POLICY, FINANCING AND RISK MANAGEMENT ISSUES OF PUBLIC PRIVATE PARTNERSHIP PROJECTS

THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
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ALA' MUSTAFA SHUKRI AHMAD

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Approval of the Graduate School of Natural and Applied Sciences, Atilim University.

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I certify that this thesis satisfies all the requirements as a thesis for the degree of **Master of Science in Civil Engineering Department, Atılım University**.

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

POLICY, FINANCING AND RISK MANAGEMENT ISSUES OF PUBLIC PRIVATE PARTNERSHIP PROJECTS

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Public Private Partnership (PPP) is a class of delivery systems whose main function is to facilitate mega engineering and infrastructure projects through cooperation between the public and private sectors. These types of projects are designed to enhance the economic situation of the countries in which they occur, and to strengthen the relationship between these two sectors. Each country has its own experiences with PPPs, particularly with respect to legal, social, economic, and political factors. Although PPP projects are generally influenced by constraints such as local challenges and various risk types, the fact remains that a successful PPP is deeply connected to the internal affairs of a country. This study deals with policy, financing, and risk allocation issues concerning the implementation of PPP engineering and infrastructure projects in Turkey, the United Kingdom, Indonesia, the United States of America, and China. For each country, the applicability of PPPs will be exhibited through a clarification of its legal infrastructure, required amendments, and economic status. Examples of implemented PPP projects in various sectors, associated budgets, and other critical factors that have challenged the execution of PPP projects will also be discussed. In order to understand the impact of PPP projects, a comparison between these countries will also be provided.

Keywords: Public Private Partnership, Infrastructure, Engineering Projects.

ÖZ

KAMU ÖZEL ORTAKLIK PROJELERİNİN POLİTİKASI, FİNANSMAN VE RİSK YÖNETİMİ KONULARI

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Temmuz 2021,116 sayfa

Kamu Özel Ortaklığı (PPP), ana işlevi kamu ve özel sektör arasındaki işbirliği yoluyla mega mühendislik ve altyapı projelerini kolaylaştırmak olan bir proje yapım sistemi sınıfıdır. Bu tür projeler, gerçekleştikleri ülkelerin ekonomik durumlarını iyileştirmek ve bu iki sektör arasındaki ilişkiyi güçlendirmek için tasarlanmaktadır. Her ülkenin, özellikle yasal, sosyal, ekonomik ve politik faktörlerle ilgili olarak PPP'lere ait kendi deneyimleri vardır. PPP projeleri genellikle yerel zorluklar ve çeşitli risk türleri gibi kısıtlamalardan etkilense de, başarılı bir PPP'nin bir ülkenin iç işlerine derinden bağlı olduğu gerçeği devam etmektedir. Bu çalışma, Türkiye, Birleşik Krallık, Endonezya, Amerika Birleşik Devletleri ve Çin'deki PPP mühendislik ve altyapı projelerinin uygulanmasına ilişkin politika, finansman ve risk tahsisi gibi konuları ele almaktadır. Bu ülkelerdeki PPP'lerin uygulanabilirliği, yasal altyapısının ve ihtiyaç duyulan diğer değişiklikler ile birlikte ekonomik durumunun belirlenmesi ele alınacaktır. Çeşitli sektörlerde uygulanan PPP projelerinin örnekleri, ilgili bütçeleri ve bu projelerin yürütülmesini zorlaştıran diğer kritik faktörler de çalışma kapsamında değerlendirilecektir. PPP projelerinin etkilerini anlamak amacı ile değerlendirmeye alınan ülkeler arasında bir karşılaştırma da ayrıca yapılacaktır.

Anahtar Kelimeler: Public Private Partnership, Altyapı, Mühendislik Projeleri

To my family

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I would like to admit here that this work would not have been possible if I had not had tremendous support from my Creator, Allah the Almighty, my family, and my committee members. It is hoped that this work will have a good impact on human knowledge in general, and on the field of engineering management, particularly. The Almighty has ordered us to seek knowledge in all aspects of life for the good of humanity by having the word "اقرأ" as the first order from Him in the sacred Qura'an. I hope that this work abides by this heavenly order in a way to benefit humanity.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ASCE	American Society of Civil Engineering
ASEAN	Association of Southeast Asian Nations
BBO	Buy Build Operate model
BLOT	Build Lease Operate Transfer model
BLT	Build Lease Transfer model
BOO	Build Own Operate model
BOOT	Build Own Operate Transfer model
BOT	Build Operate Transfer model
BTO	Build Transfer Operate model
DB	Design Build
DBF	Design Build Finance model
DBFO	Design Build Finance Operate model
DBFOM	Design Build Finance Operate Manage model
DBO	Design Build Operate model
DCMF	Design Construct Manage Finance model
DUS	Denver Union Station
EU	The European Union
FAA	The Federal Aviation Administration
GDP	Gross Domestic Product
ICT	Information and Communication Technologies
IGA	Istanbul Grant Airport

IT	Information Technology
KPBU	Kerjasama Pemerintah dan Badan Usaha
LROT	Lease Rehabilitate Operate Transfer model
MIM	Mutual Investment Model
MOF	The Ministry of Finance
MOH	Ministry of Health
NDRC	National Development and Reform Commission
NPD	Non-Profit Distributing Project model
O & M	Operation and Maintenence contract
OECD	Organisation for Economic Co-operation and Development
PFI	Private Finance Initiative
PF2	The modified version of the Private Finance Initiative
PPP	Public Private Partnership
PSC	Public Sector Comparator
PSP	Private Sector Participation
PWLB	The Public Works Loan Board
P3	Triple Ps
RAB	Regulated Asset Base model
RA-PSC	Risk-Adjusted Public Sector Comparator
RFQ	Request for Qualification
ROT	Rehabilitate Operate Transfer model
SASAC	The State-Owned Assets Supervision and Administration Commission
TOT	Transfer-Operate-Transfer

Triple Ps	Public Private Partnership
UC	The University of California
UK	The United Kingdom
USA	The United States of America
USAID	United States Agency for International Development
VFM	Value For Money

CHAPTER 1

INTRODUCTION

The world of today is the world of competition in various fields, particularly in the economic field. The population of the world is reaching soaring figures accompanied by enormous demands; therefore, experts all over the world are trying their best to cope with such incredible demands, and provide projects of all kinds, particularly infrastructure projects to make life possible on this planet. One of the highly promising types of those infrastructure projects is Public Private Partnership (PPP).

1.1 What is PPP?

PPP is a class of delivery systems of a long-term duration, typically over a period of 20 years, dealing with types of contractual arrangements between private and public bodies through which skills, assets, and monetary resources of both the public and private bodies are assigned to a complementary framework for the provision of public services and/or development of public infrastructure [1, 2, 3]. In this way, transactional bodies share the risks and rewards to implement mega projects whose budgets are usually no less than 11 million US dollars, as exemplified in Turkey, which is one of the countries included in this research [4, 5].

1.2 Sectors benefiting from PPP

PPP is well-known for the range and scope of benefits it offers, since it is used in a wide range of projects related, but not limited, to the following fields [2]:

1. Health sector
2. Educational sector
3. Tourism infrastructure
4. Energy and power generation
5. Telecommunication sector
6. Transportation sector
7. Water resources sector

8. Solid waste sector
9. Governmental buildings, stadiums, prisons, low-income housing, correction services.

PPP is really a breakthrough in international development, especially in countries whose infrastructure is a fertile place for implementing long-term projects, something to be detailed and exemplified at different points in this research.

1.3 Differences between PPP and Privatization

Although sometimes the terms "PPP" and "Privatization" are used synonymously, they should be differentiated. Privatization deals with the transfer of physical assets and/or business from public to private partnership. Selling a public service through the sale of the ownership in government equities is a straight privatization, and is accompanied by regulations to prevent monopoly [2].

As for PPPs, these include constructing, maintaining, financing, and operating the infrastructure assets, in addition to managing existent public assets in some cases. It is the responsibility of the public sector to deliver services in spite of the fact that the private sector supplies the service for a lengthy period [2].

1.4 Differences between PPP and PSP

Although sometimes the terms "PPP" and "PSP" are used one for the other, they should be differentiated. PSP is a type of contract which has sought to transfer the investment duties to the private sector in order not to pressure the budget instead of emphasizing partnership [2]. In addition to the previous shortcomings, PSP also faces three major problems which are monopoly, overambitious projects, and lack of enough services which have led to a shift to a refined PPP which is supposed to offer the society the needed services. The ultimate purpose of PPPs is to offer the best allocation of risk, and to provide effective and innovative public services, in other words, not just focusing on private financing for the creation of assets [2].

1.5 Characteristics differentiating PPP from Conventional Projects

The most important question here is in what aspects PPP differs from conventional projects. The major differences concerning the principal facets, which are ordered according to their importance, are offered as follows [6]:

1. Funding sources
2. Duration
3. Inputs and outputs
4. Risk

1.5.1 Funding sources

Traditionally, public infrastructure projects have been financed by the national budget of governments [6]. The governments used to select a contractor and pay him according to the job progress in the project construction [6]. What this means is that most of the project payments are made already during the construction phase [6].

In PPPs, public infrastructure projects are financed by the private sector with a goal that they will be reimbursed later as they expect to generate profit through their investment [6]. The question now is how do private investors expect to get their money back through their investment? They achieve this in two ways [6]:

1. Collecting fees from users: The private sector is given the right to gather fees from the users. For example, in road projects the private sector can collect tolls on highways [6].

2. Being reimbursed by the government: The government can pay the money back to the private sector by using "availability payments". In this case, the government pays the private sector based on the availability of the assets over time [6]. Going back to the previous example of the highway project, the "availability payment" concept is applied by checking whether the asset is available or not and only if it achieves the quality requirements as specified in the contract [6]. If the previous conditions have been met, the private sector, then, will be paid; otherwise, payments will be reduced [6].

To be brief, the difference between the two approaches depends on the source of funding: in the traditional approach, most funds during the construction phase come from the national budget [6]. As for the second approach, the

funding comes from the private sector; in other words, no public funds will be disbursed during the construction phase: payments will be arranged over the lifetime of the project as soon as the project is in its operational phase [6].

1.5.2 Duration

Duration-wise in traditional contracts, the relationship between the private contractor and the government institution will end when the construction phase ends [6]. However, in PPP, the matter is different: the relationship extends far beyond the completion of the construction phase [6]. This is because the private sector is not only responsible for constructing the project, but rather they are also responsible for operating it for a number of years, a period which might vary according to the country, but normally it is a period of 20 years or more [6]. In the meanwhile, the government agency has to monitor the performance of the private sector from the beginning of the contract until its end. Ultimately, the asset rights will typically return to the government [6].

1.5.3 Inputs and Outputs

PPPs concentrate on outputs while conventional contracts concentrate on inputs. In PPPs, requirements are to be clarified in terms of outputs which supply the private sector with a chance to reach a smart solution for delivering the public services, which in term enables remarkable money savings [6]. For example, as for an airport project, the output is in the airport's capacity to provide services for 10 million passengers a year, while the conventional type will focus on the **How**, which means that the input might be concerned with building two terminals, each with 250,000 square meters which eventually will serve the required number of passengers [6].

The conclusion we can draw is that focus on the output will require a fundamentally innovative mind-set and may make it necessary for adjustments from the public sector who are more familiar with the input-oriented approaches [6].

1.5.4 Risks

Generally speaking, in traditional contracts, the risk will be carried by the public sector, but in PPPs, risks are shared by both the public and the private sectors [6]. For instance, risks belonging to the construction and operational phases are usually covered by the private sector [6]. These risks are the ones which appear if the construction and operational costs exceed the planned budget. In other words, the public sector will not be subjected to risks from potential cost overruns [6].

In a traditional contract the financial risk is completely assigned to the government agency [6]. But, in PPPs risks are studied from the very beginning and the project is structured in such a way that the risk is assigned to the partner who is best qualified [6].

1.6 Models of PPP

PPP models include several acronyms such as BOT, PFI, DBFM, and so on, but these acronyms may be confusing to readers who are not experts in the PPP field [7]. To make it easier to understand these acronyms, firstly two essential questions which differentiate the general categories adopted in the classification of PPP models will be explained. Later, every PPP model will be indicated and named separately. As for the questions, here they are [7]:

1. What objectives are you trying to achieve?
2. What are the responsibilities which are going to be assigned to the private sector?

The choice of a PPP model depends on deciding whether or not a party is going to employ the private sector in investing capital and/or building or expanding a public infrastructure [7].

The general categories adopted in the classification of PPP models, as pointed out previously, are the following:

Category 1. If there is no planning for benefitting from the private sector as a funder, it is still possible to employ the private sector as a party by which other objectives, such as improving the performance of an existing public asset, could be achieved [7].

To be more specific, in some types of PPP models, operation and maintenance of a public asset could be assigned to the private sector and the private sector's payments may be assigned to specific performance targets [7]. Such a tying of payment and performance gives the motivation to the private sector to fulfil higher efficiency [7]. No commercial risks will be borne by the private sector, they will only be exposed to penalties if operational and maintenance performance does not fulfil the required standards [7].

For instance, in the water field, the management of water services can be assigned to the operators of the private sector. To motivate efficiency profits, the payments of the private operator are assigned to specific targets, such as the "volume of water saved through leakage reduction". In such a situation, there would be no transfer of commercial risk to the private operator. Service taxes or the number of users doesn't determine payments to the private operator. Absence of bearing commercial risks by the private sector will eliminate the challenge of implementing the PPP models which adopt this category [7].

Another case of tying profit to performance is the performance-based road maintenance contract. This type of contract varies from the regular price-per-unit contract in which fees are paid according to an agreed-upon rate for maintenance items, like paying a fixed fee on each filled pothole in a road. In this case, the standard that is adopted is performance-based which complies with an agreed-upon standard whereby a contractor will maintain a deadline that the private operator must meet, or else the contractor will be penalized. For example, "all potholes larger than a specific dimension must be filled within a certain period of time", if standards are met, a full fee is collected. Otherwise, penalties are applied. Following this category provides the government with cost-certainty as a result of incentivizing the private sector to maintain the asset in good conditions [7].

Related to Category 1. If adherence to maintenance standards, fixed by the contract, costs more than expected; such as the cost overruns which are going to be borne by the private sector, risk here will be carried out by the private sector. In the models following this category, the involvement of the government will be considerably changed: from expending payments for maintaining the application of the per unit

basis, to monitoring asset performance, determined by a set of maintenance indicators [7].

Advantages of Category 1. From a government view point, using the performance-based models allows improvement of service delivery through benefiting from the expertise and efficiency of the private sector. Another advantage for the public sector is to reduce the operational and maintenance risks which are going to be handled by the private sector. On the other hand, this model can also be used for an existing project where the private sector does not make any capital investments. All of what has been already mentioned makes this model direct and easy to be implemented [7].

