work

The compound of buildings of the former prison is formed mainly by the three-storey wings of the prison premises surrounding the inner courtyard. The layout shows two wings: the hall on one side and larger or smaller cells on the other. The rather the dominant building of seclusions cells runs out towards the north, further dividing the enclosed surface area into two large spaces.
The original prison chapel extends into the axis of the solitary confinement block. The classicist building style and particularly the axial mass and urban composition of are the main subjects of heritage interest.

3.3 Necessity of implementation

As mentioned earlier, the building of the former prison is in desolate state and it needs urgent renovation, otherwise the building will simply fall apart. Until then, its situation in the centre of the town near the bus station spoils the impression from an otherwise beautiful and repaired town. Its location also predestines it for public purposes.
The current headquarters of the district court do not comply with its needs. The court is situated in the building of the former district office on the second floor. This location is insufficient for the needs of the court because of the lack of capacity (not enough offices, courtrooms, storage rooms). The expansion to other floors of the building is impossible, because they house the department of administrative agendas of the municipality. The court already uses part of the former prison as an archive but still there is the threat of its demolition.
There is also a vast pending agenda at the court in Uherske Hradiste (which rates highest in the South Moravian region for criminal proceedings in individuals and things).
Last but not the least, there is a problem with the lack of parking spaces in the vicinity (parking zones).

3.3.1 Pre-screening analysis

For better analysis of the necessity and feasibility of the reconstruction, a pre-screening checklist is conducted. It can help to better allocate the available resources to projects which

have a better chance of success.[56] With the increasing number of PPP candidate tools, it shows that using the pre-screening tool is very important when considering the implementation of the project.

PPP pre-screening helps the public sector in the early stages to decide whether to realize the project through public procurement or PPP and thereby achieve optimal allocation of resources. The checklist is divided into three categories, institutional maturity (the level of preparedness of public sector to deliver the project through PPP), project maturity (the availability of all the necessary documents that a PPP project will need in order to be procured successfully) and market maturity (market conditions for PPP). This checklist was developed based on the review and comparison of different pre-screening checklists.

Different questions are asked for each category. These should be answered subjectively as either "yes", "no" or "maybe". A "yes" answer should be given if the decision maker is sure that information or material in question is available, sufficient and accurate. If the decision maker is not sure about the availability, sufficiency and accuracy, the answer should be "maybe". If the decision maker is sure that the content in the question is not currently available, and it is not likely that it can be obtained in a reasonable timeframe in the future, the answer should be "no".

When evaluating the pre-screening checklist, the answers to all questions must be considered and if the answer to even one question is "no", the project should not be considered for PPP.

Institutional maturity

- *Is the public agency authorized to develop PPP projects?*

Yes, by the *Act No.139/2006* Coll., on Concession Contracts a granting authority shall be understood as the Czech Republic, a state allowance organisation or a territorial self-governing unit or an allowance organisation in respect of which such a territorial self-governing unit executes the function of the founder thereof.[57]

- *Is there any need to finance the project through debt and/or private equity?*

Yes, during recent years many attempts to develop the plan of reconstruction of the prison were made, but most of them failed because state budget resources are restricted, especially in the current crisis.

[56] The World Bank : World Bank Toolkit for Public Private Partnerships in Highways. Public-Private Partnerships in Roads and Highways [retrieved 15.7. 2012], Available on: <http://www. ppiaf. org/ documents/ toolkits/ highwaytoolkit/>

[57] The Act No.139/2006 Coll., on Concession Contracts

- *Is there necessary political/public support for the PPP project?*

Maybe; recently new discussions about the D3 highway and its realization through PPP were launched. Furthermore, reforms in education, healthcare and social services are also creating a better environment for PPP, and it is already working in the water and energy sectors. Not least, changes in legislation are currently being discussed – especially in the Concessions Act and Public Procurement Act. Still, society is rather sceptical about PPP projects in the Czech Republic.

Project maturity

- *Is the project aligned with the ministry's long term plan?*

Yes, in the past the Ministry of Justice has considered using the prison buildings as headquarters for the district court, because the current premises are not sufficient.

- *Are there sufficient data (traffic, geotechnical, environmental, etc.) available to run the financial analysis?*

Yes, in 1992 a study was carried out that proved the feasibility of reconstruction and usability of the complex for court's needs. Based on these data, further analysis can be done.

- *Is the project expected to have sustainable demand?*

Yes, the demand for the premises for the district court was proven. When considering the commercial premises, the location in the centre of the town in the proximity of the bus station represents an attractive option for merchants and service providers. The demand for parking should also be guaranteed by its favourable location.

Market maturity

- *Are the financial market conditions favourable for developing a PPP project?*

Yes, the financial market in the Czech Republic can be considered healthy, loans are available, interest rates are reasonable and loan payment schedules are flexible.

- *Is there enough market interest in the project?*

Yes, because of the recession the economy has slowed down and the offer of convenient projects has diminished. Companies should be interested in a project that is moreover guaranteed by the state.

As most of the answers are yes, the project for reconstruction of the prison has passed the pre-screening analysis and it can be considered to be become PPP project.

3.4 Project beneficiaries

For the later valuation of the project, we need to determine who is supposed to be the project beneficiary.

There are two main groups of beneficiaries of the project: the institution of the district court and the inhabitants of the Czech Republic that can be further divided into two groups: inhabitants of the district of Uherské Hradiště and its visitors. The most significant impact would be on the institution of the district court of Uherské Hradiště, more specifically its everyday operation and its employees. The reconstruction of the prison would affect the inhabitants in two positive ways: better accessibility of the court and together with visitors, they would benefit from the improvement of town's appearance.

3.5 Options for the prison

In this part of my thesis, I am going to describe the various options for the facility of the former prison in Uherské Hradiště. I am going to present two alternatives: null and investment. The investment alternative will consequently be considered from two points of view: implementation through public procurement and as a PPP project. This division arises from the cost and benefits analysis (CBA) that is among the basic methods of evaluating public projects, in which the costs and benefits expressed in money are measured. Because the main purpose of this project is to assess the realization of the project through the PPP method, not to evaluate the entire project and its value for the public, I with use CBA as an auxiliary method (mainly for social purposes).

3.5.1 Null and investment alternative

The main difference between the investment (do something) and null (do nothing) alternative is the reconstruction and its subsequent use for public purposes and the resulting benefits for inhabitants and the district court. Currently, the only use of the facility is for the storage of the court's archive. It is in desolate condition, the entire building is going to ruins. Its hideous appearance in the centre is detrimental not only for passers-by, but also for the town's management. The poor condition of the building could cause damages should anybody would enter it (there have been a few attempted burglaries in past or people just try to enter it out of curiosity). After reconstruction, the building should become not only the headquarters of the district court, but also a dignified facility that will represent the seriousness of the institution and gracefully bear reference to the past.

The inhabitants and visitors of the town should find not only the district court and museum of totalitarianism in the compound, but also parking spaces and a cafeteria that will increase the positive effect.

As stated in professional literature[58], the null alternative is represented by the best alternative investment in the case that the investment alternative is not realized. In this case, the owner (Ministry of Justice) should sell the compound to a developer and acquire a considerable amount of money that will be more than welcomed in the time of crisis and diminishing budgets. The developer would probably try to demolish the entire building and build a commercial complex with offices and apartments. However, the prison is a cultural monument and therefore its immediate demolition or even partial destruction for commercially use would be a very demanding process with an uncertain outcome under the Heritage Act. Furthermore, additional commercial facilities would not bring society many benefits, as the compound of former military barracks was recently rebuilt and now serves commercial purposes. Therefore, in this thesis the current state is set as the null alternative. The facility would continue to decay and the only costs would be for its basic maintenance. The cost currently fluctuates around 1.5 million CZK including insurance and security, but given the ongoing state of decay of the facility, the expenditures are increasing every year. This amount was based on consultations with an expert from the area.

The null alternative is presented here only for a better understanding of the whole issue. Nevertheless, the null alternative will not be further taken into consideration, as it represents an undesirable state of affairs. The aim of this thesis is to consider the reconstruction of the prison and compare the investment alternatives, i.e. traditional public procurement and PPP, not to consider how to let it fall into disrepair. As mention above, its demolition is impossible as the whole compound is a heritage site.

3.6 Possible means of project financing for the public sector

The public sector has several alternatives for financing the reconstruction of the former prison. The following sources can be used:

- Public sector capital
- Public sector capital combined with grants (state, municipal, EU funds)
- Public sector implementation with involvement of the private sector (PPP)

[58] SIEBER, P.: Finanční a socioekonomické hodnocení projektů (metodická příručka), Praha : VŠE, 2008

- Public sector implementation with involvement of the private sector and capital from grants
- Private sector capital

The following chart shows the advantages and disadvantages of the aforementioned means of financing:

Table 5: Advantages and disadvantages of various means of financing

Means of financing	Advantages	Disadvantages
Public sector	• Public sector uses its own sources • No conditions for obtaining funds	• Financing risk borne only by the public sector • Difficult obtaining of resources for the public sector • Low motivation, exceeding of time schedule and budget
Public sector + Funds	• More accessible financing because of funds	• Conditions for obtaining funds • Low motivation, exceeding of time schedules and budgets
PPP	• Financing by the private sector • Diversification of risks • Public sector does not pay before launching the project	• Public sector must respect the private sector's interests
PPP + Funds	• Same as with PPP • Most accessible means of financing • Public sector controls project development	• Same as PPP • Conditions for obtaining funds
Private sector	• No financial burden on the public sector • Higher quality of provided service	• Public sector has no control over the project

3.7 Common preconditions for PPP and PSC

- To design, reconstruct, finance and operate the judicial court with parking and rental premises
- To provide all the additional services such as cleaning and waste management, parking operation, reception desk, assistant helpdesk, facility management,

telecommunications, informational technologies, security, delivery, moving and transportation services

- The expected term of the project is 25 years, building is planned for 2 years
- The same high-quality outcome must be ensured for both options
- In the model, 100% usage of compound is expected
- All income costs are counted at prices for 2012, costs are discounted during the project lifetime
- The value of fixed assets is maintained for the entire project lifetime by repairs and maintenance, repairs will be conducted regularly every 5 years
- Investment costs, life cycle costs and operating costs are the same for both options; in the PSC model the risk of higher expenses is accounted into total costs
- The model counts with a corporate income tax of 19 %
- After 25 years, the entire facility is ceded to public sector for free (the public sector will not need to spend any resources for its purchase)
- As concerns the value of the project after 25 years and further, both options are identical, so that this topic can be omitted (it is assumed that cash flows will not change the Net Present Value when project lifecycle ends)

3.7.1 Economic parameters

- **Inflation rate**

All financial values in this model must take into account the assumed rate of inflation, i.e. all values must be stated at their nominal value. For the needs of this thesis, the predictions of the Czech National Bank and European Central Bank were used. The inflation rate expressed as the increase of the average annual Consumer Price Index (CPI) was set at 2.3%. This rate is used in the entire financial model for indexing the values.

- **Discount rate**

The nominal discount rate that is used to determine the net present value was calculated according to the Fisher equation[59] with a real discount rate of 3%[60] and inflation rate of 2.3%. This discount rate will be used to compare project implementation through PPP and

[59] Calculation of net present value using the Fischer equation: (1+0.03) * (1+0.023) – 1 = 0.0536

[60] Real discount rate in the amount of 3% is given by Decree No. 217/2006 Coll., Coll., stipulating the essentials of application for prior opinion on the conclusion of a concession contract or a contract under the Concession Act and on amendment to the concluded concession contract or contract under the Concession Act

traditional public procurement. It is not intended to supply the investment decision for the private partner.

Real discount rate 3%
Nominal discount rate 5.36%

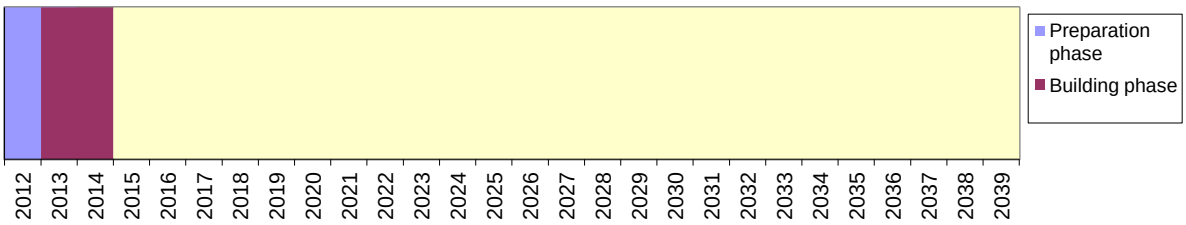
3.8 Counting of costs for the PPP and PSC model

3.8.1 Beginning and end of the project

The commencement date of the contract is understood as the beginning of the implementation phase of the project. The end of the project then represents the assumed end date of the contract.

The length of the project is divided into two phases: building and operational. Changes in the length of the project can have a huge impact on all inputs, intra-outputs and outputs of financial model.
When considering the length of time between the beginning and end of the project, the possibility of gaining and reimbursement of financial resources for project implementation (including the period of preparation and approval of project documentation, the period of building and operational phase) must be taken into account. The main criteria are the best value for money for the contracting party and the qualitative and quantitative values of the project.
Usually, the length of PPP projects ranges from 6 to 30 years. In reality, according to current legislation the length of concession is not limited.
For the project of reconstruction of the prison, the assumed length of the contract should be 25 years with a building phase of 2 years. For better projection in the graph below, the term of the project is divided into three phases: preparation, building and operation.

Chart 2: Term of project



Source: Own work

3.8.2 Beginning and end of the construction phase

The date of starting construction works is regarded as the beginning of the construction phase. The end of construction phase is the date of the assumed termination of construction works.[61]

The building phase has a time schedule that is closely linked to cash flow. If the schedule is prepared properly, future risks are minimized and it is also possible to make competence decisions about the project's progress.

The schedule of reconstruction of the prison is illustrated below:

Table 6: Diagram of building phase implementation

Activity/year	1	2	3
Project planning			
Project preparation			
Liquidation of ecological damages, demolitions, changes in engineering and transport networks			
EIA (Environmental Impact Assessment)			
Documentation for the building permit			
Discussion of the building permit			
Issuance of the building permit			
Legal power of the building permit			
Realisation of building			
Final approval			
Trial operation			
Putting the infrastructure in the fully operational phase			

Source: Own work

[61] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 15.7.2012], Available on: <http://www.pppcentrum.cz>

Three years seems to be relatively long time, but this schedule covers all the main aspects of the building phase. In case of properly prepared project documentation and issuance of all the necessary documentation by the administrative bodies, the schedule can be significantly reduced. Still, in terms of the Czech Republic I would be rather sceptical and count with a longer time.

3.8.3 Risks

Risks appear every time when the output or consequence is not certain. The negative aspect of this uncertainty can be called risk.[62]

The correct identification, valuation and effective allocation of risks is crucial when drawing up the financial model.

The following methods are used for the risk evaluation:

- Simple method
- Advanced method
- Risk evaluation using excessive inclination towards optimism

In my thesis, I will use the last method based on a simplified determination of the percentage factor of optimism deduced from the historical data of similar projects. The value of the risk is then counted by multiplying this percentage factor with the given cost. This calculation is used hereinafter in the chapter Project savings.

When considering the diversification of risks, the private partner bear the main risks for the construction and availability of the compound and the risk of availability of the provided services required for use of the infrastructure, as well as the demand risk connected to the lease of commercial premises and parking.

Table 7: Diversification of risks in the project

Risk	Ministry of Justice	Private Partner	Shared
Fulfilment to the standards of the Ministry of Justice		X	
Construction		X	
Operational risks of the private partner (breakdown of service/equipment/building)		X	
Operational risks of the public partner (breakdown of security)	X		
Demand for commercial premises and parking places		X	

[62] Boothroyd &Emmett: Risk Management, Witherby & Co Ltd, 1996

Security of justice court	X		
Security equipment of the justice court		X	
Financing		X	
Risk of obsolescence		X	
Change of VAT in the meantime between submission of the tender and date of taxation	X		
Force majeure			X

Source: Own work

3.9 Gross PSC

Gross PSC represents the basic costs of the public partner (Ministry of Justice) for the reconstruction, operation and maintenance of the whole facility. The main gross expenditures are estimated based on the previously defined project, estimates by experts and historical data from similar projects. In this case, the main sources of information were the calculations from the former project dating back to 1996. The assignment of the contract was very similar, i.e. to change the dilapidated facility into the headquarters of the district court.[63] In the following chart, the first column shows the original calculations. The second column shows the current values obtained from the original values multiplied by price index for construction works[64].