Category 2. This category concerns leasing. In this category, the private contractor pays money to the public sector in order to operate a current asset to gain revenues from such operation. However, it is the public sector which has to be responsible for the payment of the initial capital investment. A well-known example to this model is a container terminal which is leased to the private sector by a government agency. The private sector, in turn, provides facilities such as cranes, and warehouses, while at the same time it charges users for dealing with containers. In such a category, the private sector bears the commercial risk since revenues depend on the number of containers being handled. The duration of the lease contract is long enough so that the private sector benefits from revenues [7].

Advantages of Category 2. For the government, there are two main advantages: First, revenues will be obtained from an already existing asset. Second, service delivery will be improved by the efficient performance of the private sector. However, there is a need for regularity supervision, since there is an opportunity for monopoly by the private sector operator in overcharging users [7].

Now, the discussion is to be shifted to explain the principle of **category 3** in which the private sector makes considerable investment in either building a public asset or rehabilitating an existing one. This type of contract is a long-term one which extends typically for 20 years in order to allow the private sector to gain profits and regain their invested capital by the two different methods which have been mentioned earlier in the "**Function Sources**" section [7].

Advantages of Category 3. A number of important advantages will be gained from this partnership (PPP) between the private and public sectors in the models following category3. First, efficiency will be achieved in all phases of the project since the private sector is responsible for all of the following phases: designing, building, and maintaining the asset. Second, additional risks will be handled by the private sector such as construction risk. Third, financing of the asset will be shared between both the private and public parties [7].

Disadvantages of Category 3. According to this category, there are certain limitations. First, this type of partnerships has structural complexity which requires considerable negotiation. Second, financial support and guarantees have to be provided by the public sector in order to make the projects financially capable. Third, the private sector funding is higher than the public borrowing, therefore, the PPP project has to own high efficiency which will enable the private sector to make up for the capital which they have spent [7].

Category 4. This PPP category is similar to category 3 with an exception. This exception states that the ownership of the project remains in the hands of the private sector and is not transferred to the public sector. Despite the fact that the ownership goes to the private sector, the public sector still has its role in the infrastructure development [7].

To be brief, PPP regulations can be an attractive option for the purpose of raising and developing infrastructure services. It is important to give an account of each PPP model characteristics and choose the best, taking into consideration the fact that sometimes the project can be executed using more than one model at the same time.

It is crucial to note that the boundaries of PPP are not quite clear, and therefore, depending on different studies, the following acronyms are considered to be some or all of the PPP models as they are known in a typical contract terminology [1, 3, 8, 9]:

- **Design-Build (DB)**: In this model, the private sector is responsible for designing, and building an infrastructure project in a way which meets the public sector's requirements. All risks will be borne by the private sector. In some countries DB is also known as **Turnkey** [8, 9]. It is to be mentioned

here that this model is not a clear-cut part of PPP, but this is what has been found in some studies.

- **Operation and Maintenance Contract (O & M)**: According to this contract model, the private sector will operate a publicly-owned asset for a certain period of time [1, 8].
- **Design-Build-Finance (DBF)**: In this model, there will be a single contract which will be offered for designing, building, and totally or partially financing the project. Long-term maintenance will be borne by the sponsor with an ability for being included in an independent agreement. Here, the sponsor benefits from the DB approach efficiencies, which makes it possible for him to postpone full or partial finance during the construction period [8], this is to keep in mind that the sponsor is the private sector.
- **Design-Build-Finance-Operate (DBFO)**: In this model, the private sector will lease a long-term contract for the purpose of: designing, financing, constructing a new infrastructure component, and maintaining/operating it [1, 3, 8].
- **Design-Build-Finance-Operate-Manage (DBFOM)**: In this model, designing, building, financing, operating, and managing responsibilities are gathered and shifted over to the private sector. There is a great amount of variety in this type, especially the advantage of the high responsibility which is borne by the private sector in financial matters [1,8].
- **Design-Construct-Manage-Finance (DCMF)**: To illustrate this model type, following examples are used; public hospitals and prisons are examples. Here, the private sector handles designing, constructing, managing, and financing the asset. Cash flows come from the rent payment from the government, even though it is, as in the hospital example, the government has the ownership and rights for price and quality control. This model helps the government in avoiding indebtedness [1, 3, 8].
- **Design-Build-Operate (DBO)**: In this model, a single contractor is responsible for designing, building, and operating a project for a certain period of time. The ownership of the project is left for the financing authority [8].

- **Build-Own-Operate (BOO)**: In this model, financing, building, operating, and owning an asset are continuously the tasks of the private sector. Still the public authority keeps certain constraints on the work of the private sector through a regulatory authority [3, 8].
- **Build-Operate-Transfer (BOT)**: In this model, the private sector is committed to build and operate the facility for a specific period of time, then the ownership will be transferred to the public sector. Here, private sector has both choices, either to finance or not to finance [1, 8, 3, 9].
- **Build-Transfer-Operate (BTO):** This model is the same as BOT, except for the fact that the ownership of the asset is directly transferred to the public sector once the construction phase is over [1, 8, 9].
- **Build-Own-Operate-Transfer (BOOT)**: In this model, the private sector is given the right to finance, design, build, and operate an infrastructure project in addition to charging user fees. This will be for a specific period of time, after that the ownership of the asset will be transferred to the public sector. BOOT is different from both BOT, and BTO by being obliged to finance the asset [1,8, 9].
- **Rehabilitate-Operate-Transfer (ROT)**: This model has the same characteristics of BOT, BTO, BOOT, except that rehabilitation may take the place of building. In this type, the private sector is the responsible party for rehabilitating, promoting, or widening an existing asset [1, 8]. In 2011, Abdul Quium used in his article, the form of Build-Rehabilitate-Operate-Transfer (BROT) instead of (ROT) [9].

  Note: It is important to state that BOT is of various forms: Build-Transfer-Operate (BTO), Build-Own-Operate-Transfer (BOOT), and Build-Rehabilitate-Operate-Transfer (BROT) [9].

- **Buy-Build-Operate (BBO)**: In this model, the ownership of a public asset is temporarily transferred to the private sector for a certain period of time [8].

- **Build-Lease-Transfer (BLT)**: In this model, a private sector builds an asset and leases it and its control to the government for a period of time. In other words, the ownership will remain in the hands of the private sector until the leasing time is over, then the ownership of the asset and the operational issues will be transferred to the public sector [8, 9].
- **Build-Lease-Operate-Transfer (BLOT)**: In this model, the private sector will handle the responsibility of financing, designing, and building an asset on a leased public land. The private sector will operate the asset until the lease is over, then the asset will be transferred to the public sector [8].
- **Lease-Renovate-Operate-transfer (LROT)**: In this model, an existing asset will be leased to a private sector for a certain period of time for the purpose of repairing that asset. The repair operation requires giving a certain budget back to the private sector as agreed upon in the contract, then the asset will be turned back to the government [8].
- **Operation License Contract (Service contract**): In this type, a license for operating a public service is given to the private sector for a specific period of time. This is usually applied in Information Technology (IT) projects [8].
- **Management contract:** This contract is the same as operation license contract except for some differences. A management contract is of a longer period. It turns over a wider set of services to the private sector. If the private sector exceeds the expected targets, there will be a bonus to reward them [8].
- **Finance only**: In this type, the private sector acts as a financial source which funds the government in the infrastructure part of a project, and charges them interest for using their funds [8].

The following figure shows the different levels of private sector engagement in PPP contracts:

Different Levels of Private sector engagement in PPP contracts

Model	Identify Infrastructure Need	Propose solution	Project design	Project financing	Construction	Operation	Maintenance	Ownership	Concession?
Bid–build	Public sector				Private sector	Public sector			No
Design–bid–build	Public sector		Private sector	Public sector	Private sector	Public sector			No
Design–build	Public sector		Private sector	Public sector	Private sector	Public sector			No
Design–build–finance	Public sector		Private sector			Public sector			No
Design–build–finance–maintain	Public sector		Private sector			Public sector	Private sector	Public sector	No
Design–build–finance–operate	Public sector		Private sector				Public sector		No
Design–build–finance–maintain–operate	Public sector		Private sector					Public sector	No
Build–finance	Public sector			Private sector		Public sector			No
Operation & maintenance contract	Public sector					Private sector		Public sector	No
Build-operate-transfer	Public sector		Private sector					Public sector	Temporary
Build–lease–transfer	Public sector		Private sector			Public sector	Private sector		Temporary
Build–own–operate–transfer	Public sector		Private sector						Temporary
Build–own–operate	Public sector		Private sector						Yes
Market-led proposals	Private sector							Public sector	No

Figure 1 The private sector engagement in PPP contracts [see figure 39]

1.7 The Hierarchical Risk Structure in PPP Models

In the following figure, we have a hierarchical display of the seriousness degree of risks in the PPP models, from bottom to top.

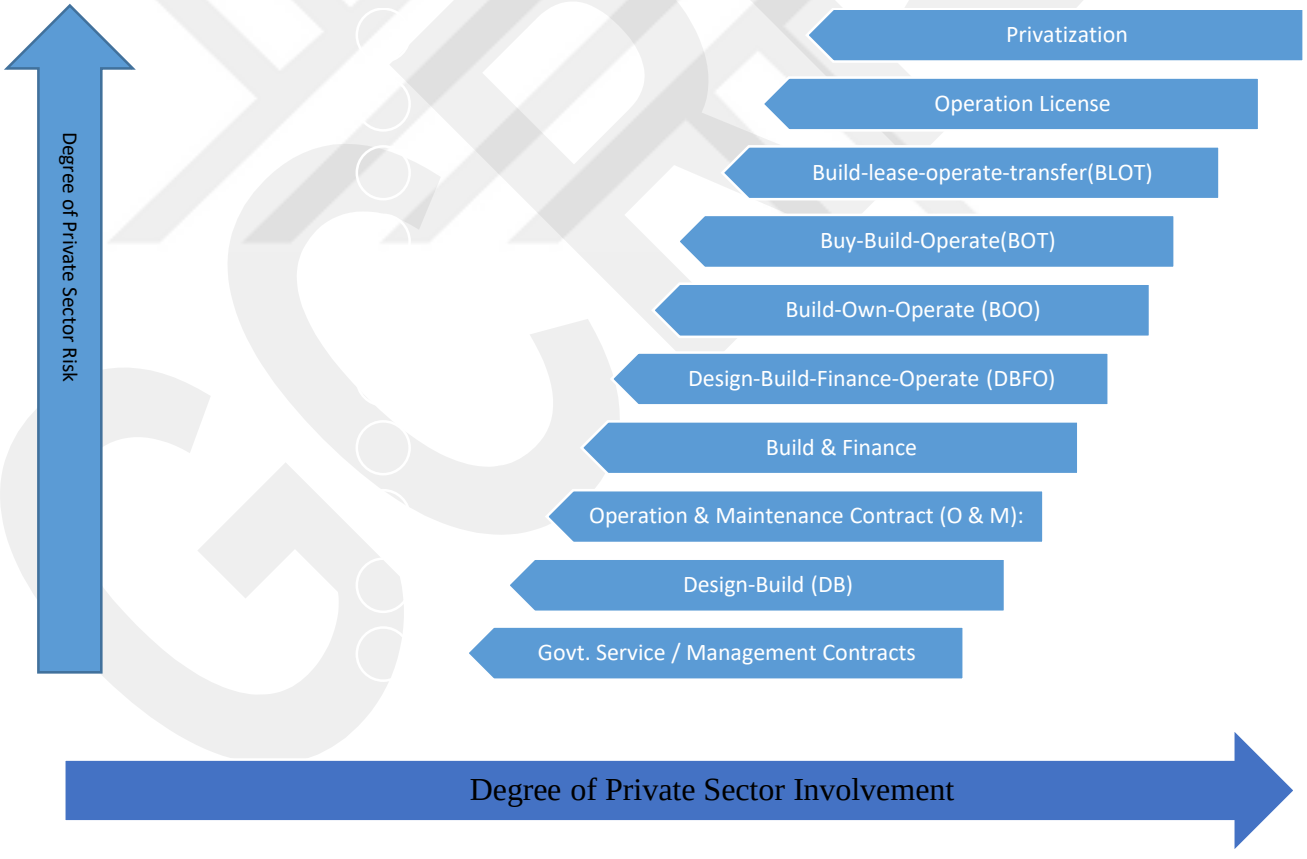

Figure 2 The Seriousness Degree of Risks in the PPP Models [8]

1.8 Other Nomenclatures for PPP

While the concept of PPP is well known as a participation between the public sector and one private sector or more, it is somewhat differently named around the world. Here are the various names of PPP that have been abstracted in the countries which are the subject matter in this thesis:

1. **PPP**– Public Private Partnership: This term is the commonly used one in Turkey, and China.
2. **P3 –** Public Private Partnership (the triple Ps): This term is the one used in the USA, in addition to PPP.
3. **PFI –** Private Finance Initiative: This term was the first used one for PPP in the UK.
4. **PF2 –** Private Finance 2: This term was the second version of PPP in the UK.
5. **MIM –** Mutual Investment Model: Through the reading of the various references related to the PPP case in the UK, this MIM has been found to be the last used term in the country.
6. **KPBU –** Kerjasama Pemerintah dan Badan Usaha/Cooperation Between Government and Business Entities: This term is the one used in Indonesia. Taking into account that this abbreviation (KPBU) symbolizes Indonesian words, already translated above.

1.9 Historical Overview of PPP

According to the definition of PPP, establishing a partnership between the private and public sectors dates back to the Roman Empire 2000 years ago in Europe [10]. The partnership was manifested by a network of postal stations established for the purpose of accompanying the wide expansion of the highway system under the Roman legions. The postal stations were structured of small communities stationed around large stables, workshops, warehouses, hotels and military barracks. The construction and management of these stations were in the hands of a private sector for a period of 5 years. Sometimes, that process was accompanied by maintaining associated highways which dealt with a contract granted by municipalities under competitive bidding. Construction and operation of ports and inland harbors were also granted by the Roman Empire. The English word "port" is a Roman word which testifies that the

Romans had left their fingerprints on the creation of infrastructure [10]. Clearly, the processes mentioned here, conceptually at least, are not very much different from the concepts of current PPP contracts.

Unfortunately, the process described above stopped momentarily when the Roman Empire fell, to reappear in the form of fortified towns and occupied land in the south west of France in the 12th and 13th centuries. In this era, occupancy contracts conceded their villages to the occupants, provided that the latter should better those villages. In addition, concessions on activities in the village, including the mill, the baker, the bridge, etc. besides the associated tolls, generally on bridges and highways, all involved the concessionaire paying a part of their income to the community to finance new activities, all were well-established under medieval custom [10].

In the 16th and 17th centuries, European governments especially in France, started more wide-range public work related to particularly concession programs concerning canal building, road paving, waste collection, public lighting, the distribution of mail, and public transportation. In the 19th century, industrialization spread in Europe causing the spread of concessions concerning fast urbanization and an increase of public networks in transport (such as railways, and tramways), water supply and sewage, and energy. This period witnessed the golden age of concessions in Europe. After that, liberal ideas which took place as a result of the French revolution, especially the principle of free enterprise which played a big role in the structured choice of concessions. This is something which had weakened the administrative structures in all fields of delegated public action [10].