Table 8: Original and calculated costs of reconstruction

	Original figures (in thousands of CZK)	Indexed figures(in thousands of CZK)
Cost of project preparation	11,998	18,500
Building costs	452,535	672,707
Other costs	76,926	118,713
Operational expenditures	45,490	70,200

Source: Own work

The value of lifecycle costs was then consulted with a civil engineering expert. The calculation of incomes is explained in the relevant chapter.

The estimated material expenditures are then assigned to the corresponding period of future cash flow of the project (so that the time value of money is ensured).

- Cost of project design and consulting and advisory fees will be paid in the preparation phase of the project

[63] The author of the project was Stavoprojekt Zlín, státní podnikový a projektový závod

[64] For the year 1994, price index of construction works is 64.8, data available on> <http://www.mpostav.cz/insprac.htm>

- Construction payments will be paid during the construction phase
- Expenditures for reconstruction and purchasing of equipment are spread over the construction phase
- Expenditures for repairs and further reconstruction are spread over the entire lifecycle of the project with a five-year periodicity
- Operational expenditures will be paid regularly every year and are estimated in the same amount for the entire lifecycle of the project

3.9.1 Cost of project preparation

The cost of project preparation includes all the expenses spent by the contracting party for activities connected with project preparation, i.e. before its implementation.[65]

The most common cost in this area includes expenses for consulting, legal services, activities connected with the preparation of a public tender, etc.

For the needs of this thesis, the information from pilot PPP projects about the costs of similar projects was used. Nevertheless, as more experience was gained during recent years, these costs are declining and this will be also included in the cost.

The cost of project preparation is assumed at the amount of **18,500,000 CZK**.

3.9.2 Capital expenditures (CAPEX)

Expenses designated for the purchase of land, buildings and equipment necessary for production of the product or provision of services. Direct capital investments can include e.g. expenses for the construction of new equipment or acquiring new assets.[66]

Capital expenditures are added to the model in the year they are accrued and are divided into hard costs (HC) related to the building cost as expenditures for reconstruction of the facility, preparation of external areas and equipment, and soft costs (SF) related to other costs such as management, design, etc. For the purpose of this thesis, they include:

- Reconstruction (including demolition of non-recoverable buildings) (HC)
- Quality controls during the construction phase (SF)

[65] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 15.7.2012], Available on: <http://www.pppcentrum.cz>

[66] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 15.7.2012], Available on: <http://www.pppcentrum.cz>

- Expenditures for preparation of reconstruction (construction site, fencing, security, etc.) (HC)
- Material and machinery (HC)
- Equipment including IT infrastructure (HC)
- Modernization and technical appreciation of infrastructure (HC)
- Expenditures connected with management of the construction (SF)
- External consultants (SF)

Table 9: Expenditures

Expenditures	
Building costs (hard costs)	672,707,000 CZK
Other costs (soft costs)	118,713,000 CZK
Total	**791,420,000 CZK**

Source: Own work

3.9.3 Maintenance costs

Maintenance costs include expenses spent during the entire lifecycle of the project and they are determined for physical maintenance of the infrastructure in the state required for providing the public services to end users.[67]

These costs are sometimes called lifecycle costs or restoring costs. They include material, equipment and tools and the work connected with maintenance of the facility.

The most significant items are maintenance of the construction (roof, floors, facade, etc.), technical equipment (wiring, air condition, heating) and maintenance of internal equipment (catering service, greenery, roads and pavements).

It should be noted that any essential technical appreciation that will be carried out beyond the current requirements or expenses for further building changes cannot be included. The main purpose of this cost is to maintain the facility in the same operational state as at the beginning, even after expiry of the contract.

The amount differs for the PPP and PSC models as by investment cost as the private partner has the ability to manage maintenance costs better.

[67] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 15.7.2012], Available on: <http://www.pppcentrum.cz>

3.9.4 Operational expenditures (OPEX)

Operational expenditures are all expenditures that are connected with the operation of the necessary infrastructure and real providing of service.[68]

These expenditures includes material, consumer goods, direct management, insurance, staff (wages, benefits, insurance, etc.), rent and fees for infrastructure use and utilities (electricity, water, gas, heating), regular inspections of technical infrastructure (boiler room, fire control, generators, cables, etc.), garbage collection, facade cleaning, landscaping, building administration, cleaning, accounting, security, etc.

Table 10: Operational expenditures

Operational expenditures	
Building and equipment	60,000,000 CZK
External areas including parking	10,200,000 CZK
Total	**70,200,000 CZK**

Source: Own work

3.9.5 Incomes

In this project, two sources of income are expected. These are third-party payments in the form of income from available capacities for lease and from parking. The total area of commercial premises would be 400 m^2 and the assumed rent in this locality amounts to 2,200 CZK/m^2/year.

Of the 100 newly-built parking spaces, half will serve the court's needs and fees for them will be included in availability payment, while the second half will be rented. The average income from one space is 2,000 CZK per month, i.e. 24,000 CZK per year.[69]

Table 11: Incomes

Incomes	
Rent for commercial areas	880,000 CZK
Parking	1,200,000 CZK
Total	**2,080,000 CZK**

Source: Own work

[68] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 15.7.2012], Available on: <http://www.pppcentrum.cz>

[69] The high of rent for the commercial areas was set based on the research of average rent in the centre of the town. The average income from parking was determined by given current parking fee and average occupancy rate was considered to be 80%.

3.9.6 Value added tax

Value added tax (VAT) represents the difference between the market price of the product and the price of intermediate product. VAT is paid by the buyer in the product price and the seller pays it to state budget.[70]

The VAT issue is relatively large and complex. Therefore for this project it is assumed that private partner is a VAT payer, its subcontractors also pay VAT and the grantor is legally not a VAT payer. In the financial model, the input VAT that is paid by the private sector for subcontracts and will be deducted in its tax declaration is taken into account. The output VAT (VAT for availability payment) is calculated against it. Both these payments are than depicted in the cash flow of the private party.

Including VAT into the financial model follows from Act No. 235/2004 Coll., on Value Added Tax.

3.9.7 Project savings

As mentioned above, the private sector is capable of managing costs with higher efficiency. These savings must also be taken into consideration in the financial model. All the savings that emerge during the project lifecycle are added to particular cost in the PSC option. However, one complication arises with the savings; these savings are responsive to the assessment of risks transferred to the private party. Risks should always be allocated to the side that is capable of their better management at lower costs. The risks are usually the turning point when comparing Value for Money. In comparison with the PSC option, where public sector bears all the risks, in PPP they are divided between the public and private sectors.

The determination of these risks is a rather subjective issue. For the purpose of this thesis, the risks were consulted with experts from the PPP sector and with accessible literature and documents dealing with this issue. In particular, pilot projects were used as the main sources for estimating risks. These represent the best available data for PPP projects in the Czech environment. Nevertheless, for the needs of real projects, further investigation and deeper research would need to be done.[71]

For the sake of simplicity, only the basic risks related to construction, operation, financing, the lifecycle phase and income were selected. Others common risks are political risk, the

[70] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 15.7.2012], Available on: <http://www.pppcentrum.cz>

[71] In pilot projects, the average risk of exceeding building costs was about 20%, the risk of exceeding the time schedule about 13%, the risk of exceeding the budget about 12% and the risk of obsolescence 15%.

financial risk of the country, demand risk, etc. Furthermore, this model does not take into account the risks affecting the private sector, which is presumed to be insured against them. In the project of prison reconstruction, the following types of risks and assumed savings are considered:

Table 12: Transferred risks and their quantification

Risks	Public sector	Private sector	Quantification of savings in PPP option
Construction phase			
Risk of project design		x	10%
Risk of meeting the deadline		x	12%
Non-discriminatory legislative changes		x	4%
Financing phase			
Risk of exceeding the budget		x	12%
Operation phase			
Risk of exceeding project lifecycle costs		x	10%
Risk of inefficiency - energy		x	10%
Non-discriminatory legislative changes		x	3%
Life cycle cost			
Risk of obsolescence		x	8%
Income			
Market risk		x	10%

Source: Own work

3.10 Reconstruction of the prison through traditional public procurement

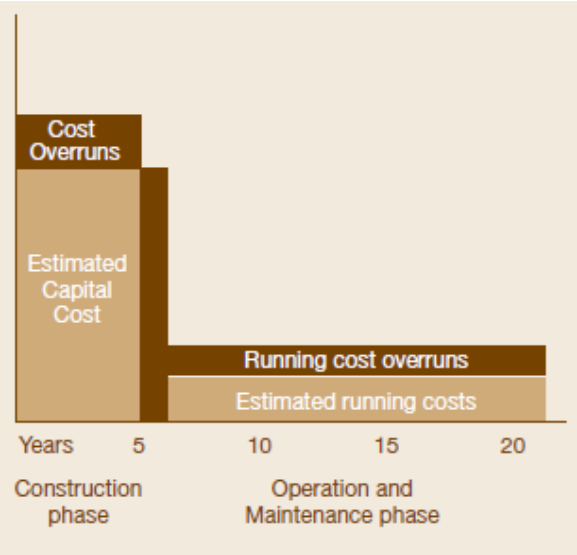
The first option for the reconstruction of the former prison is traditional public procurement. In this case, the contract would be concluded with several entities according to the separate phases (design, construction, operation). When comparing traditional public procurement with the PPP option, the Public Sector Comparator (PSC) is to be used. This helps the public sector to quantify all expenditures that are linked to project implementation. The calculation of PCS is based on the cost of building and operating of the facility by the public sector. The value of risks that are connected to the project and which would be borne by the private partner under the PPP option are included.

In this case the contractual arrangement would be carried out through separate contracts for the design, construction and operation with different entities. The facility would remain in the ownership of the Ministry of Justice. The design, construction and operation would be performed by selected entities and the costs of the project would be carried by the Ministry of Justice. The capital for financing would be raised by issuing government bonds under Act No. 190/2004 Coll., on Bonds.[72] A coupon would be regularly paid to the holder and at the end of given period, the principal would be repaid. This is the most commonly used means of financing for public sector.

Generally, the main advantage of traditional public procurement is the lower administrative burden and shorter time required for project preparation. However, it also involves a significant number of problems: the public sector needs to have at its disposal the necessary amount for the needs of the project budget and solve problems with exceeding the budget or delays in deadline, while also bearing all the risks.

The graph shows the development of costs during the project lifecycle, i.e. 27 years. Large-scale investments are needed in the first two years when the design and construction is underway. On the other hand, over the next 25 years cost remains constantly low with the exception of repairs and reconstruction at five years intervals (as stated above).

Chart 3: Development of costs during the project lifecycle



Source: Feasibility Study Guideline for Public Private Partnership Projects[73]

[72] Government bonds are bonds issued by the Ministry of Finance, Source: Act No. 190/2004 Coll., Coll., on Bonds

[73] PricewaterhouseCoopers: Feasibility Study Guideline for Public Private Partnership Projects, [retrieved 20. 7. 2012], Available on: <http://ntl.bts.gov/lib/36000/36000/36066/930-722R_Final_Report.pdf>

3.10.1 Option of financing the project by issuing government bonds

In the case of traditional public procurement, the project would be financed by issuing government bonds. In this case, the public side has to fall into debt and obtain the necessary funds on the capital market. The interest rate that represents the cost of financing the project is set at the amount of 4.2%.[74] The costs of issuing bonds will be included in the financing model as PSC financial expenditures.

3.11 Reconstruction of the prison through PPP

When considering the PPP option, the private party will be in charge of designing, constructing and operating the entire project for 25 years.

Table 13: Overview of the project using the PPP method

PPP	
Type of PPP	DBFO (design, build, finance, operate)
Concession contract	The concession contract will be concluded for 27 years (2 years of construction and 25 years of operation)
Ownership	Public sector, Ministry of Justice
Construction	Private partner
Financing	Private partner
Operation	Private partner
Cost of the project	All the cost will be funded by private partner
Payment mechanism	Public sector pays the private partner availability payments for the entire term of the project lifecycle. Availability payments cover 100% of costs and given the rate of return for the private partner.

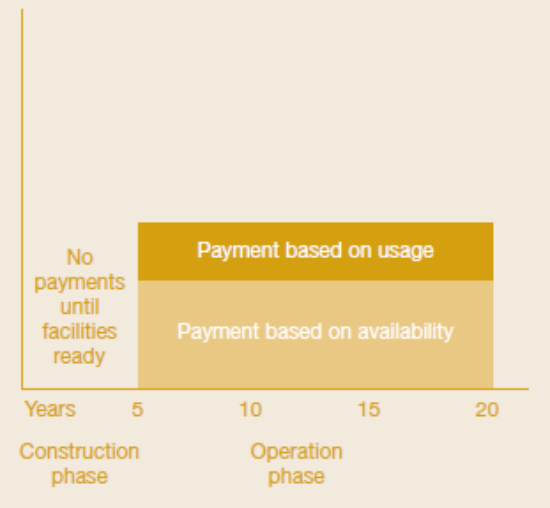
With PPP, the greatest disadvantages are the high price of project preparation and choosing a concessionaire with the length of project preparation and reduced flexibility. On the other hand, these negative aspects can be outweighed by the more suitable distribution of investment costs in time, transferring risks to the private party and savings that the private sector is able to attain through numerous activities within the project.

The following graph shows the development of costs in next 27 years for the public sector. In the preparation phase, the public partner participates only partially, mainly in expenses related

[74] This rate is determined by interest rate of long-term government bond that are posted on Ministry of Finance CR websites. In this case 30 years government bonds were chosen as there are no in the length of 25 years.

to the documentation of the project and organisation of a public tender. During the operation phase, it pays regular availability payments for the provided service.

Chart 4: Payment profile for the public sector



Source: Feasibility Study Guideline for Public Private Partnership Projects[75]

3.11.1 Financing of PPP

In the Czech Republic, the basic financing structure is made up from the equity capital of the private partner and =additional bank loans. In this project, the structure will consist of 20% of equity capital and 80% of foreign capital. The banks can guarantee up to 95% of investments. Nevertheless, such a high rate is more common for projects in countries with adequate experience with PPP. The debt ratio, i.e. the ratio of external and own capital, depends on[76]:

- Expenditures connected with obtaining the relevant capital
- Size and stability of corporate income
- Ownership structure
- Maintaining control over business activities

In the PPP pilot models, the share of own equity ranged between 14% and 30%. For this project, a rather conservative approach was chosen because the private partner bears significant risks. The cost of foreign capital is 5.36%. The repayment of debt will start after the construction phase, that is to say after two years, in the third year once operation of project is launched. Instalments will be paid annually in the same amount.

[75] PricewaterhouseCoopers: Feasibility Study Guideline for Public Private Partnership Projects, [retrieved 20. 7. 2012], Available on: <http://ntl.bts.gov/lib/36000/36000/36066/930-722R_Final_Report.pdf>

[76] PPP Centrum, Praktická interpretace finančních modelů k PPP projektům, [retrieved 16.7.2012], Available on: <http://www.pppcentrum.cz>

The required rate of return for the private partner is 12%. In the pilot models, this rate oscillated around 14%, but was near the upper limits of the required return. At present, the anticipated rate of return is to be rather lower as construction companies are suffering from a lower demand for their services due to the financial and economic crisis. The chosen rate of return also influences the calculation of availability payments so that it provides the repayment of dividends in required amount. These dividends are depicted in the cash flow statement and balance statement.

As stated above, one of the important assumptions of the financial model is to provide the same service or quality of service in both options. Nevertheless, under the PPP option there is the possibility for the private sector to undertake secondary activities and thereby acquire additional resources that can lead to a reduction in availability payments or the provision of better and broader services.

3.11.2 Cost of the PPP project versus PSC

In the following chart, the particular costs for each option are shown according to their type and amount. The PSC cost is adjusted by the savings that arise in the PPP option by adjusting the transferred risks. For the PSC option and PPP option, the costs of financing are added.