This situation of the government was reversed by the 20th century European wars in which the government, the economies, and the long-term contracts were disrupted. The authority of the government became more noticeable; there was governmental supervision, to the extent that the state became a welfare state. Due to the damage which affected most of the European countries, many long-term contracts were cancelled since nobody wanted to bear responsibility. The government started to own companies which replaced long-term contracts. After World War I, and until 1982, transport infrastructure projects which were financed by a private entity, were of a very limited scope with an exception in Europe which was tolled motorway construction

programs in France and Spain. These were funded from the 1960s by private consortia, basically contractors and banks [10]. In the 1970s, most of the private companies were nationalized as a result of the well-known oil crises: in Spain, 5 out of 12 companies, and in France, 3 out of 4 companies [10].

In the USA, public private partnerships did not play a prominent role in the transport infrastructure. Even though, private sectors, in the 19th century built the canals, and railroads. Modern highways which were executed in the 1930s and the 1940s were built by public companies held by the state and local governments, in other words, not by PPPs. In the eastern part of the USA, tolls were of more preference, while in the west, profits from the gasoline tax were used to fund the untolled highways. From the 1950s, and by the fuel tax used for the purpose of financing the national highways, the interstate highway system was established [10].

Everywhere in the industrialized and developing countries, there has been a preferred trend for liberalization and privatization of infrastructure activities, and with a rapid increase from the 1980s to the 1990s. During the period 2000 to 2010, there had been a unification of various PPP projects, and a growth in markets, noted widely in Asia. That pioneering work of using PPPs, included more than one country, such as Chile, Brazil, Hungary, China, and recently India, have widely applied PPPs in infrastructure maintenance and developmental projects superseding many other industrial countries. At the same time, initiatives were looking for using the private firms in the maintenance activities. That has been implemented in Africa, Asia and to a larger extent in Latin America [10].

Ongoing PPP Programs Worldwide

Now, a number of advanced OECD (Organisation for Economic Co-operation and Development) countries which have well-founded PPP projects these days will be presented. Starting with the PFI (private finance initiative) in the United Kingdom, that started in 1992, which is now responsible for nearly 14% of the whole public investment projects in principal infrastructure regions [10, 11, 12, 13]. Other countries with remarkable PPP programs including Australia -especially the state of Victoria-

and Ireland, while at the same time the United States have good experience with leasing [10].

Although many continental Western European countries operate a number of PPP projects, these projects are not considerably involved in total public investment; these countries comprise France, Spain, and Italy, who have had a well-known engagement in concessions concerning motorway development. However, other countries like Portugal, Netherlands, Greece, Finland, and Germany show a need to be more involved in a large scale of infrastructure investment; due to a weak financial capacity, the following central and eastern European countries including Czech Republic, Poland, Hungary, and others have settled on PPPs. There are also newly born projects in Canada, and Japan. Most of PPPs in these countries are road projects. In addition to that, there is a trans-European road network underway [10].

The Latin American countries such as Chile, Colombia, and Mexico have embarked PPPs to encourage the participation of the private sector in public investment projects. In Chile, for example, PPP programs have been well-established in the development of the following fields: roads, prisons, irrigation, and airports. Colombia has been using PPPs since the 1990s, even though the earlier projects were not that successful because they were not well-designed; however, a PPP program which emphasizes road projects has been restarted. In Mexico, as early as the1980s, PPPs were used for the financing of roads, but unfortunately that was a failure until the mid-1990s, when Mexico successfully employed PPPs in the energy sectors with the appearance of plans for extending the role of PPPs in other projects. Other countries like Brazil are considerably looking for employing PPPs in their projects. In Latin America there is a trend for having PPPs in infrastructure developments as in Europe [10].

In Asia, countries such as China, South Korea, and India, are all continuing to have long extensive and well-established PPP investment projects, with different percentages of implementation and success of PPP projects in Indonesia, the Philippines and Singapore [10].

In Africa, South Africa has been a leader in employing PPPs in various sectors. Other African countries have their roles in employing PPPs and other forms of the private sector's involvement in the sectors of power and water [10].

CHAPTER 2

PROJECT CYCLE OF PPP

In this chapter, an attempt for overviewing the lifecycle of a PPP project is to be discussed. Generally speaking, the PPP is a set of nearly 19 types of delivery systems as has been illustrated earlier in this work. Although these types may be similar in the preparation and the shaping parts of the project, they are usually differentiated in their implementation phase, operation phase, maintenance phase, and their life cycles. But in this section, an explanation which mostly deals with a BOT delivery system is to be discussed as an example showing the lifecycle of one of these delivery system types.

A process goes through 4 phases showing how a BOT project is developed [14]. The first phase is concerned with how transactors can "identify" a project as having the possibility of being implemented as a PPP project. The second phase deals with the "preparation" necessary for developing a PPP project. The third phase (the transaction phase) shows how one can be steered through key steps in dealing with the development of a PPP project which enables the "selection of a private partner". Finally, in the fourth phase, certain issues related to "management" which may appear when the project is ready for being operated are to be taken into consideration [14].

The following figure briefly illustrates these four phases of developing a BOT contract project:

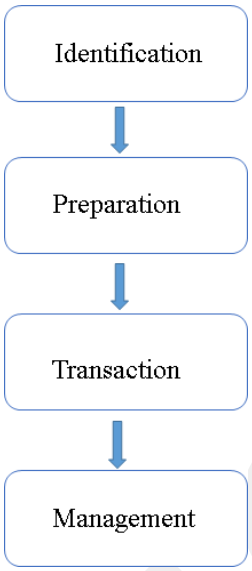

Figure 3 Phases of Developing a BOT Contract Project [14]

2.1 The Phase of Project Identification

Identifying an infrastructure project is considered within a government's planning process. Once a government decides that a project is a priority, a decision must be made as to whether the project will be implemented as a PPP project or to be procured as a traditional one. In making such a decision, a procurement method which leads to the getting of most beneficial value of the project has to be adopted. In addition to that, a set of particular criteria has to be used for the purpose of evaluating the suitability of implementing the project as a BOT choice [14].

These criteria address the following:

2.1.1 Scale of the project

The project has to be big enough in terms of cost (a minimum in USD millions), and timewise (typically over a period of 20 years), in order to be suitable for being implemented as a PPP one [14]. The preparation for PPP projects requires high costs due to the complexity of the nature of PPPs. Another reason of high costs is the transactions of PPP projects. Therefore; large scale projects are likely to cover such expenses [14].

2.1.2 Assessing infrastructure needs

This criterion is concerned with how much need there is for certain infrastructure projects. PPPs are more successful with an appearance of long-

term-expected infrastructure needs. For example, one does not want to get engaged in a 20-year contract, to find out after a few years that your long-term infrastructure project is no more needed. The performance of the private sector has to be monitored, so that the project should have well-defined output arrangements which can be easily accommodated [14].

2.1.3 The Capacity of Managing the PPP Project

It is important to ask the question whether the local private sector organizations are capable of managing this type of long-term projects; in case local capacity is limited, there should be an interest from international funders to be able to carry out the work.

These are the aforementioned criteria which have to be considered for adopting a preliminary "Value for Money" qualitative assessments. After applying the whole previous criteria, selection will be made for showing which track is the right one to end up with more financial value: implementing the project as a PPP, or as a traditional one [14].

2.1.4 Pre-feasibility Study

In addition to the previous set of criteria, the identification phase also includes preparing a pre-feasibility study. Such an analysis concerns the compilation of basic information related to a project's scope and objectives. In addition to these, an estimation of the level of technical, legal, and financial viability of a project is required, as well as the necessity for public financial support [14].

Based on the previous four considerations, one can reach the conclusion that whether the project has the possibility of being developed as a PPP project, and in which case one should have the license to go on with the preparation phase.

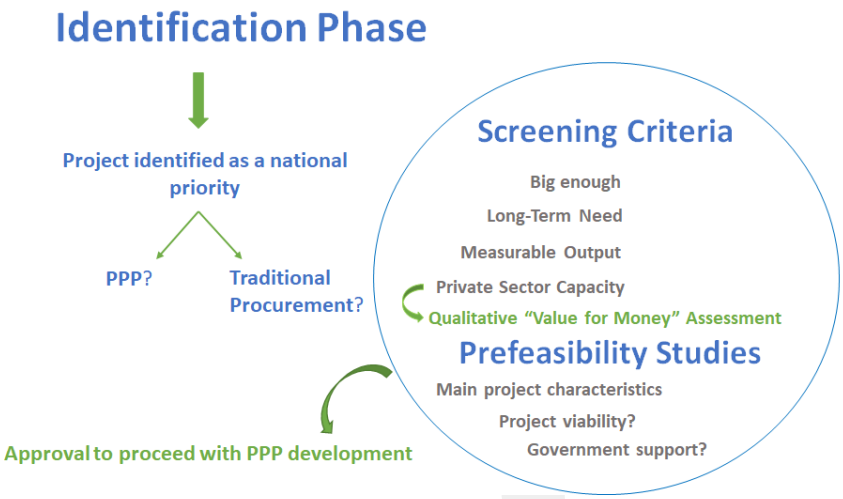

Figure 4 The Phases of Project Identification [14]

2.2 The Preparation Phase

This phase starts with the preparation of a project's business case. As a first step, the project's viability has to be confirmed by full scale and detailed feasibility studies. These are mainly extensions of the pre-feasibility studies applied during the identification phase. In this phase, there are many major points that form what is called "feasibility studies" which is to be detailed in the upcoming discussion:

2.2.1 Technical Studies

Technical studies have to be conducted for the purpose of determining the requirements of a project's output and confirming the feasibility of a project to be technically executed [14]. Through this study, one has to be able to answer the following question: do the available technologies have the potential of achieving the project objectives? The project's probable capital and operational costs must also be estimated.

2.2.2 Socio-Economic Benefits

Socio-economic benefits of a project have to be assessed. This point deals with deciding the impact of the project on job creation and the economic growth of the country [14]. It also answers the question whether the benefits of the project's economic exceed its economic costs. In other words, the natural question is whether the project makes sense socio-economically, or not.

2.2.3 Financial Elements

Financial elements are surely to be considered. The first consideration is the number of people who will be using the public services. How many financial returns can be guaranteed? What are the expectations concerning returns? To what extent is the project bankable? These decisions demand the adoption of a financial model that can imitate various scenarios based on various assumptions [14].

Another element that has to be included in the financial analysis is the fiscal sustainability of the project which provides information related to the following items 1) its affordability for the government. 2) the appearance of alternatives that can reduce the demand on government finances. 3) the ability of the government to provide grants required for the project.

2.2.4 Potential, Legal, and Regulatory Challenges

The potential of legal and regulatory challenges of a project has to be reviewed. In other words, it is necessary to test whether the government has obvious legal basis which enable it to enter into a PPP contract for a project [14].

2.2.5 Delay Risks

Regulatory constraints play a very vital role in assessing the risk of delays that a project may encounter [14].

2.2.6 Social and Environmental Effects

Potential adverse social and environmental effects must be considered, as well. One consideration is whether a project requires population resettlements [14]. Will the emissions of carbon be increased due to the project? And finally, it needs to be considered whether the project observes social and environmental standards or not.

2.2.7 Risk Allocation

In order to prepare for a project at hand, it is essential to specify the roles and responsibilities of each operator for the purpose of risk allocating [14]. If there is a need for illustrating what “risk allocation” is, one has to realize that the risk allocation is of a critical role which can determine the possibility of success

of a PPP project or its failure. It also has the capacity of deciding the project's attractiveness for private sector investors. Once the risk allocation is determined, “market sounding” activities such as roadshows can also be operated in order to determine if the private sector has remarkable interest in the suggested project. Besides, one should take into consideration the success of other similar projects for the purpose of making sure that the project is capable of attracting private investors' interest.

With all of the information collected so far, improving the “value for money” analysis and asserting whether a PPP is the best choice as a procurement method for the concerned project are to be identified [14]. A quantitative assessment is made in some countries for the purpose of comparing the estimated costs of a PPP with those of traditional procurement, which is called a “public sector comparator”. Even though the public sector comparator has advantages, it is characterized by difficult implementation due to its requirement of a big quantity of data, and the big number of methodological limitations. Because of these difficulties, not all countries prefer to employ these quantitative assessments.

At the end of the project preparation phase, it is necessary to have all the information needed to find acceptance to proceed to the transaction phase. Acceptance is necessary for the purpose of confirming the political buy-in for a project, and to refrain from spending transaction costs on projects that are unlikely to succeed.

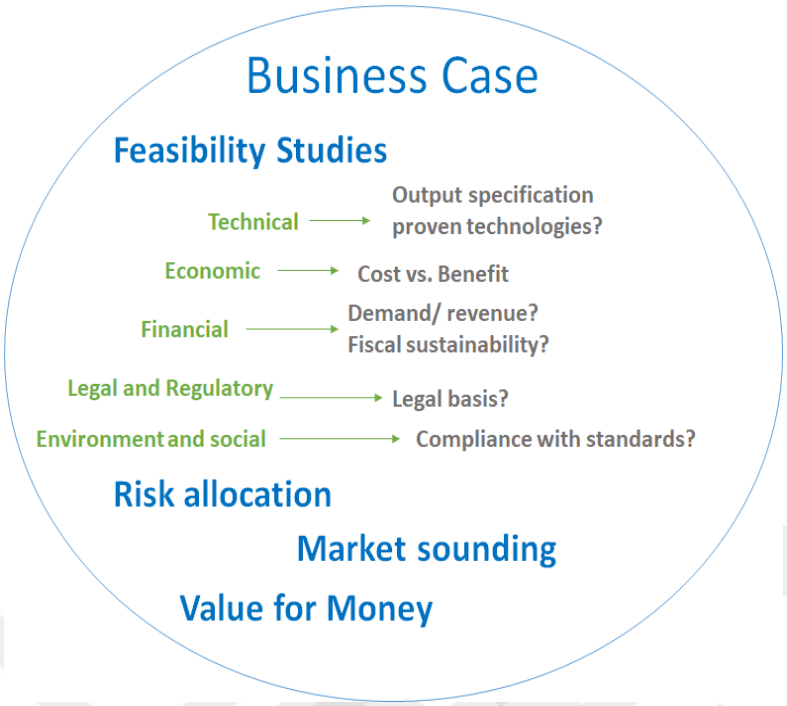

Figure 5 The preparation phase [14]

2.3 The Project Transaction Phase

This is the third phase which follows the operational phase. This phase has to abide by the principles of fairness, competition, and transparency [14]. If the previous principles are not observed, the private sector may not participate in the bidding, and that may result in an unsatisfactory situation for the public authority. There are 3 processes to complete this phase. These are the following:

2.3.1 Pre-tender Process

To start the transaction phase, the first step to be done is the preparation of the "bidding documents". The documents which are going to be prepared through the "pre-tender process" are the following:

1. Draft PPP Contract: this clearly states the proposal which includes the list of future private sector partners who are likely to be chosen to work with [14]. This is also concerned with defining the responsibilities and roles of the participating parties.