Table 14: Cost of reconstruction through PSC and PPP

Cost	PSC – financing by bond issue	PPP- financing by private capital
Investment cost	1,012,400,000	809,920,000
Operation cost	86,364,000	70,200,000
Regular repairs and reconstruction	16,950,000	15,000,000
Financing cost	1,313,494,187	1,797,061,255
Total	**2,429,190,187**	**2,692,181,255**

Source: Own work

According to total cost, the PSC option financed through a government bond issue represents the better option for reconstruction of the former prison facility.

Still, this does not mean that it is the best option. The main reasons for using PPP and therefore assuring higher efficiency and management of risks are:

- A single partner is chosen for the entire project whereby higher transparency is ensured
- *PPP enables project implementation sooner, faster and without the risk of exceeding the budget for the public sector. The private partner is usually able to manage the*

whole project better, meet construction deadlines and not exceed costs.[77] The commencement of availability payments after the construction phase can serve as motivation for the private partner to finish the project as soon as possible.

- The use of better construction processes and technical equipment that leads to the achievement of savings
- Risks are assigned to the party that is able to manage and absorb them more efficiently
- Payments are distributed over time
- The public sector pays only if the service is delivered
- The public sector controls the project and if the contract is terminated or delivery is not due and punctual, the private partner would not be paid for it

3.12 Financial model

In the financial model, two different options of project implementation are considered. The first option is traditional public procurement where the necessary capital is raised by issuing government bonds. The second option is realization through PPP where financing is ensured by taking a loan. For the sake of good comparability, both models must have the same structure and classification. Therefore, all items (e.g. capital, financial, operational expenditures etc.) must appear two times in the model. At the end of the financial model, the net present value of both options is determined and Value for Money is then calculated based on the net present value of PSC and the availability payment for PPP.

3.12.1 Conventional public procurement (PSC)

In the case of traditional public procurement, the net present value of the project was determined in the amount of **3,060,577,012 CZK**. This figure includes all discounted expenditures that the public sector would spend on the project, reduced by discounted incomes from the lease of commercial areas and parking. The expenditures are increased by the summarised transferable risks.

[77] VYSKOČIL, V. K., ŠTRUP O., PAVLÍK M. Facility Management a Public Private Partnership. 1. vyd. Praha: Professional Publishing, 2007.

Table 15: Net present value of PSC

	Nominal	Discounted
Preparatory expenditures	18 500 000	17 558 846
Capoital investments	791 420 000	732 051 032
Life cycle cost	111 826 714	46 435 130
Operational expenditures	2 501 696 927	1 153 559 412
Financial expenditures	1 379 168 896	675 830 592
Incomes	-74 124 353	-34 179 538
Transferable risks	820 212 171	469 321 538
Total cost	**5 548 700 354**	**3 060 577 012**
NPV PSC		**3 060 577 012**

Source: Own work

3.12.2 Public Private Partnership (PPP)

Under the PPP option, individual items of expenses are the same. The difference is in their value, as the private sector is able to achieve lower costs because of better management and higher efficiency. As it is assumed that private partner finances the project from foreign capital, the cost of financing also appears. The incomes differ significantly because of the availability payment that represents the total expenditures for the public sector during the entire project lifecycle. In the chart, the net cash flow for the private sector is counted. Nevertheless, for the purpose of comparing PSC and PPP, only the availability payment is relevant. Therefore, the net current value of the availability payment is **2,894,288,683 CZK**. In the next chapter, this particular amount is used when determining value for money.
The availability payments should cover the rest of private partner's expenses that are not covered by income from parking and lease, and provide the concessionaire with the required 12%rate of return. The annual value of the availability payment is then 176,132,294 CZK. It is necessary to mention that in reality, these availability payments can be reduced by the agreed deductions when the service is not provided properly or on time. Yet no deductions are counted in the model.

Table 16: Net present value of project through PPP

	Nominal	Discounted
Preparatory expenditures	18 500 000	17 558 846
Capoital investments	791 420 000	732 051 032
Life cycle cost	111 826 714	46 435 130
Operational expenditures	2 501 696 927	1 153 559 412
Financial expenditures	530 789 255	300 579 027
Incomes	74 124 353	34 179 538
Availabillity payment	6 276 775 193	2 894 288 683
Cash flow before taxation	**2 396 666 651**	**678 284 775**
Tax	455 366 664	128 874 107
Cash flow after taxation	**1 941 299 987**	**549 410 668**
Net cost for public sector	**6 276 775 193**	**2 894 288 683**
NPV PPP		**2 894 288 683**

Source: Own work

3.13 Value for money

As stated above, the concept of value for money is used for the valuation of the project realized by the state, municipalities or towns. It represents the optimal combination of the total lifetime costs of the project and the quality within the offer. In the case of reconstruction of the former prison, it represents only a theoretical calculation of value for money. The aim of this thesis was to create a simplified financial model that can be used for to compare project implementation through conventional public procurement and through PPP. Value for money was then calculated based on this simplified model. For the purpose of the model, the values of all inputs had to be determined in such an amount so that both options were comparable, that is to say that the scope of services, value of expenses or quality of service had to be comparable.

Value for money is determined by comparing the net present values of all project expenditures in the PPP and PSC option. For the PPP option, the availability payment that represents all payments by public sector is used.

As the project is considered to be long-term, all the values have to be discounted and indexed. This is shown in the following chart, which displays the net present values of the PSC and PPP options.

Table 17: Value for Money

	Nominal	Discounted
PPP		
Expenditures of the Authority	6 276 775 193	2 894 288 683
Incomes of the Authority	0	0
Net incomes of the Authority	6 276 775 193	2 894 288 683
PSC - financed by issue of bonds		
Expenditures of the Authority	5 622 824 707	3 094 756 550
Incomes of the Authority	-74 124 353	-34 179 538
Net incomes of the Authority	5 548 700 354	3 060 577 012
Value for Money (CZK)		**166 288 329**
Value for Money (%)		**5,43%**

Source: Own work

Evaluation and conclusion

Public Private Partnership is currently often used term not only among professionals, but also in media, by politicians and also broad public becomes to be familiar with this concept. Unfortunately PPP is still connected with pejorative words as bribery, too expensive etc. Nevertheless if key presumptions for PPP project application (e.g. achievement of value for money, optimal transfer of risks or effective usage of knowledge) are fulfilled, the usage of this method brings important benefits for both sides. In current tough years of financial crisis the government is forced to allocate its scarce resources more effectively and it is not able to finance all the public needs. Unfortunately in the Czech Republic to date no bigger PPP project (i.e. on a national level) was carried out. Examples of good practices lie abroad and it would be shame not to use them as inspiration.

The aim of this thesis was to show whether a partnership of the public and public sectors would be the best option for the reconstruction of former prison in the town Uherské Hradiště. As the main method for its evaluation the methodology of Ministry of finance CR was chosen. This financial model was used by the evaluation of pilot PPP projects in the Czech Republic and is considered to be the basic source when making decision if the project is suitable for usage of PPP method.

In the first chapter the concept of PPP was introduced with the definition of other terms that are connected. As PPP disposes with long history that reaches as far as the ancient Rome in the first chapter I have also described the development of PPP in the world. Separately the history of PPP in the Czech Republic was described with the listing of current projects on national level, that are unfortunately all suspended with the only exception of highway D3. Description of the situation would not be complete without legal and institutional framework. Without these also no PPP project realization would be possible in the Czech Republic.

The second chapter deals with the methodical tools for PPP projects evaluation. At beginning the socioeconomic evaluation of PPP project is introduced as the realization of project by PPP method should lead to increase in socioeconomic value. Nevertheless as was stated in the aim of this thesis the rest of the chapter is devoted to the description of financial model and its important parts.

In the third chapter the very project of the reconstruction of the prison in the town Uherské Hradiště was presented. The economic favourableness of two ways of realization was compared. The comparison was made from the public sector point of view and it should lead to the determination which way represents for the state the most efficient usage of available resources. I drew up the simplified financial model based on the mentioned methodology. As

the inputs the real amounts from the former study were used. The financial model compares the realization of the project by PPP and PSC (Public Sector Comparator – traditional public procurement).

The financial model shows that PPP realization of reconstruction of the prison can bring savings (value for money) for public sector. The savings for PPP options were counted in the amount of 166,288,329 CZK that represents 5.43% of savings comparing to traditional public procurement. The rate of availability payment that would be paid by public sector to concessionaire was determined in the amount of 176 132 294 CZK.

With regard to the complexity of the financial model and the difficulty of estimation of inputs it is highly recommended to use the service of experienced advisors when designing model or preparing the concession contract. In this model numerous estimations based on the available literature and simplifications must have been done. But taken generally investments into qualitative preparation and realistic calculation of own expenditures will finally pay off. Wrong estimation of own expenditures can lead to choosing wrong and therefore more expensive option. Considering the length of project and public sector liabilities the project preparation and evaluation of own equity is crucial.

Although this calculation seems to be very interesting this outcome should be further analysed by public sector when considering the possibility of PPP model for the project.

Firstly it must be emphasized that PPP projects are in their nature not different from the projects that are done by traditional public procurement and this counts also for the project presented in this thesis. The cost of the project (operational, life-cycle cost, capital investments, etc.) should be the same for the private and public sector when the quality of the work done would be the same. From the fiscal point of view the traditional public procurement must be proceeds as cheaper option as the initial cost of PPP project is higher. In this case the difference is represented by the organizational and proprietary organization and primarily by the transfer of risks.

Firstly let us look on the organizational aspect of the problem. Experiences from abroad show that a lot of activities done by public sector can be procured more efficiently when private sector is involved. It is generally assumed that the private sector is capable of better management of the project and therefore their work should lead to benefits for the public sector. But this general assumption can´t be taken as the certainty, mainly in the Czech

economy where the rate of corruption is significantly high[78]. In the past we can find a lot of examples where that introduction of private item and its management into the project led to the significant negative aspects for it.

The second and from my point of view the most problematic issue when evaluating the PPP project is the transfer of risks. As mentioned before when creating financial model it is very important to identify, value and allocate the significant risks of the project. In the model risks are divided by the phases of the project and they are assigned values of the probability of their appearance. "*Made researches (ACCA 2005[79] and OFDMFM 2005[80]) show that the right estimation of the risk size and its division influence 60% of PPP project success, i.e. value of reached savings.*"[81]

Even the definition of the risk is problematic as there are more ways how to define it: probability or possibility of loss, generally failure, variability of possible outcomes or uncertainty of reaching them, deviation of real and anticipated outcomes, the probability of any results that is different from anticipated, the risk of wrong decision etc. Different people understand this term in different ways and their risk evaluation can differ just because of that. The results than seem to be not reliable enough.

Still this is not the only problem when evaluating risk. In the first stage of risk transfer, risk identification, some risks or risk situations can be omitted or on the other side counted twice[82]. At this point the experience of private sector should represent significant benefit but as was mentioned before quality of private management is not a dogma.

The second stage of risk transfer, its evaluation, is next highly problematic issue in the financial model. Every PPP project is specific and also risks that are connected differ significantly not only by their nature, but also by possible impacts and the probability of their appearance. In the financial model two parameters are crucial for their evaluation: high of potential impact (i.e. potential loss caused by risk) and the probability that they will occur. These quantities are not possible to measure properly and estimations of experts, historical data, methods of multiple criterions and further ways are used so that the estimations are of the best quality. Nevertheless the financial model does not show the outcomes of other

[78] By the Corruption Percentage Index issued by Transparency International organization the Czech Republic ranked 57, same as e.g. Namibia. Source: http://cpi.transparency.org/cpi2011/results/

[79] ACCA 2005: Evaluating the Operation of PFI in Roads and Hospitals, Research Report no.84, London

[80] OFDMFM 2005: Review of Opportunities for Public Private Partnerships in Northern Ireland, Belfast.

[81] PAVEL,J.: PPP projekty v ČR - šance nebo riziko? Implementace projektů v České republice a její rizika. Praha 2007. Available from: chttp://www.transparency.cz/doc/vz_analyza_ppp_implementace.pdfc

[82] Doubling the risk is by PPP centre the most common failure when evaluating risk. Source: vhttp://www.pppcentrum.cz/res/data/004/000623.pdfv

possibilities, that is to say the values that were not chosen. But the estimated risk creates only small part of the scenarios that can happen. The outcomes of financial model can be totally different only because of small error or not correct estimation in the initial phase.
Last but not least problematic area is the risk allocation. As by traditional public procurement the public sector bears all risks of the project, private sector is not motivated to prevent the risks. In PPP project the risks should be allocated to the party that is capable of their better management. But it cannot be ensured that current chosen side will be the best candidate also in the future. Moreover with the higher rate of private partner participation in the project also its participation on bearing the risks rises and therefore higher rate of return is required. This is than computed into the availability payment that can be in result disadvantageous for the public sector. Optimal risk allocation is also connected with the problem of public sector reaction when the service is not provided in given quality and extend. Public sector is directly responsible for provision of different service and therefore it cannot allow any failure in their provision. In this situation public sector will be probably forced to support the service provider or at least purchase some equipment.
Theoretical concept of PPP projects is described as the possibility how to achieve higher efficiency rate when the aims of governmental policies are fulfilled. Still it depends on the set of assumptions if the provision of public services with higher efficiency will be reached also in the reality. The public sector must be prepared for the evaluation of risks that emerge from PPP contractual relationships and it also needs to know how to define the concessionaire´s performance and consequently how to monitor him.

List of abbreviations

PPP – Public Private Partnership

PFI – Private Finance Initiative

ERDF - European Regional Development Fund

ESF - European Social Fund

CF - Cohesion Fund

EIB – European Investment Bank

PSC – Public Sector Comparator

VfM – Value for Money

SPV – Special Purpose Vehicle

NPV – Net Present Value

IRR – Internal Rate of Return

WACC – Weighted Average Cost of Capital

BOO –Build, Own, Operate

DB – Design, Build

DBFO – Design, Build, Finance, Operate

BOT – Build, Operate, Transfer

CBA – Cost-Benefit Analysis

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Annex A – Input data for the project "The reconstruction of former prison in Uherské Hradiště"

Input data			PPP - financing by own equity	PSC - financing by bond issue
Investments	**Preparation expenditures**	thousands	18 500	18 500
	Total capital investments	thousands	791 420	791 420
	Operational phase (the length of concession)	years	25	25
Incomes	**Size of commercial areas**	m2	400	400
	Rent 1m2 per year	thousands	2.2	2.2
	Total incomes from commercial areas per year	thousands	16 376 400	16 376 400
	Number of paid parking places		50	50
	Incomes from one place per year	thousands	24	24
	Total incomes from parking	thousands	1 200	1 200
	Total incomes per year	thousands	16 377 600	16 377 600
Cost	**year of commencement of construction**		2013	2013
	Length of construction	years	2	2
	Annual operation costs	thousands	70 200	70 200
	Buildings and equipment	thousands	60 000	60 000
	External areas and parking	thousands	10 200	10 200
	Regular repairs and reconstruction (total)	thousands	75 000	75 000
	Frequency of repairs and reconstruction	years	5	5
	First regular repair and reconstruction	year	2019	2019
Price indexes	**Inflation**	%	2,3%	2,3%
	Building price´s growth	%	-0,5%	-0,5%
	Energy prices´ growth	%	2,5%	2,5%
PSC - increased by savings	**Risk of project design**	%		10%
	Risk of meeting the deadline	%		12%
	Non-discriminatory legislative changes	%		3%
	Risk of exceeding the budget	%		12%
	Risk of exceeding project lifecycle cost	%		10%
	Risk of inefficiency - energy	%		10%
	Non-discriminatory legislative changes	%	-	4%
	Risk of obsolescence	%	-	13%

	Market risks		-	10%
PPP investor´s inputs	**Used own equity**	%	20%	
	Own equity	thousands	158 284	
	Assumed IRR	%	12%	
	Tax	%	19%	
Common financing	**Maturity**	years	25	25
	No of installements per year		1	1
	Length of deffered repayment	years	2	2
	First repayment	year	2015	2015
	Total no of repayments		25	25
	Interest rate	%	4,2%	4,2%
	Discount rate (real)	%	3%	3%
	Expected inflation rate	%	2,3%	2,3%
	Discounted rate (nominal)	%	5,36%	5,36%