2. Procurement Strategy: this involves the used criteria implemented in evaluating candidates. It also takes into account how much interaction is allowed with the bidders at the time of the transaction. This also illustrates both

the pros and cons of the interaction; on the one hand, such interaction can improve the proposal of the project by integrating bidder recommendations; that will be of considerable value in complex projects such as PPPs [14]. On the other hand, too long interaction may hinder transparency, and precautions must be taken to minimize any corruption risks. Additionally, the project can be announced by holding a “pre-bid” conference which includes the prospective bidders, and providing a procurement notice that tells the private sector investors about the future project.

2.3.2 Pre-qualification Process

Additionally, after preparing the previously mentioned documents in the pre-tender process, the document which is to be prepared through this process is the following:

- **Request for Qualification (RFQ)**: the first step in the transaction of the “pre-qualification process” is the request for qualification "RFQ". That is a set of documents which requests issuing for qualification, and concerns providing enough information to prospective investors, that includes: the project's principal commercial terms, the total bidding process, and the criteria for a bidder to prequalify [14]. Other matters which are to be taken into consideration through the “pre-qualification process” are: selection of only companies with the needed experience potential, having enough resources to handle the project since one would not want to choose companies that are not well-qualified. By following these criteria, encountering an excessive number of bidders will be avoided. In general, three to six bidders will be considered a good number [14].

As a conclusion to the transaction phase, all that has been mentioned should be enough for the purposes of: keeping the competitive pressure while at the same time promoting interaction with the bidders, raising the chances of success to every bidder, and as a result of having big success chances for every bidder, they will be motivated to invest in the “bidding process” [14].

2.3.3 Bidding Process

This process starts when the "pre-qualification stage" is over. Here, at the start of the "bidding process", each pre-qualified bidder receives a set of bidding documents which consists of already prepared documents including the draft PPP contract [14]. Bidders are then given the chance to ask for clarification concerning any unclear areas of the "draft PPP contract" with the established and responsible contracting agency. In order to make this possible, a conference which includes the whole list of prequalified bidders is normally held to make it possible for them to ask for clarifications of the bidding documents.

Once these matters have been taken care of, prequalified bidders can now hand in their proposals. This bidding process is of two types: a "single stage process" or a "two-stage" one [14]. If the single stage process is the chosen one, then both of the technical and financial proposals are to be submitted at the same time. In case more interaction is allowed with bidders through a "two-stage process", technical proposals are to be submitted first, then parties can discuss the proposals and likely modify the bidding documents. After that, the modified bidding documents are announced and the bidders can then begin preparing both their financial and technical proposals.

2.3.4 Bid Evaluation Process

This process will start after ending the bidding process. If the financial preference had been completed according to the criteria of the two-stage process, then the first step to take is to open the technical proposal and evaluate it according to a fail/pass basis [14]. If the technical proposal had been accepted, moving to the parallel financial proposal for the purpose of reviewing and evaluating it for the sake of the users, or for the government with the lowest cost, will be needed. It is also possible to use a joint evaluation, joining together the financial and technical criteria. It is true that this approach is advantageous, it is likely to lead to increased chances of subjective evaluation, such a situation makes it possible for an increase in the risk of corruption.

Once the evaluation results are obtained, a selection of the preferred bidder is made, and the final negotiations start.

2.3.5 Final Negotiation Process

These final negotiations have the aim of making it clear of any residual matters, and updating the contract with the fine details of the preferred bidder. During the bidding phase, no substantial changes can be applied. That ensures fairness of the process to other bidders who might have handed different proposals if they had known that the contract could be modified after the choice had landed on the preferred bidder.

Lenders may be a source of pressure to induce changes to the contract as well. It is at this time that the preferred bidder finishes his loan agreement. Lenders may start endangering the whole process by declining to finance the project if their request for changes is not taken into consideration.

When the contract is finished, this will be the time for a public authority to approve it after it had been submitted to them. After that, the project will be ready to start, on the condition that the financing agreements have been finished and the conditions which have been previously included in the agreements are also fulfilled. Such conditions could contain getting permissions needed for starting the construction or obtaining a specific percentage of land.

To conclude, after all of these matters have been considered, the project gets to its financial close, which means that funds can be distributed to implement it. Up to now, projects which have been discussed are those initiated by the government. But there is another alternative, in which projects can also be suggested directly to the government by a private sector. These are designated as “unsolicited bids” [14].

To take a decision whether these unsolicited bids are to be adopted, their pros and cons have to be carefully evaluated. On the one hand, the pros show that the private sector can be a vital source for bright ideas dealing with infrastructure projects, in such a case the government can also get benefit from

proposals that have been prepared well, and novel solutions identified by the private sector. On the other hand, such proposals can redirect the government's attention from more urgent, serious matters. Unsolicited proposals may not match the national priorities, and evaluating them costs a lot and needs mobilizing local resources, not to mention the risk of corruption.

If unsolicited proposals are the choice, mechanisms to introduce competition have to be produced. There is a variety of methods to this end. The most well-known way is the “Swiss Challenge”, where more parties are called to submit competing proposals. The first party is, however, the one who has the opportunity to compare those competing proposals [14].

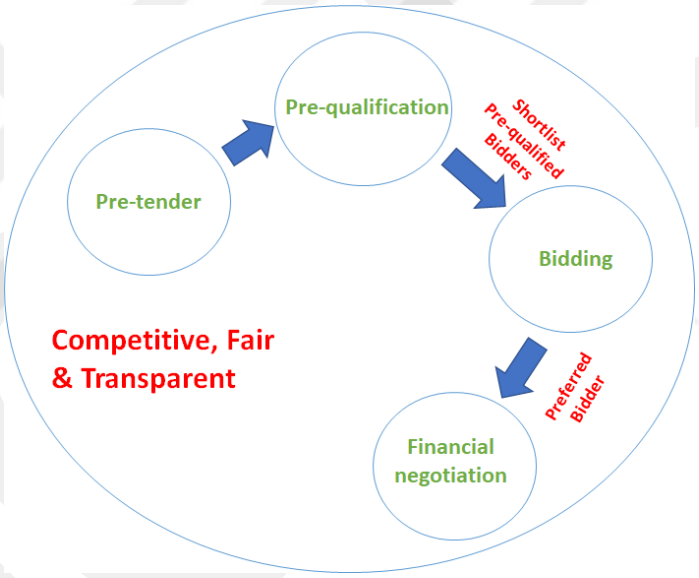

Figure 6 The project transaction phase [14]

2.4 The Management of a project during its operational Phase

Once the processes required for the establishment of a PPP project have been illustrated, now it is possible to view how the project is to be managed through its operational phase, in order to guarantee its success. Here, project management procedures are to be provided in addition to allocating enough resources for the purpose of monitoring the performance of the private sector, and charging penalties if there is a need for that. Besides that, effective communication challenges should be

established by those management procedures. For instance, the private sector should be asked to provide the necessary reporting requirements, so that the public sector remains updated with respect to the progress of the project, and it is able to fix problems early enough.

During the operational stage, other matters are to be provided by the project management procedures. These contain the establishment of protocols in order to implement the continual modifications which are required during the life time of a successful, long-term project. For example, if unpredicted events occur, there may be a need to renegotiate the contract. In that case, a need arises to apply the project management procedures to handle the situation. The PPP unit could offer help to the implementing agency in dealing with such complicated matters.

Effective conflict resolution mechanisms are very much needed in order to maintain a successful management process for the PPP project; that could be achieved by using fair and quick methods to solve differences that may arise between the public and private sectors. Contract management contains: matters concerning the end of a contract, ones related to termination payments, and finally the state of an asset at the close of a contract.

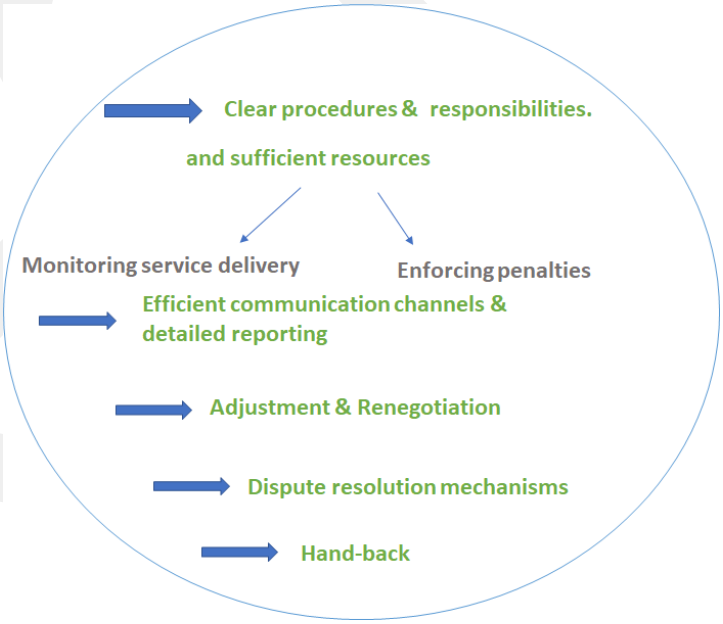

Figure 7 Management of the project during the operational phase [14]

What has been illustrated so far concerning the project cycle, has focused mostly on a BOT delivery method model. However, it is not possible within the scope of this thesis to do the same for all PPP models. But a following figure may explain the lifecycle of a PPP project [15].

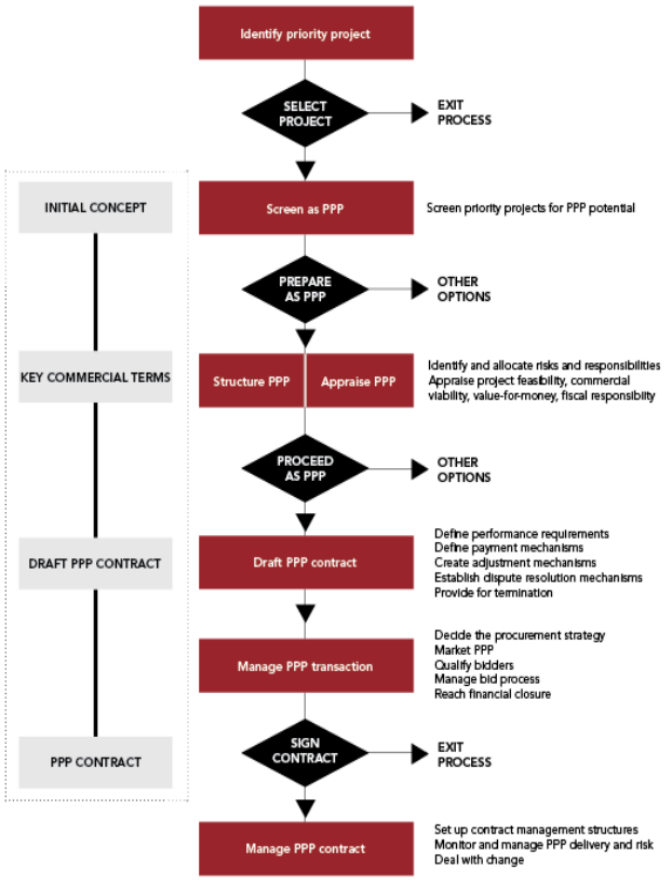

Figure 8 Genral description concerning the lifecycle of a PPP project [15]

CHAPTER 3

RISK IDENTIFICATION AND ALLOCATION

Generally speaking, a risk in PPP projects is a genuine threat as it is in any other type of projects, but the difference lies in the magnitude of risks. A risk is identified when the outcome or the results of an activity are not compatible with the set requirements. A requirement may be at risk individually, or concomitantly with respect to the outcome and results of an activity. In other words, when a risk is present, it is an obstacle in the way of a project to fulfil its objectives [16].

In the forthcoming discussion, a crucial and critical aspect of risks in PPP will be illustrated. In this respect, the types of risks, and the best ways to allocate these risks among partners are to be explained.

Risks cannot be completely transferred to the private sector, since the private sector might lose interest in participating in the project and no banks will be interested in financing it [16]. Moreover, if the risk remains completely in the hands of the public sector, that will deprive the private sector from introducing innovation for a project to achieve efficiency in their performance. It is advisable then to have a balanced risk allocation between the private and public sectors to attain success of a PPP project. To achieve that balance, risk has to be transferred to the best party which can: control, manage, and reduce its bad effects on the project.

3.1 Major Risks of PPP Projects

The key/major risks in a PPP project are the following [16]:

1. Supply risks
2. Demand risks
3. Financial risks
4. Political, legal, and regulatory risks
5. Force Majeure risks

3.1.1 Supply Risks

To illustrate what is meant by "supply risks", it is necessary to define the risk factors that could prevent the public service from being delivered. These factors are the following:

1. Land availability: This factor is of utmost importance in the success of a PPP project since absence of land prevents the project from being realized. There is a number of reasons that may stand in the way of acquiring land for a project. These are:

i. Land may not be suitable because it has a need to be installed from contamination.

ii. Land may be a historical site which may prevent or delay its acquisition.

iii. The need for environmental permits.

iv. The requirements for population settlement.

After considering the reasons that may stand in the way of land acquisition, it is important to emphasize that the best party which can handle the risk of land acquisition is the public partner. It is well-known that the acquisition of lands needs some legal procedures, therefore, the public sector is the best to handle those. It is also advisable to get hold of the land before the tendering process because of the possibility of effect of land acquisition on the project delivery.

2. Construction risk: This type of risks is linked to the construction phase of infrastructure projects. The two main reasons that cause this type of risks are the following:

i. Cost overruns

ii. Delays

In the presence of these two factors the construction may face the following risks [16]:

i. The asset may not be constructed well.

ii. The asset may not deliver the desired service.

The construction risk is normally assigned to the "private partner". One may wonder whether assigning the construction risk of a PPP project to the private sector will decrease the effects of this risk or not. The studies have showed that considering the project as a PPP reduces the risk of exceeding the initial budget that the traditional procurement projects have faced due to cost overruns and delays (86% of public infrastructure projects that followed traditional procurement approach exceeded their initial budgets by 28 percent on average). That is because having the project as a PPP one will get benefit from the situation; that the private sector will not be remunerated until the end of the construction phase, so they will try their best to prevent delays and cost overruns by delivering the project on time [16].

3. Operational risks: Once the construction phase is over, the operational phase takes place. Risks will occur during this phase as they do in all other phases. These risks involve the following [16]:

i. Exceeding the planned budget: This risk occurs when the maintenance, or the operation of an asset exceeds the planned budget for that asset. For example, input prices and salaries may be more expensive than what is expected, accordingly, this will raise the overall operating costs.

ii. Service interruptions: It is likely that the services may be interrupted, which naturally results in remarkable revenue losses.

However, the operational risks are also assigned to the "private partner" in a PPP project. This risk can also be mitigated by: imposing tariffs which are automatically modified to inflation, and employing long-term input supply contracts.

4. Contract submission risk: This type of risk happens when the ownership of the asset is submitted back to the public authority. This risk occurs since the asset is in a worse condition than what is expected, which will lead to upgrade costs [16]. This risk, therefore, is allocated to the "public sector" if they determine to operationalize the asset when the contract is over. The discussion

now goes to how the private sector tries keeping the asset in a good condition. This goal could be achieved through making a condition which states that there will be no final payment unless the asset is to be handed in a good condition at the end of the partnership. Another way could be followed by imposing a term in the contract to force the private partner to submit the asset at the end of the partnership according to specific set standards [16].

3.1.2 Demand Risk

This type of risk can be defined as the one which occurs when the number of the public asset users is lower than expected, leading to a loss of incoming revenues, in addition to financial difficulties [16].

As it is well-known, predicting a public asset's demand for a long period of time can be especially difficult, but the demand could be expected by examining a number of factors such as:

i. Economic trends in the country.
ii. Demographic trends in the country.
iii. Competing services: the same service can be offered by different parties in a certain location; therefore, there might be less demand on the asset concerned.
iv. Willingness to pay: this can be a negative factor when users refuse to trade better service for higher cost, leading to lower demand [16]. For example, users determine not to use a toll highway if they find out that the difference in time spent is not worth the higher cost of using the toll highway.
v. Connecting infrastructure: this factor is concerned with how one can get to the specified asset. For example, when the asset is a port which is not possible to get to, or one which has recurrent delays due to the quality of the linking road, that in turn will decrease the number of users of that port. This factor is beyond the control of the operator.

In the past, lack of considering such factors led to inaccurate predictions causing unwanted results. Thus, inaccurate predictions lead to difficulty in risk

allocating. In this case, the objective is to determine the responsible party that will handle the risk. If the "private sector" is the party which is going to handle the risk, then this might motivate them to produce service of a high quality for the purpose of attracting as many users as possible. However, there is a problem here since the private sector may not have reliable forecasts, or they might not have that much positive effect on the demand. In this situation, it may not make sense to shift the risk to the private sector; rather, it is advisable to have risk sharing [16]. For instance, public guarantees can be applied to make sure that the private sector is getting a minimum payment, no matter how many users there are. Moreover, there is another way which involves extending the concession period, so that the minimum demand will be achieved. Additionally, no rival projects will be allowed to function at the same time.

3.1.3 Financial Risks

After having dealt with the "demand risks", and "supply risks", a discussion of the financial risks that the project may face will be presented. These risks can be briefly mentioned as follows [16]:

i. Availability of funds
ii. Currency mismatch
iii. Repatriation and convertibility of revenues

Availability of funds

The first main concern in a PPP project is the unavailability of funds after the preferred bidder has been chosen; in other words, this involves starting the project with no money. For example, the funding bank may claim that they have no time to review the project documents for the purpose of taking decision and simply decline, or they may just refuse to finance the project following their own judgement [16]. That situation imposes a shared risk because both the public and the private sectors have invested their money and time in order to have a successful project.

For partners there are several solutions in avoiding such a risk. The first solution is to involve the bank in discussions of the project documents early

enough, so that the bank cannot claim that they had no time to review the project documents. At the same time, they will have enough time to determine as to whether they are going to lend or not. The second solution can be fulfilled by asking the bank for financial commitments, with documenting that as a term in the bidding documents. Running matters that way increases the transaction costs and the conditions of banks' commitment. The third solution states that the chosen bidder has a maximum period to achieve the financial close; otherwise, the public authority has the right to change the bidder [16].

Currency mismatch

This risk is one of the important risks that happen in many developing countries which leads to the failure of many projects. This type of risk occurs when there is a mismatch between the local currency and the currency of the loan [16]. There is a condition here which demands that the money of revenues should be converted into the loan currency. If the local currency loses its value, revenues will not be adequate to cover the loan payments. The solution here is to lend in the local currency. If this solution is applied, the **private sector** will bear the risk. If not, the public sector is obliged to support the risk since the private sector has no control on the reason of that risk.

Repatriation and convertibility of revenues

The above given risk is more or less a political one. In this situation, the investor is not an inhabitant of the country, revenues are produced, and money requires to be transferred abroad. Under such circumstances, the country in which the project is at work may force capital control regulations which might reduce the possibility of money transfer to the investor. A solution for that risk in the developing countries could be obtaining some protection against it by the private sector [16].

3.1.4 Political, legal, and regulatory risks.

This type of risks includes (a) changes in the legal system, and (b) Policy decisions. Those two sources of risk can affect the project in a negative way. Here, in these types of risks, it is important to mention that the private sector has no control; however, the private sector may try to get guarantees concerning their protection and compensation. If the government is not in a

position which enables it to provide the investor with what they are demanding, they will, then, not have the incentive to continue [16].

For example, the private sector may be involved in building a school for the government with certain payments. However, all of a sudden, the government may stop the contract, or take property of the asset without compensating the private sector, even though the asset was performed according to the set standards. In that situation the private sector protect themselves by obtaining a political risk insurance [16].

Another risk could happen due to changes in legislation. These can result in negative effects on the revenue of the project. Those effects are like: raising the corporate tax which reduces the total amount of revenues that will be going to the private sector, or increasing import taxes which again affects the revenues negatively [16]. Now the question is, how can the private sector be protected? The answer is by having the "Change in law" protocol in the concession contract which is meant to protect the private sector just in case there are changes in legislation.

To be brief, political and legal risks are as follows:

i. Changes in the legal system
ii. Policy decisions and changes in legislation

In addition to the risks mentioned above, regulatory risks may occur. To illustrate this type of risk, the following example is to be presented: suppose there is a private sector which is responsible for providing water services to a certain location with having the right to get fees from users. Here, if the regulatory authority is not completely independent politically, it may be allured to lower taxes just to please the public; at the same time this will lead to the reduction of the revenue which the private sector will receive [16]. In this case in order to reduce risk, the private sector may try to get guarantees related to

the setting of the specifications of tariffs, clearly in the concession contract. Thus, security against negative actions from the regulator will be provided.

3.1.5 Force Majeure Risks

This type of risks is concerned purely with circumstances in which neither the private sector nor the public sector has control. In other words, it would be impossible for either party to fulfill its obligations [16].

Those circumstances include natural disasters, wars, and so on. The questions which merit answers here are the following: should the private sector be compensated for such disasters for the purpose of preventing a collapse of the project? And if there is a need to end the contract if the magnitude of such circumstances is great. For example, the contract has to be ended with compensating the equity providers, the lender, or both of them, if circumstances go beyond a six-month period. This should be stated in the contractual agreements.

The fact here is that no matter how much compensation there is, it is not to be a substitute for insurance for majeure risks.

After having discussed the aforementioned risks which confront all parties of the project, a situation is revealed in a way which enables the concerned parties to protect the project during its life cycle. There is a risk formula which is usually used in the contract drafting, and the negotiation of project structure, that is for easing the discussion, the outline, and the allocation of all risks. This formula has to be provided in the development process. It is also crucial to know that risk location will affect the profit margins wanted by the private investors [16].

3.2 Value for Money and Public Sector Comparators

The value for money (VFM, henceforth) concept is a crucial element in showing that implementing a project as a PPP will bring in more value than if it is implemented as a traditional procurement one [2]. If value for money is to be defined, it will mean getting the optimal joining of benefits and costs in offering services which are wanted by users [2]. The analysis of value for money can be started if the operational phase of the project has been completed as pointed out previously. Improved VFM can only be done when the competitive tendering process has ended.

3.2.1 Value for Money in PPP Projects

To achieve good understanding and explanation of what is called “VFM in PPP projects”, some major concepts which discuss the matter are to be presented [2]:

- Getting value for money (VFM) in PPP projects is one of the private sector's responsibilities to be fulfilled by the engagement of the private sector's effectiveness, efficiency, economy, and their responsibility in allocating risks.
- The party which takes the responsibility of demand risk of the project is the one which determines how VFM is to be used.
- The final estimation if PPP produces improved VFM can only be done when the competitive tendering process has ended. The determination of that includes two main components which are:
    1) Identifying factors which determine if the project leads to improved VFM.
    2) Evaluation of the capability of the private sector in delivering VFM.
- The outputs of the final estimation which shows if the private sector produces VFM also helps in:
    1) Identification of the most suitable form of PPP.
    2) Deciding the optimum extent of the PPP.
    3) Selection of parameters which have to be used at the end of the procurement process to decide whether the chosen type of PPP produces VFM or not.

3.2.2 Factors to Determine VFM

Factors whose role is to determine the VFM differ depending on the following [2]:

1) The type of the project
2) The sector
3) The benefiting countries from the project

The list below includes the factors that determine the VFM in PPPs:

1) Reducing the cost of the whole cycle of the project
2) Improved risk allocation
3) Good and constant project implementation
4) Better quality of services

5) The ability to open additional sources of money

3.2.3 The operational plan of PPP projects and assessment of VFM

While trying to form a plan for a better design to get more VFM, PPP is benefiting from the following [2]:

- The attempt of PPP to design a plan which leads to better VFM can be obtained from previous experiences of similar projects completed by the public sector in other countries.
- Previous experiences are obtained from:
    1) Desk-based research.
    2) Consultants.
    3) The private sector operators.
    4) In case of not having the previous three sources in a uniform manner in other countries, benchmark information has to be collected from similar environments.
- The transaction team (consists of an executing agency, transaction advisors, and other bodies from the funding source) is the one which is responsible for assessing if the private sector has the ability to provide VFM. This will be known from the "precedent review" and "market sounding".

  Precedent Review: The issues which have to be discussed in the precedent review differ from one project to another, but typically, there should be information, related to experiences of similar projects, which contains the scope of the project, the potential for risk transfer in a cost-effective manner, the appearance of user complaints, revenues coming from a third party, and finally the potential for VFM.

  Market Sounding: Before evaluating the market sounding of a PPP project, this project has to be assessed whether it is practicable or not according to the following issues if they are available [2]:

    1) When the investors, the developers, and the financiers have no problem with:
        i) payment and credit risk of the project.
        ii) legal and regulatory framework.

2) Contractors are capable of delivering required service, and are ready to accept sufficient risk transfer.

- Once the previous issues have been established, the next step is to test the market interest in a PPP solution. This is to be decided by what is called the Market Sounding exercise.
- How does the private sector asses its interest in a certain project? This is based on earlier market soundings or from earlier projects collected from similar operating environments. If the project is a large, innovative, and complex one, a special market sounding exercise should be performed as a part of PPP assessment. This is to be supported by considering certain aspects of the project including strength of the private sector markets related to the project, the private sector's scope for achieving economy of a large scale, and associated relevant expertise. These matters decide whether or not the project will be undertaken.
- What is meant by "senior lenders" and what is their contribution? They are the ones who have been involved in large projects for a long time. They price the debt and identify the cover ratios of the project in order to determine whether the project will be able to provide VFM or not. The discussions with them is better than conventional procurement.
- How to maximize the effectiveness of market sounding? The private sector institutions have to be provided with a preliminary overview of the project, and/or a project information briefing that displays an indication of matters such as scope and scale of the project, its service content, its contractual terms, and finally a preliminary allocation of risks.

3.2.4 Developing a Comparator Model for the Public Sector:

The party which is responsible for providing the public sector with the cost concerning construction and operation is called the Public Sector Comparator (PSC) [2]. The list below includes the requirements to develop a PSC:

1) A design which meets the outputs
2) Estimation of the costs of construction
3) Estimation of financing costs

4) Estimation of the operating costs along the whole life of the project

The party which is responsible for estimating the probabilities and size of impacts of risks which the public sector will foresee in implementing the project is called the Risk-Adjusted Public Sector Comparator (RA-PSC).

Types of risks gained from factual analysis of the data of previously completed projects can be summarized as:

1) Overrun risk in construction cost
2) Risks due to delays in completion of the project
3) Cost risks which exceed a level higher than the planned operating costs
4) Risks which are of relevance to the government

3.2.5 Developing a Comparator Model for the Private Sector:

The party which is responsible for 1) Estimating the size and probability of the private sector management in construction, operation risks, and completion. 2) Estimating the cost of private sector funding is called Private Sector Comparator. The management of operation risks is lower for the private sector as compared with the public sector. However, the private sector financing is higher than the public one. It is compulsory on the private sector to assume its responsibilities, because the fulfilling of these responsibilities means achieving the following requirements [2]:

1) The PPP reference model (pre-tendering)
2) The winning PPP bid (post-tendering)

3.2.6 VFM Analysis

The following list includes the details of the VFM analysis [2]:

- VFM may reveal issues related to affordability depending on the ideal scope and breadth of the project. Alternatively, there are tests by which it is possible to decide whether some adjustments in the scope and breadth of the project may lead to more benefit by having smaller projects instead of a larger scale one.
- VFM is a crucial tool for telling governments and other institutions the true cost of each method in offering services. Moreover, it can be used to cause fine

changes in the design of a certain project, for it to be suitable for risk and financial constraints imposed by the government. However, taking into consideration the many areas of cost doubt and adjustments on the cost and likelihood of risk occurrence, VFM analysis cannot be considered as an ideal tool for pursuing a project under public or PPP model.

3.2.7 Fund Sources:

Funds can be provided by more than one source. The source might be one or more of the following [2]:

1) The government
2) The development finance institutions
3) The private sector

Funds can take more than one form. These forms can be exhibited in one or more of the following:

1) Loans

2) Contingent grants

3) Government contributions

CHAPTER 4

PPPs in Turkey

Because of their reputation worldwide, PPPs have found a place in Turkey. The attraction here is not the popularity of PPPs only, but Turkey is also trying its best to develop a fertile environment for such projects, especially in the infrastructure of healthcare, transportation, and energy fields as reported by the investment office belonging to the Presidency of the Republic of Turkey [17].