Annex B – PSC Total flows of expenditures and incomes

	Period	1	2	3	4	5	6	7	8	9	10	11	12
	year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Investment	18 500 000	0	18 500 000	0	0	0	0	0	0	0	0	0	0
Discounted	17 558 846	0	17 558 846	0	0	0	0	0	0	0	0	0	0
Capital investments	791 420 000	0	395 710 000	395 710 000	0	0	0	0	0	0	0	0	0
Discounted	732 051 032	0	375 578 967	356 472 065	0	0	0	0	0	0	0	0	0
Life cycle cost	111 826 714	0	0	0	0	0	0	0	17 588 172	0	0	0	0
Discounted	46 435 130	0	0	0	0	0	0	0	12 203 667	0	0	0	0
Operational expenditures	2 501 696 927	0	0	0	75 156 062	76 884 651	78 652 998	80 462 017	82 312 643	84 205 834	86 142 568	88 123 847	90 150 696
Discounted	1 153 559 412	0	0	0	64 259 409	62 393 105	60 581 005	58 821 534	57 113 163	55 454 410	53 843 832	52 280 030	50 761 647
Financial expenditures	1 379 168 896	0	0	0	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756
Discounted	675 830 592	0	0	0	47 168 293	44 768 691	42 491 165	40 329 503	38 277 813	36 330 498	34 482 249	32 728 027	31 063 048
Incomes	74 124 353	0	0	0	2 226 846	2 278 064	2 330 459	2 384 060	2 438 893	2 494 988	2 552 372	2 611 077	2 671 132
Discounted	34 179 538	0	0	0	1 903 982	1 848 685	1 794 993	1 742 860	1 692 242	1 643 094	1 595 373	1 549 038	1 504 049
Total	**4 728 488 183**	**0**	**414 210 000**	**395 710 000**	**128 095 971**	**129 773 343**	**131 489 295**	**133 244 713**	**152 628 678**	**136 877 602**	**138 756 952**	**140 679 526**	**142 646 320**
Discounted	2 591 255 474	0	393 137 813	356 472 065	62 355 427	60 544 420	58 786 012	57 078 673	67 624 589	53 811 316	52 248 459	50 730 992	49 257 598
Transferable risks	820 212 171	0	98 927 500	98 927 500	18 260 139	18 680 123	19 109 765	19 549 290	22 285 386	20 458 899	20 929 454	21 410 831	21 903 280
Discounted	**469 321 538**	**0**	**93 894 742**	**89 118 016**	**15 612 656**	**15 159 214**	**14 718 940**	**14 291 454**	**15 462 860**	**13 473 368**	**13 082 057**	**12 702 111**	**12 333 200**
Total	5 548 700 354	0	513 137 500	494 637 500	146 356 110	148 453 466	150 599 060	152 794 003	174 914 064	157 336 501	159 686 405	162 090 357	164 549 600
Discounted	**3 060 577 012**	**0**	**487 032 555**	**445 590 081**	**125 136 376**	**120 472 325**	**115 996 117**	**111 699 631**	**121 365 261**	**103 615 182**	**99 812 765**	**96 161 130**	**92 653 846**

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 706 017	0	0	0	0	22 078 880	0	0	0	0	24 737 465	0	0	0	0	27 716 180
10 531 488	0	0	0	0	9 088 434	0	0	0	0	7 843 112	0	0	0	0	6 768 428
92 224 162	94 345 318	96 515 260	98 735 111	101 006 018	103 329 157	105 705 727	108 136 959	110 624 109	113 168 464	115 771 338	118 434 079	121 158 063	123 944 698	126 795 426	129 711 721
49 287 362	47 855 895	46 466 003	45 116 478	43 806 147	42 533 873	41 298 550	40 099 105	38 934 495	37 803 710	36 705 766	35 639 710	34 604 616	33 599 584	32 623 742	31 676 242
55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756	55 166 756
29 482 771	27 982 888	26 559 309	25 208 152	23 925 733	22 708 555	21 553 298	20 456 813	19 416 109	18 428 350	17 490 841	16 601 026	15 756 478	14 954 896	14 194 093	13 471 994
2 732 568	2 795 417	2 859 711	2 925 485	2 992 771	3 061 605	3 132 022	3 204 058	3 277 751	3 353 140	3 430 262	3 509 158	3 589 869	3 672 436	3 756 902	3 843 310
1 460 366	1 417 952	1 376 770	1 336 785	1 297 960	1 260 263	1 223 661	1 188 122	1 153 615	1 120 110	1 087 578	1 055 991	1 025 322	995 543	966 629	938 555
164 364 367	**146 716 657**	**148 822 304**	**150 976 382**	**153 180 003**	**177 513 188**	**157 740 462**	**160 099 657**	**162 513 114**	**164 982 080**	**192 245 298**	**170 091 677**	**172 734 950**	**175 439 019**	**178 205 281**	**208 751 347**
58 358 483	46 437 943	45 089 233	43 779 693	42 508 187	50 362 045	40 074 889	38 910 983	37 780 880	36 683 600	43 461 300	34 583 719	33 579 294	32 604 041	31 657 113	37 506 114
24 968 838	22 922 418	23 449 633	23 988 975	24 540 721	27 975 412	25 682 577	26 273 276	26 877 561	27 495 745	31 344 018	28 775 095	29 436 922	30 113 971	30 806 592	35 118 247
13 344 097	**11 627 210**	**11 289 518**	**10 961 633**	**10 643 271**	**11 515 652**	**10 034 018**	**9 742 597**	**9 459 640**	**9 184 901**	**9 937 746**	**8 659 130**	**8 407 640**	**8 163 455**	**7 926 361**	**8 576 049**
189 333 205	169 639 074	172 271 938	174 965 357	177 720 725	205 488 600	183 423 038	186 372 933	189 390 675	192 477 825	223 589 316	198 866 772	202 171 872	205 552 990	209 011 873	243 869 594
101 185 351	**86 048 041**	**82 938 060**	**79 949 479**	**77 077 192**	**84 586 252**	**71 662 205**	**69 110 393**	**66 656 630**	**64 296 851**	**70 889 887**	**59 843 874**	**57 743 412**	**55 722 392**	**53 777 567**	**59 554 157**

Annex C – PPP Availability Payment

Availability payment	6 276 775 193	0	0	0	188 567 087	192 904 130	197 340 925	201 879 767	206 523 001	211 273 030	216 132 310	221 103 353	226 188 730	
Discounted	**2 894 288 683**	**0**	**0**	**0**	**161 227 310**	**156 544 740**	**151 998 167**	**147 583 642**	**143 297 328**	**139 135 504**	**135 094 553**	**131 170 964**	**127 361 329**	

231 391 071	236 713 066	242 157 466	247 727 088	253 424 811	259 253 581	265 216 414	271 316 391	277 556 668	283 940 472	290 471 103	297 151 938	303 986 432	310 978 120	318 130 617	325 447 621
123 662 338	**120 070 778**	**116 583 529**	**113 197 561**	**109 909 932**	**106 717 787**	**103 618 353**	**100 608 936**	**97 686 922**	**94 849 774**	**92 095 025**	**89 420 283**	**86 823 225**	**84 301 594**	**81 853 199**	**79 475 914**

Annex C – PPP Financing

		Period	1	2	3	4	5	6	7	8	9	10	11
Senior debt		**year**	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Senior debt - total	633 136 000												
Effective interest rate	5,36%												
No. of years of repayment	25												
Installment		1 163 925 255	0	0	0	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010
Principal		633 136 000	0	0	0	12 620 921	13 297 402	14 010 143	14 761 086	15 552 281	16 385 883	17 264 166	18 189 525
Interest		530 789 255	0	0	0	33 936 090	33 259 608	32 546 868	31 795 924	31 004 730	30 171 127	29 292 844	28 367 485
Capitalized interest		33 936 090	0	12 726 034	21 210 056	0	0	0	0	0	0	0	0
Outstanding debt			0	237 426 000	633 136 000	620 515 079	607 217 677	593 207 535	578 446 448	562 894 168	546 508 285	529 244 119	511 054 594
Total cash-out		**12 501 997 200**	0	250152033,6	654346056	713629099,8	700331697,9	686321555,2	671560468,9	656008188,3	639622305,5	622358139,4	604168614
Financial cost of financing - nominal		530 789 255	0	0	0	33 936 090	33 259 608	32 546 868	31 795 924	31 004 730	30 171 127	29 292 844	28 367 485
Financial cost of financing - real		300 579 027	0	0	0	29 015 798	26 990 696	25 068 618	23 244 322	21 512 833	19 869 432	18 309 635	16 829 190