4.1 The Economical-Situation of Turkey

According to the statistical report provided by the Presidency of the Republic of Turkey in 2018, the situation in Turkey is a promising one for investing in PPP projects considering the following reasons:

1. **The Economic Growth**:

   According to the data released in 2018, the country's economy is growing rapidly with an average annual GDP growth rate of 5.5% [17]. Figure 9 proves that:

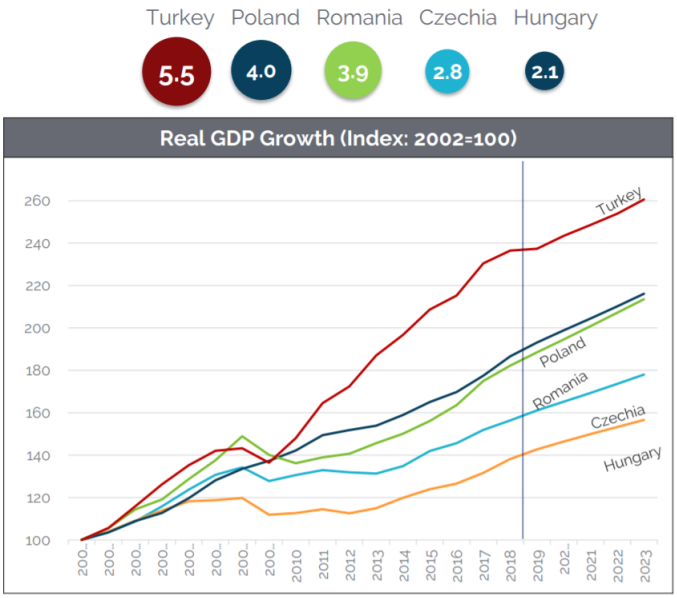

Figure 9 The Turkish economic growth [17]

With this economic rate, Turkey comes as number 13 amongst the world economies [17]. Figure 10 shows that:

Figure 10 The Turkish economic growth rank [17]

2. **The Population Growth**:

   In 2018, the population of Turkey was 82-million people, with an increasing rate of 1 million annually, coupled with a fast urbanization process resulting in the appearance of no less than 23 urban centers of more than 1 million each [17]. Figure 11 shows the very rapid soaring growth in the Turkish population. The population is expected to be 92 million in the year 2028, and 100 million in the year 2040 depending on the calculated growth rate:

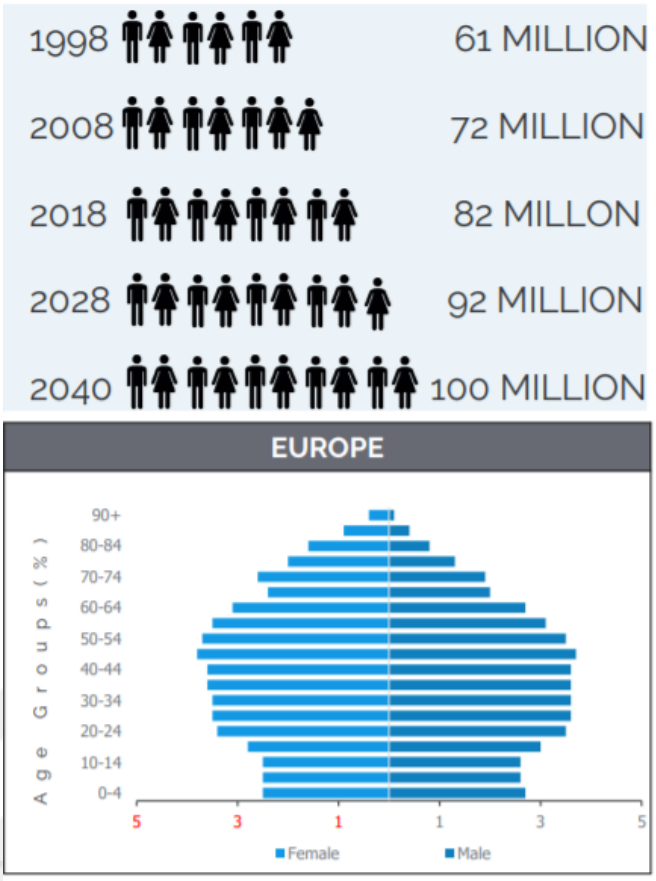

Figure 11 The population of Turkey [17]

3. **The Trade Volume Growth**:

   Turkey is one of the leading countries in the size of its trade due to its strategic location that lies at the crossroads between Europe and Asia, and close to the energy resources and international trade routes. Turkey's foreign trade size has been raised from $88 billion in 2002 to $391 billion in 2018 [17]. Statistics in the following figure show these facts:

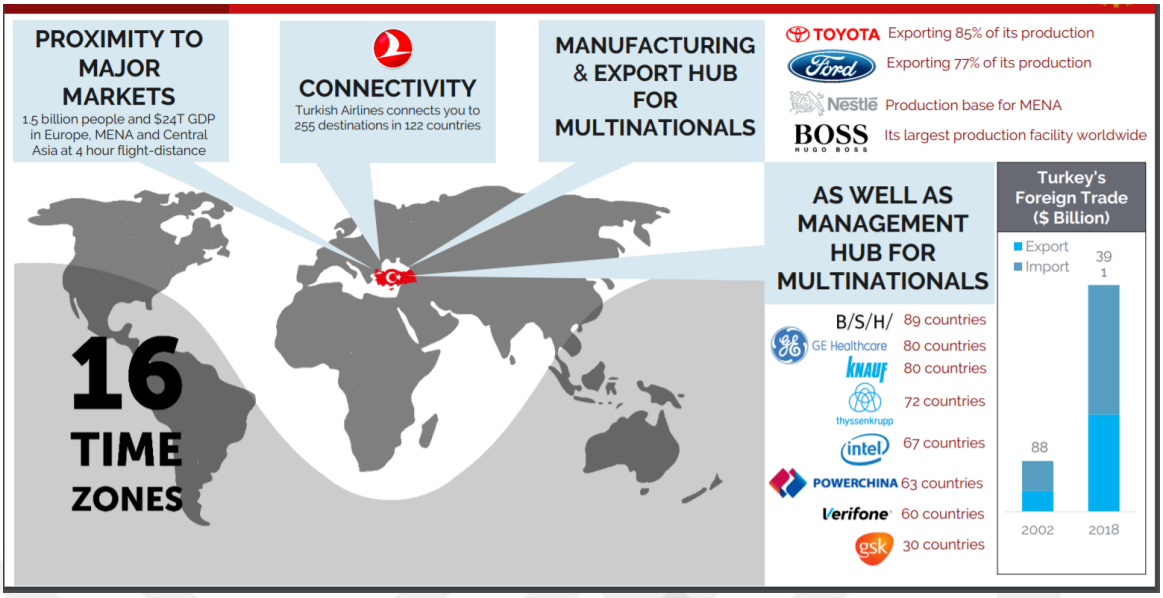

Figure 12 A view of the Turkish trade situation [17]

4.2 The Public Private Partnership Projects' Status in Turkey

Turkey is one of the countries which has implemented substantial projects of huge financial demands as PPP ones. To illustrate, up to 2018, the country had invested $139 billion in PPPs of different sectors [17]. The main purpose of implementing such huge projects, and establishing ambitios plans is to upgrade the infrastructure of the country in various fields.

According to the investment office of the Presidency of the Republic of Turkey, a group of graphs will be shown to display the current situation in PPP:

1. Figure 13 shows the pricing of the PPP contracts that were implemented in Turkey up to 2018 (in US Dollars). It is noticable from the provided figure that the total amount of money was $139 billion:

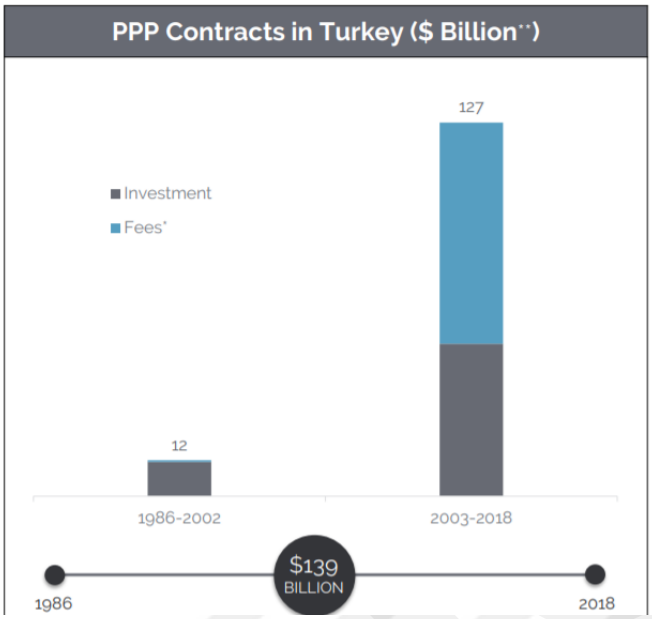

Figure 13 The pricing of PPP contracts in Turkey in USD [17]

2. Figure 14 presents the number of projects that have adopted PPP as a main strategy in their implementation [17]. As one can see, the number of projects between 1986-2002 was 67, while the number soared up to 175 between 2003-2018:

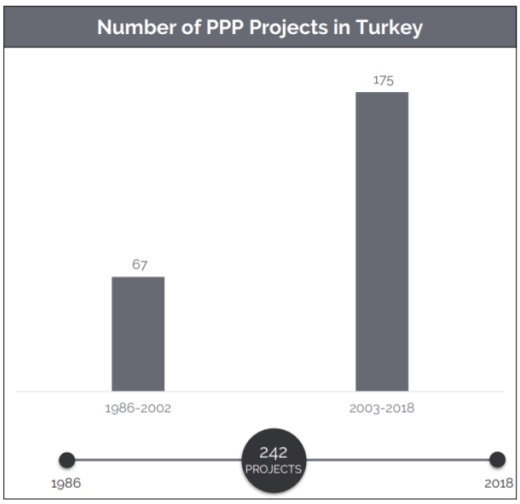

Figure 14 The number of PPP projects in Turkey [17]

3. Figure 15 clarifies every PPP sector's pricing up to 2018 (in US Dollars) [17]. Obviously, the pricing is the highest in the airport sector which comes up to

$71,502 billion, but it is the smallest in the case of the culture and the tourism sector ($141 million), as for the rest, they fluctuate between these two values:

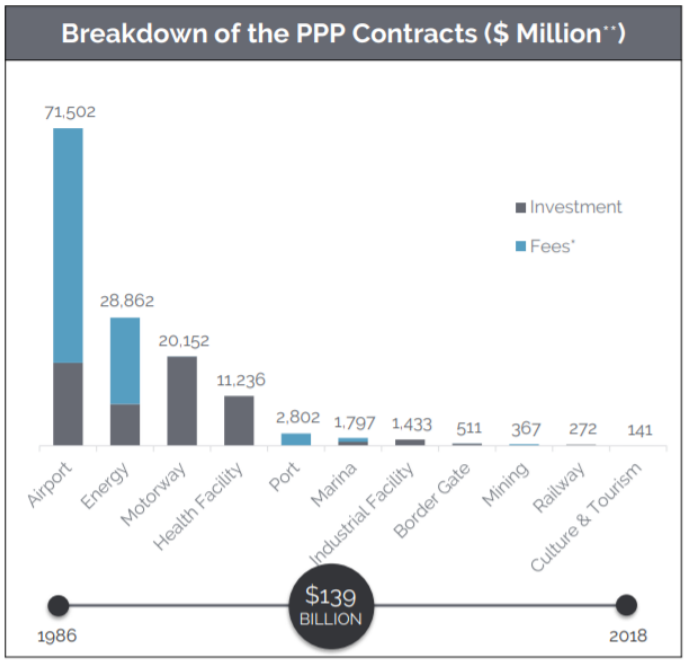

Figure 15 Capital distribution of PPPs in each sector [17]

4. Figure 16 specifies the number of PPP projects in every sector: the highest number was in the energy sector with 91 projects, while the smallest number was in the culture and tourism sector with 1 project. As for the rest, their numbers go between 1 and 42 projects:

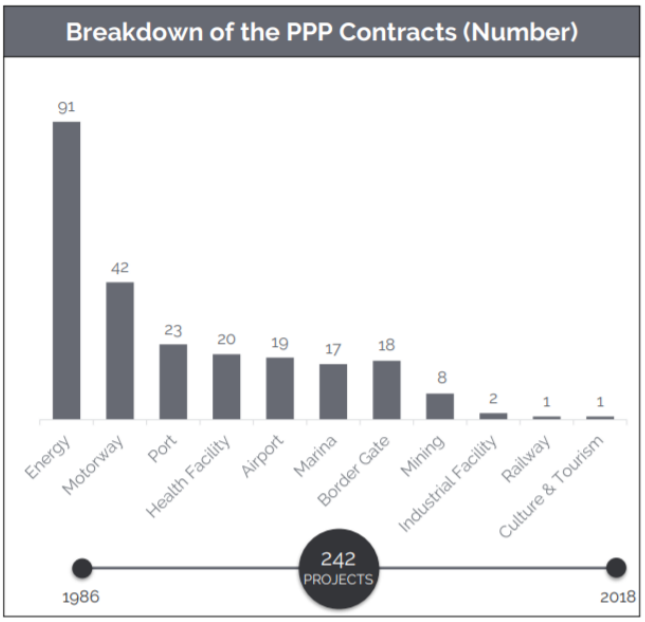

Figure 16 Numbers of PPP projects per sector [17]

5. Figure 17 illustrates how much money was allocated with respect to the PPP model type [17]. In a decreasing order from the highest pricing to the lowest, they come as follows: Build-Operate-Transfer (BOT), Transfer of Operating Rights (TOR), Build-Lease-Transfer (BLT), and finally, Build-Operate (BO):

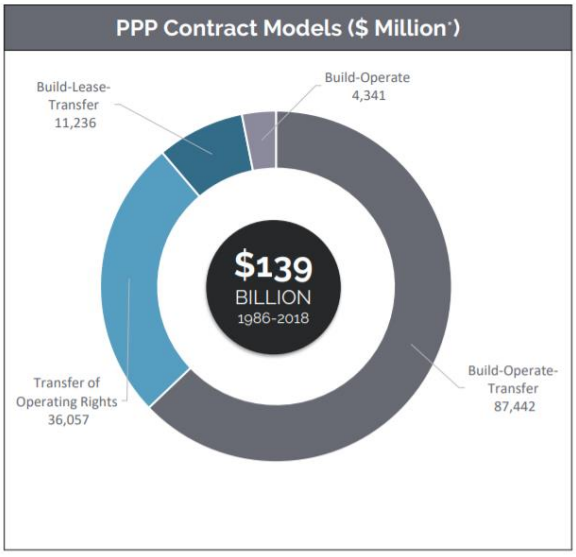

Figure 17 Capital distribution with respect to the PPP model type [17]

6. Figure 18 shows the number of every PPP model type with respect to the total number of PPP projects [17]. Numbers are increasingly ordered as follows:

Build-Operate with 5 projects; Build-Lease-Transfer with 20 projects; Transfer of Operating Rights with 108 projects; and finally Build-Operate-Transfer (109 projects):

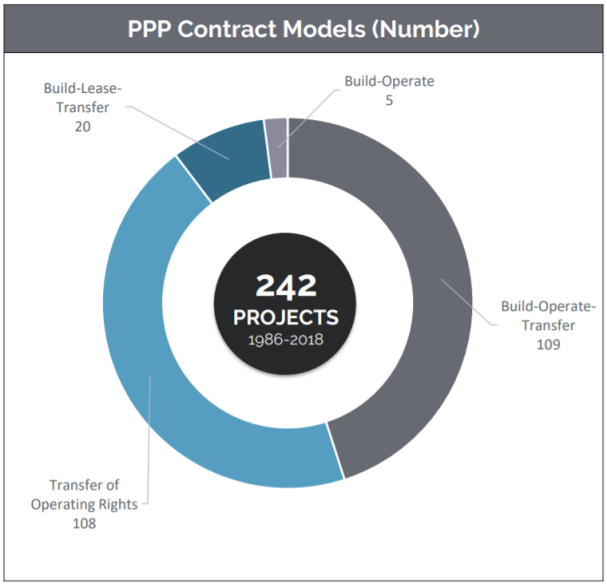

Figure 18 Number of projects per PPP model type [17]

4.2.1 Turkey's Future Plans

In addition to the wide scope of Turkey's present PPP projects, its ambitious plans look forward to continuing the investment for many years to come by setting a group of targets to invest and implement PPP projects of different sectors [17]. It is illustrated in the following set of figures that in 2023, the hospital bed capacity of quality rooms rate will be raised to get to 100%; in 2035, the total number of kilometers used as motorways (toll roads) will reach 8,523; in 2023, the railways will cover nearly 25,030 km; and finally in 2023, the amount of the installed power capacity will be 120 GW, figure 19 proves that:

Figure 19 Future ambitious PPP project plans for different sectors [17]

4.2.2 The Turkish Participation in PPP projects

The Turkish investment in public private partnership projects is not restricted to the country itself. The statistical studies of the investment office of the Presidency of the Republic of Turkey show, in figure 20, the total amount of the Turkish money invested in the PPP projects in Turkey and other countries, up to 2018:

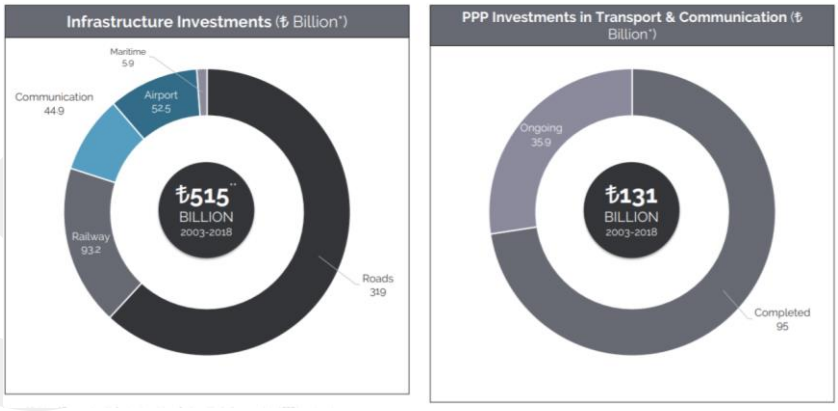

Figure 20 The Turkish Participation in PPP projects inside and outside Turkey [17]

4.2.3 Classified statistical data of PPP projects in Turkey

In Turkey, more than one party have tried to statistically detemine the status of PPP projects in Turkey. For example, wih reference to the PPP knowledge Lab which is an information pool, statistics up to 2020 were as follows [4]:

1. The total number of PPP projects = 250
2. The total amount of money invested = $146,078 billion
3. The total number of active projects = 244
4. The total amount of active investment = $145,033 billion

The statistical information provided in item numbers 1 through 4 was supported by tables that contain some project names of the PPP type in Turkey. Table 1 gives the names of the largest PPP Projects in Turkey, which are the same as the largest PPP Active Projects. The highest amount of money investment was in constructing the IGA Airport with a cost of $35.587 billion [4]. This belongs to the airport sector projects in year 2015, while the lowest, InterGan Gebze adapazarı Izmir, was in the year 2000 as an electricity sector project with an investment cost of $2.2 billion:

Table 1 The largest PPP projects in Turkey [4]

The Largest Active Projects

The Project Name	Sector	Financial Closure Year	Investment ($US Billion)
IGA Airport	Airports	2015	$35.587
Gebze-Orhangazi-İzmir Motorway	Roads	2013	$9.756
Kemerkoy and Yenikoy Thermal Power Plants	Electricity	2014	$7.576
Turk Telekom	ICT	2005	$6.550
Third Bosphorus Bridge and Northern Marmara Highway Project	Roads	2014	$2.900
Malkara-Canakkale Motorway PPP	Roads	2018	$2.842
Ataturk Airport lease contract	Airports	2005	$2.543
Enerjisa phases I and II	Electricity	2008	$2.539
Seyitomer Thermal Power Plant	Electricity	2013	$2.248
InterGen Gebze Adapazari Izmir	Electricity	2000	$2.200

Table 2 displays the most recent PPP projects in Turkey, which are the same as the most recent active projects. The most recent and the most costly one was in 2020,

Saros Wind Farm, as an electricity sector project with an investment cost of $183.65 million [4]:

Table 2 The most recent PPP projects in Turkey [4]

The Most Recent Active Projects

The Project Name	Sector	Financial Closure Year	Investment ($US Million)
Saros wind farm	Electricity	2020	$183.65
Kiyikoy wind farm expansion	Electricity	2020	$74.00
Akkus wind farm	Electricity	2020	$14.5
Bioden biogas plant	Electricity	2020	$11.25
Ilis Enerji biogas plant	Electricity	2020	$11.25
EFELER Geothermal Power Plant Capacity Extension (97.6MW)	Electricity	2019	$350.00
Alpaslan II	Electricity	2019	$300.95
Tekirdag Port Modernization and Expansion	Ports	2019	$127.80
Kocaeli Railport Terminal	Railways	2019	$86.00
Gazi 9 Wind Farm	Electricity	2019	$65.00

4.3 PPP Models Implemented in Turkey and their Legal Framework

4.3.1 PPP Models Implemented in Turkey

PPP is exhibited in various models as illustrated in the previous sections. Specific PPP models have been selected in Turkey. These are: Build-Operate (BO), Build-Operate-Transfer (BOT), Build-Lease-Transfer (BLT), and Transfer of Operating Rights (TOR). Each of these models has been alloted a specific function in various fields of Turkey [18, 19]:

1. **Build-Operate model (BO)**: Turkey has implemented this model in the field of electrical energy production. The government of Turkey gives the private sector the right to build, operate, and own thermal power plants. The Turkish government then start buying the electric power while the ownership of the whole project remains in the hands of the private sector [19].
2. **Build-Operate-Transfer Model (BOT)**: As for this model, it has been functioning in Turkey as early as the 1980s in various fields such as: airports, ports, highways, tunnel construction, bridges, and finally nature parks [18, 19]. In this model, the private sector is granted the

right to build the facility on some public land, with the right of operating, maintaining, and repairing it for a specific period of time. When that specified period of time ends, the private sector transfers the ownership back to the public sector. In the case of risk, this is shared by both the private and the public sectors.

3. **Build-Lease-Transfer Model (BLT)**: In Turkey, in the late 2000s, this model is mainly used in city hospitals and health campuses in the health sector [18]. In this model, it is the responsibility of the private sector to build the facility and provide its physical equipment, operate specified aspects which are mentioned in the contract, and then transfer the facility to the public sector at the end of the specified period. It is important to mention that the private sector should receive rent payments annually from the public sector.
4. **Transfer of Operating Rights Model (TOR)**: In this model, the private sector assumes the right of operating an existing facility for a specific period of time. Generally speaking, this model does not present a customization method, because only the operation right is given to the private sector without the ownership of the facility itself for that specified period of time [19].

After having explained matters concerning the PPP models used in Turkey, one can draw on the information provided by the Ministry of Health to display the number of PPP projects per model as follows:

Table 3 The number of PPP projects per model in the health sector in Turkey [18]

Model	Number of the Projects	Model Percentage
BOT	98	49%
BO	5	3%
BLT	18	9%
TOR	78	39%
Total	198	100%

4.3.2 The Legal Framework of PPP projects in Turkey

In Turkey, implementing the PPP project is correlated to a number of laws. These laws are either sector-based or model-based, which are in turn limited, leading to the fragmentation of their legal framework [19]. The basis of legislation of PPP models are as displayed in the following tables:

Table 4 The basis of legislation of PPP models in Turkey [19]

Model	Related Legislation
Build-Operate-Transfer (BOT)	Law No 3996 is the basic law for the BOT implementations in Turkey. (13/611994)
	Decision regarding the procedure and application of Law No 3996 (201 1/1807)
	Law No 3096 - the first law allowing the private sector involvement in the electricity sector. (4/ 12/ 1984)
	Law No. 3465 -removed the monopoly position of the General Directorate of State Highways for highway construction, maintenance and operation. (28/511928)
	Implementing regulation of the Law on the establishment, maintenance and operation of access-controlled highway (highway) by organizations other than the General Directorate of Highways.
Build-Rent-Transfer	Law No. 6428 on establishment, renovation and service delivery by the Ministry of Health with a public-private cooperation model (9/3/2013)
	Implementing regulation on the establishment, renovation and service delivery of the Ministry of Health with a public-private cooperation model
	Article 23 of the Decree Law no. 625 on institutions ions providing private housing services and some regulations
	Regulation on the provision of education and training facilities in exchange for the lease and the operation and service of the facilities other than the training and service areas in exchange for the operation
	Article 20 of the Higher Education Credit and Dormitory Institution Law No. 35 1
Build-Operate	Law No. 4283 on the establishment and operation of electric power generation facilities with the build-operate model and regulation of energy sales (19/07/ 1997)
	Regulation on the establishment and operation of electrical power generation ion facilities with the build-operate model and the regulation of energy sales
Privatization and Transfer of Operating Rights	Law No.4046 on privatization practices (24/ 11/1994)
	Article 33th of the Law No. 5335 (Transfer of operating right of airports) (21/4/2005)
	Article 218/A of Customs Law No.4458 (Transfer of operating right of customs gates)
Concession	Law on Concessions Related to the General Public (10/06/ 1326)

4.4 Challenges to PPPs in Turkey

Turkey is a developing country which is working hard to build and update its economy especially in its infrastructure by making use of various methods. One of these methods is the wide range application of PPP projects. Building on the database of the private contribution in infrastructure that was published by the World Bank in 2011, Turkey and the Russian Federation were considered as the two main places where investment in Europe and the Central Asian countries concentrated [20]. Of the evidence which shows that Turkey is very much concerned about the improvement of all its infrastructure is that the first law which deals with the BOT model in the whole world was initially adopted in Turkey [21]. The main objectives of adopting that law and starting the first BOT project in 1984 were to be part of the international markets, and to push forward more involvement of the private sector in the economy of the country. Despite all these improvements and initiations there will always be challenges and obstacles that have faced Turkey while it has been trying to develop its economy and infrastructure using a good number of PPP models. Some of these challenges and obstacles are the following:

4.4.1 Challenges at the Outset of PPPs in Turkey

The implementation of PPP projects in Turkey was not problem free. Some obstacles were really challenging when Turkey was trying to establish its roots with respect to the use of PPP projects. These included the following:

1. Inadequate Funding by the Government: This was a main problem that had faced countries which use PPP models including Turkey [20]. Turkey dealt with the problem by setting a group of laws and legislations that enable the private sectors to be part of the life cycle of PPP projects. By issuing these legislations, the private sector played a main role in funding and operating such projects to achieve the demand needed for constructing new infrastructures, and rehabilitate existing ones.
2. The Obstacles Occurred while BOT was the Sole Used PPP Model: This challenge was concerned with (a) the refusal of the government to take up the responsibility for offering guarantees concerning country risks. (b) limited legislations. (c) the absence of adequate experience in dealing with BOT projects as packages. (d) extended bureaucracy. (e) unsuccessful tendering and

payment processes which led to weak achievement of BOT projects at the end of 1990s [20, 22]. The governmental solution of this challenge was developing new laws which dealt with updated different models of PPP [20, 22]. These models whose role was to end the investment gap were: TOR, BO, and BLT. After adopting new PPP models, and in order to facilitate the work of various PPP models in an effective way, some amendments or enactments of the laws took place in a way that passed the parliament to eliminate the limitations imposed on PPP projects in Turkey. As has been found in some studies [20, 23], the chronological set concerning the major and active PPP laws is as given in table 5:

Table 5 The chronological order of PPP laws in Turkey [20]

Law number	Year of enactment	Model	Definition
3096	1984	BOT, TOR	Authorization the private entities to generate, transmit, distribute and trade electricity other than the Turkish Electricity Administration
3465	1988	BOT, TOR	Commissioning of entities for access controlled motorways (highways) construction, maintenance and operation other than the General Directorate of Highways
3996	1994	BOT	Commissioning of certain investments and services for BOT implementations
4046	1994	TOR	Arrangements for the implementation of privatization and amending certain laws and decrees with the force of law
4283	1997	BO	Construction and operation of electricity generation plants and regulation of energy sales in the BO model
5335	2005	TOR	Transfer of operation rights of airports and passenger terminals other than General Directorate of State Airports Authority
5396	2005	BLT	Regulation on the construction of health facilities on a lease-and-build basis and the restoration of the services and areas in facilities other than medical service areas on the restore-and-operate basis

4.4.2 Inadequacy of the Current PPP Legislations in Turkey

As noted by specific studies, the fact is that with all the success that PPP has had during its 3 decades, there are still certain challenges which face PPPs in Turkey [20, 24]. These are arrayed as follows:

1. Sufficient documents required for the completion of the project may not be available on time.
2. The technical and economic aspects might not be correctly evaluated.
3. The status of the public sector's ownership may be weak because their role will not be effectively outstanding since the private sector is the party which funds and operates the project.
4. There can be a situation where the public sector officials are not that experienced in the process of procuring PPPs.

4.4.3 Solutions to deal with the existing and future challenges

As has been discussed in the two previous sections, the implementation of PPP projects has faced, and will still be facing challenges. As things appear, challenges are likely to be encountered because of the touch which exists between the PPP laws and the legislation. The Turkish government and those who are involved in PPP projects in one way or another, have tried to regulate the situation of such projects in effective ways to render successful and bankable projects.

By tracing what has been illustrated concerning the implementation of PPP projects in Turkey up to this section of the present work, it is to be realized that a set of laws direct various PPP models in the country. Four main references [20, 25, 26, 27] will be considered simultaneously to clarify and discuss this matter in this section.

It is the opinion of experts to provide the following solutions: (a) a general PPP-facilitating law stating rules and steps from the development stage of the project up to the tendering and contract negotiation stage, and (b) a consistent institutionalized structure supervising the complete process in a uniform way. In order to apply the experts' opinion, the European experience (European Agency for Health and Consumers 2011) has been viewed to ensure that a general PPP legal framework could function in a better way than a set of PPP particular legislations, minimally in the healthcare field [25, 27]. The application of such PPP legal framework went through the following steps:

1. <u>The Adaption of the United Kingdom's Private Finance Initiative (PFI) Model</u>
   For the purpose of improving bankability in the Turkish market, the Turkish PPP program in the area of healthcare decided to modify the PFI model, particularly that of the United Kingdom (UNECE 2012; European Bank for

Reconstruction and Development 2015) [25, 27]. To complete this target, a suggested long-term compound PPP contract model for uncertain future was prepared and subjected to a comprehensive assessment by the concerned parties. Unfortunately, this suggestion was not followed, because the concerned parties preferred accelerating the process of approving the PPP issue. In other words, that became a top priority after the statement by the president, that the application of PPPs especially in hospitals and the healthcare sector was of supreme importance for Turkey [25].