12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010	46 557 010
19 164 484	20 191 700	21 273 975	22 414 261	23 615 665	24 881 465	26 215 111	27 620 241	29 100 686	30 660 483	32 303 885	34 035 373	35 859 669	37 781 747	39 806 849	41 940 496	44 188 506
27 392 526	26 365 310	25 283 035	24 142 750	22 941 345	21 675 546	20 341 899	18 936 769	17 456 324	15 896 528	14 253 126	12 521 637	10 697 341	8 775 263	6 750 162	4 616 515	2 368 504
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491 890 110	471 698 409	450 424 434	428 010 173	404 394 509	379 513 044	353 297 933	325 677 692	296 577 006	265 916 523	233 612 639	199 577 266	163 717 597	125 935 851	86 129 002	44 188 506	0
585004130,1	564812429,8	543538454,3	521124193,8	497508528,9	472627064,4	446411953,4	418791712,4	389691026,5	359030543,8	326726659,3	292691286,6	256831617,9	219049870,9	179243022,3	137302526,6	93114020,37
27 392 526	26 365 310	25 283 035	24 142 750	22 941 345	21 675 546	20 341 899	18 936 769	17 456 324	15 896 528	14 253 126	12 521 637	10 697 341	8 775 263	6 750 162	4 616 515	2 368 504
15 424 060	14 090 413	12 824 614	11 623 209	10 482 924	9 400 649	8 373 433	7 398 474	6 473 115	5 594 832	4 761 229	3 970 035	3 219 092	2 506 351	1 829 870	1 187 803	578 400

		Period	1	2	3	4	5	6	7	8	9	10	11	12
Financing of VAT - senior debt		year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total debt	158284000													
Interest	5,36%													
number of years of repayment	1													
debt drawing		158 284 000	0	79 142 000	79 142 000	0	0	0	0	0	0	0	0	0
Installment		166 768 022,40 Kč	0	0	0	166 768 022,40 Kč	0	0	0	0	0	0	0	0
Principal		158 284 000,00 Kč	0	0	0	158 284 000,00 Kč	0	0	0	0	0	0	0	0
Interest		8 484 022,40 Kč	0	0	0	8 484 022,40 Kč	0	0	0	0	0	0	0	0
unpaid debt			0	79 142 000	158 284 000	0	0	0	0	0	0	0	0	0
senior debt			0	316 568 000	791 420 000	620 515 079	607 217 677	593 207 535	578 446 448	562 894 168	546 508 285	529 244 119	511 054 594	491 890 110
own equity			0	158 284 000	158 284 000	161 650 438	162 944 516	163 352 044	163 679 080	162 581 872	164 200 262	164 674 616	165 043 932	165 412 440
total sources			0	474 852 000	949 704 000	782 165 517	770 162 193	756 559 579	742 125 529	725 476 040	710 708 547	693 918 735	676 098 525	657 302 550
the ratio of debt and own equity			0	66,67%	83,33%	79,33%	78,84%	78,41%	77,94%	77,59%	76,90%	76,27%	75,59%	74,83%
tax deductible interest			0	0	0	42 420 112	33 259 608	32 546 868	31 795 924	31 004 730	30 171 127	29 292 844	28 367 485	27 392 526

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
471 698 409	450 424 434	428 010 173	404 394 509	379 513 044	353 297 933	325 677 692	296 577 006	265 916 523	233 612 639	199 577 266	163 717 597	125 935 851	86 129 002	44 188 506	0
164 194 723	166 021 162	166 566 608	166 995 125	167 423 529	166 075 537	168 139 134	168 768 413	169 267 657	169 767 799	168 278 724	170 613 175	171 341 798	171 925 990	172 512 520	0
635 893 133	616 445 596	594 576 781	571 389 634	546 936 573	519 373 470	493 816 826	465 345 419	435 184 180	403 380 438	367 855 990	334 330 773	297 277 648	258 054 992	216 701 026	0
74,18%	73,07%	71,99%	70,77%	69,39%	68,02%	65,95%	63,73%	61,10%	57,91%	54,25%	48,97%	42,36%	33,38%	20,39%	100,00%
26 365 310	25 283 035	24 142 750	22 941 345	21 675 546	20 341 899	18 936 769	17 456 324	15 896 528	14 253 126	12 521 637	10 697 341	8 775 263	6 750 162	4 616 515	2 368 504

Annex E – PSC Financing

Bonds - capital investments		Period	1	2	3	4	5	6	7	8	9	10	11	12	13
Total	989 275 000	year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
interest rate	4,20%														
emission		989 275 000	0	494 637 500	494 637 500	0	0	0	0	0	0	0	0	0	0
coupon		1 038 738 750	0	0	0	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550
repayment of principal		989 275 000	0	0	0	0	0	0	0	0	0	0	0	0	0
balance			0	494 637 500	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000
discounted coupon		509 010 482	0	0	0	35 525 405	33 718 114	32 002 766	30 374 683	28 829 426	27 362 781	25 970 749	24 649 534	23 395 533	22 205 327

Bonds - VAT		Period	1	2	3	4	5	6	7	8	9	10	11	12	13
Total	197 855 000	year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550	41 549 550
0	0	0	0	0	0	0	0	0	0	0	0	0	0	989 275 000
989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	989 275 000	0
21 075 671	20 003 485	18 985 843	18 019 973	17 103 239	16 233 143	15 407 311	14 623 492	13 879 548	13 173 451	12 503 275	11 867 194	11 263 472	10 690 463	10 146 605

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039

Bonds - VAT		Period	1	2	3	4	5	6	7	8	9	10	11	12	13
Total	197 855 000	year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
interest rate	4,20%														
emission		197 855 000	0	98 927 500	98 927 500	0	0	0	0	0	0	0	0	0	0
coupon		207 747 750	0	0	0	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910
repayment of principal		197 855 000	0	0	0	0	0	0	0	0	0	0	0	0	0
balance			0	98 927 500	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000
discounted coupon		101 802 096	0	0	0	7 105 081	6 743 623	6 400 553	6 074 937	5 765 885	5 472 556	5 194 150	4 929 907	4 679 107	4 441 065

Bonds - LCC		Period	1	2	3	4	5	6	7	8	9	10	11	12	13
Total	126 364 187	year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910	8 309 910
0	0	0	0	0	0	0	0	0	0	0	0	0	0	197 855 000
197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	197 855 000	0
4 215 134	4 000 697	3 797 169	3 603 995	3 420 648	3 246 629	3 081 462	2 924 698	2 775 910	2 634 690	2 500 655	2 373 439	2 252 694	2 138 093	2 029 321

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039

Bonds - LCC		Period	1	2	3	4	5	6	7	8	9	10	11	12	13
Total	126 364 187	year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
interest rate	4,20%														
emission		126 364 187	0	0	0	0	0	0	0	19 874 634	0	0	0	0	22 267 800
coupon		132 682 396	0	0	0	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296
repayment of principal		126 364 187	0	0	0	0	0	0	0	0	0	0	0	0	0
balance			0	0	0	0	0	0	0	19 874 634	19 874 634	19 874 634	19 874 634	19 874 634	42 142 434
discounted coupon		65 018 014	0	0	0	4 537 807	4 306 954	4 087 846	3 879 884	3 682 502	3 495 161	3 317 351	3 148 587	2 988 408	2 836 378

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
0	0	0	0	24 949 134	0	0	0	0	27 953 336	0	0	0	0	31 319 283
5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296	5 307 296
0	0	0	0	0	0	0	0	0	0	0	0	0	0	126 364 187
42 142 434	42 142 434	42 142 434	42 142 434	67 091 568	67 091 568	67 091 568	67 091 568	67 091 568	95 044 904	95 044 904	95 044 904	95 044 904	95 044 904	0
2 692 083	2 555 128	2 425 140	2 301 766	2 184 667	2 073 526	1 968 040	1 867 919	1 772 892	1 682 699	1 597 095	1 515 846	1 438 730	1 365 537	1 296 068