2. The Supplementary Article

   After the government had given great importance and support to the PPP involvement, this motivated the Minister of Health to start the PPP process unimpeded [25]. To smooth the way for that, a Supplementary Article, No. 3359, was added to the healthcare services law by the Turkish Parliament in 2005, which initiated the BLT model in the healthcare sector also [25]. This Supplementary article enabled the Council of Ministers to identify all matters related to the law. However, while work according to the Supplementary Article was in progress, especially in the procurement process of the PPP projects, the Council of State which is the final director (similar to a high court) of the matters concerned with executive power, decided and started a debate with respect to the constitutionality of the Supplementary Article in July 2012 [25]. In this regard, the State Council authorized the Constitutional Court to deal with this debate. In the end, the government decided not to wait for the court decision, but rather start a comprehensive PPP law in order to avoid the criticism against the Supplemental Article and to continue the work of the current projects instead of waiting for the court decision. It should be mentioned that the final decision of the government matches with the opinion of the experts who had suggested that there should be a comprehensive PPP law from the beginning of the initiating PPP projects in the healthcare sector [25].

3. The New Law

   In 2013, a joint work by the Ministry of Health in cooperation with a public-private model came up with a New Law, No. 6428, which was authorized in

February 2013 [25]. This new law appeared clearly in projects concerning the healthcare sector: facility construction, renovating the existing facilities, and the service procurement. This New Law was superior to the old laws since 1) it covers extra and new matters not dealt with in the supplementary law, 2) old contracts required to be run by the present technical specifications formed in conformity with the previous set of regulations [25].

CHAPTER 5

PPPs IN THE U.K. AND THE U.S.

This chapter will try to give a comprehensive presentation on the situation of Public Private Partnership PPP in both the United Kingdom (UK), and the United States of America (USA).

PPPs in the U.K.

The United Kingdom is one of the leading developed countries in the world [20, 27]. Even though it has a highly developed economy, it has chosen to be involved in PPP projects for the purpose of having the private sector invest in the infrastructure of the United Kingdom. It is to be noted that PPP has functioned in the U.K. with various names other than PPP, such as PFI and PF2. In this chapter, some major matters related to the situation of PPPs in the U.K. will be illustrated. These matters are:

a. A brief history of PPP in the U.K.
b. Alternative PPP models
c. The last discussion with respect to the PPPs' situation in the U.K.
d. An overview on PFI and PF2 financial situation in the U.K.
e. Examples of PPP projects in the United Kingdom

It is to be mentioned here that despite all efforts by the government, the final situation of PPPs in the U.K. is not settled yet. The major reason of that is the Brexit, where commercial rules with EU are still complicated. This is not to forget also that COVID-19 is a major concern in this delay.

5.1 A Brief History of PPP in the United Kingdom

The use of public private partnerships (PPPs) in the United Kingdom as infrastructure delivery frameworks has not followed one designation only (model). All of those models' names have followed the general principle which states that PPP is a joint work between the public and private sectors with risk shared between them [11]. The following stages show the gradual adoption of these names:

5.1.1 Stage 1: The Private Finance Initiative (PFI)

PFI could be considered as a continuity of the privatization which prevailed in the U.K. during the rule of Margaret Thatcher. Despite the fact that the use of the privatization was to facilitate new capital investments, and reduce government liabilities in various sectors, some of these sectors specifically: prisons, the Ministry of Defense estate, schools, and hospitals were not allowed to be fully privatized for practical and political reasons. As a result, PFI was adopted to fulfil the desired aims of using such projects and to avoid having some sectors from being fully-privatized [11].

The PFI model was adopted between 1992 and 2012 [11, 12, 13]. This model was normally either design-build-operate-transfer or design-build-finance-maintain PPP type. The length of the period of most contracts that followed this PFI ranged from 25 to 30 years, but the fewest were either less than 20 years or more than 40 years [11, 28].

Initially and up to 1995, only one project a year was executed as a PFI project. That gives us an idea about its slow nature in the initial stage. But, after the success of the Labor Party with Tony Blair being the prime minister in 1997, and with the procurement contracts standardization, the number of PFI projects soared [11]; it got to the summit of having 68 projects in 2004 (having no less than 45 projects yearly, covering the period between 1999 and 2007). However, this progress was not to last because of the two following reasons:

1. The whole world experienced a global financial crisis in 2008
2. The rise in the price of long-term debts, as a result of imposing harsh capital adequacy rules

Consequently, the number and the finance value of PFI projects sharply deteriorated, and none of these projects was able to reach its financial close until 2016 [11].

5.1.2 Stage 2: The Second Generation of the Private Finance (PF2)

Until 2012, the PFI was the favored model of PPP by the government, but in this year, the government modified this PFI and replaced it by PF2. Since the application of PF2 in 2012, and as an example of the PFI projects, an investment of more than £1 billion has been spent on 46 schools and 1 hospital [11]. None of these projects reached its

financial close until the year 2016, when the Midlands Metropolitan Hospital project got to its financial close while the work of PF2 was underway.

Table 6 explains the differences between PFI and PF2.

Table 6 Content changes applied on PFI to create PF2 [11]

Change #	The content change
1	The public sector taking a minority equity interest in PFI vehicles alongside the private sector (typically a 10 per cent interest).
2	The introduction of funding competitions for part of the private sector equity interest in PFI vehicles.
3	Accelerating delivery by reducing the length of the tendering process.
4	The removal of soft facilities management services (e.g., cleaning) from the scope of services, and flexibility on the potential exclusion of minor maintenance services.
5	Open-book approach and gain share mechanism for surplus life-cycle funding.
6	Greater transparency, including in relation to private sector equity return.
7	Risk reallocation, with the public sector taking additional risk allocation, including the risk of additional capital expenditure arising from an unforeseeable general change in law, utilities costs, site contamination and insurance.

As stated earlier, during the PF2 application, only one project was able to reach financial close in 2016. As a result, a new series of projects were supposed to be developed and be appropriate for delivery through PF2, as stated in the 2016 Autumn Statement. This series of projects contained the following sectors: primary care, education, defense, and roads. This series was supposed to be announced in 2017, but two reasons made it questionable whether this series would appear or not: one reason was that the government tightened budgets related to its departments, and secondly there was the increase in political antipathy [11].

Despite the fact that some projects of this series were declared, the chancellor announced that PF2 will no more be adopted in executing governmental projects. In other words, the chancellor cancelled the work in PF2 in the discussion concerning budget 2018 [11, 19].

5.1.3 Some major reasons of PFI/PF2 collapse

There were a group of major factors which led to the gradual collapse of PFI/PF2 [11]. These factors are given as follows:

1. The event of the global financial crisis and its consequences: this factor affected the projects in a way not to reach financial closes, and increased the political antipathy towards PFI/PF2.
2. The strict budget spending that was imposed by the government concerning projects related to its departments.
3. The political antipathy and the growing negative sentiment towards PFI/PF2: this factor appeared due to more than one reason:
    i. The global financial crisis as illustrated above in item no. 1.
    ii. The reappearance of the Labor Party (the Left-Wing Party in the U.K.).
    iii. The criticism directed against the private sector because of its earning excessive returns at the expense of the public sector. This was the main issue being discussed and publicized in the media.
    iv. The bankruptcy of the second-largest construction company in the U.K., whose contractor was known as a major PFI one (Carillion plc), happened in January 2018.
4. At the time when Carillion collapsed, some projects were late with respect to their determined schedules and were overbudget. An example here is the Aberdeen Bypass project which was transferred into a non-profit distributing project (NPD).
5. Significant contractors were progressively pulling out of considerable projects with fixed-price contracts, because of the amount of risk that a contractor may face after the bad status which PFI/PF2 had reached.
6. After the failure of Carillion, another major contractor (unknown name) confronted financial problems. Until the time of publishing the reference, there had been many questions concerning the future financial situation of a large group of these major and influential PFI/PF2 projects contractors.

5.2 Alternative PPP models in the U.K.

There are some areas in the U.K. which are: Scotland, Wales, and Northern Ireland that have the option of using substitute PPP models, the same as the transport for London. The use of such models is as follows [11]:

A. The NPD (Non-Profit Distributing Project) Model: This model has been used by the governments of Scotland and Wales. According to this model, shared bearing equity and covered return for the participants of the private sector are not available. In other words, no excess return goes to the private sector, but it does go to the public sector. The attractiveness of using this NPD model has been reduced because of the reclassification depending on the changes of the European rules. As a result of these changes, this model has been classified as an “on balance sheet” one, which in turn increases the governmental debts despite the fact that the public sector, or government is the party which gains excess profits [11].
B. The MIM (Mutual Investment Model): This model has been used by the Welsh government as provided in various studies. In this model, both the government and the private sector have mutual benefit: the task of the private sector is to build and maintain an asset, while that of the government is to pay a fee for the private sector as a way to make up for constructing, maintaining, and financing the asset. When an MIM contract is over, the ownership of the asset is handed back to the government [11].

Now, with the cancellation of PFI, PF2, and the appearance of NPD, and MIM, a question arises "Are these the final forms of PPP in the U.K.?" The answer is NO! These two new models NPD, and MIM may not be able to cover some huge and long-term infrastructure projects. As a result of that, the United Kingdom has to find other alternatives. There are newly discussed ways for facilitating the operation of forming other PPP models in the U.K., but some of these may not be appropriate and may cause economic troubles for the government. The suggested ones are the following [11]:

1) Increasing the Government's Borrowing Percentage by Issuing Gilts: This way may not be beneficial for two reasons: one is that the value

of gilt is cheap as compared with earlier periods. The other reason is that the U.K. may go beyond its allowed deficit-to-GDP ratio, which is 3%, and its debt-to-GDP ratio, which is 60%, at the same time as the U.K. is suffering from increasing debts. If this is the situation, then the U.K. government would be reluctant to fund large-scale infrastructure projects. So, this route which completely depends on a governmental borrowing is more likely to fail [11].

2) Joint Funding Opportunity by the U.K. Government and the Private Sector: Whereas the previous route depended mainly on governmental borrowing, this route deals with a specified percentage of governmental borrowing with funding contribution from the private sector. It is to be mentioned that the government intends to devote 1% to 1.2% of its GDP for the funding of infrastructure projects between 2020 and 2050. An opportunity of having a private sector role in those infrastructure projects is possible. For example, an investment infrastructure program has been announced by the U.K. Treasury. This project will be funded with £600 billion up to 2028, half of which (£300 billion) will be offered by the private sector over a 10- year period [11]. With this promising plan, there has been a suggestion that governmental support for the private sector investment should continue through: differing contracts, the U.K. guarantees plan, and the RAB (regulated asset base) model [11].
3) Increasing the Governmental Usage of Direct Procurement within the Wider Infrastructure Framework: This approach is presently used in the provisions concerning regulated utility like the Thames Tideway Tunnel [11].

After having explained the suggested routes for keeping the execution of PPPs in the U.K., it is not at all possible to foretell how the role of the private financing will develop in the U.K.'s infrastructure provisions. Therefore, a revision of the existing situation needs to be

re-evaluated, new models have to be offered, and risks have to be re-allocated.

5.3 The Last Discussion with respect to the PPPs' Status in the U.K.

It looks like the final situation of adopting new PPP models in the U.K. is still uncertain. The main reason of the delay in adopting new PPP models is attributed to the U.K. Brexit event that was agreed upon on the 31st of January 2020. The direct cause of this Brexit was the success of the Conservative Party in the elections of 2019. The Brexit in its beginnings appeared as an "in principle" withdrawal agreement, required to be ratified by both the EU and the U.K., at the same time, it was agreed upon that there could be a transitional period that enables the parties to form a Post-Brexit trading model. It was not clear whether this transitional period will end on 31 December 2020 or to be extended [11].

As a result of this uncertain situation, there still must be some basic principles to be maintained whenever a model is to be adopted. The following items show these basic principles [11]:

1. The parties intended to keep all the EU-derived procurement law, once the Brexit takes place, in the United Kingdom. This law encourages the cross-border trade, and emphasizes the point that the U.K. is not only an "open for business" country, but also treats non-UK originally-based companies in the same way as UK ones. No matter how things may go, the United Kingdom must adopt a procurement law that permits its annexation to the World Trade Organization Government Procurement Agreement.
2. The uncertainty of the relationship between the EU and the U.K. has negatively affected infrastructure incoming investment from outside investors. As a result of that, the U.K. may re-consider a wider interpretation of the procurement law, which could encourage foreign investment and increase the competitiveness of the United Kingdom in trade and infrastructure projects.
3. The Infrastructure Finance Review was locked for discussion responses in June 2019, and it was expected from the government to

announce its results on March 2020, but it has not yet. However, for this announcement, there has to be concentration on the side of the government to continue constant commitment for having schemes supporting the funding of infrastructure projects. Examples of these schemes are:

1) The U.K. Guarantee Plan: This plan is supposed to guarantee the repayment of debts on nationally vital infrastructure projects [11].
2) RAB Models: These regulated-asset-based models are to be used for privatized businesses.
3) Differing Contracts: These contracts deal with the funding process for low-carbon-energy emission.
4) Co-investment Funds: These funds are to be offered to the infrastructure of new technologies like digital infrastructure.

4. According to the Public Works Loan Board (PWLB), loans are available at the local level for investing on infrastructure projects, but the public authority plans for restricting this investment on small infrastructure projects. If there will be large-scale projects such as: prisons, schools, hospitals, etc, there must be funding from private sector with the need for new model/models to accommodate these types of projects.
5. It is suggested that the United Kingdom should have a new infrastructure finance institution, probably parallel to the structure of the public infrastructure finance in the following countries:
    i. Canada: as found in Canada Infrastructure Bank
    ii. Japan: as found in the Development Bank of Japan
    iii. Germany: as found in Kreditanstalt Für Wiederaufbau (KFW) banking group.
6. Increasing the number of incorporating projects between the infrastructure finance institutions with another private party, such as the incorporation experience between the infrastructure finance

institution and the Green Investment Bank, to increase the amount of private sector investment.

Due to the uncertainty which was caused by the Brexit, matters are not settled in the United Kingdom (depending on the references that have been used in this thesis). As a general overview, matters are in a state of flux. New risk allocations, clear PPP legislation, and clear PPP models' names have to be provided in order to form an obvious vision about the PPP situation in the United Kingdom.

5.4 An Overview on PFI and PF2 Financial Situation in the U.K.

The implementation of the first two PPP models in the U.K. was considerably large to some extent. It has also covered more than one sector, such as: schools, roads, hospitals, prisons, etc. [13]. A summary of the total PPP projects investment with respect to years could be given as follows:

a. As of November 2010, the United Kingdom announced that it owed PFI a total amount of £267 billion [29].
b. Between the years 2012-2018, the PF2 had been chosen 6 times for implementing PPP projects. The total amount of money incurred by PF2 was £900 million [13], and as explained mentioned previously, in 2018, the Chancellor announced that the PF2 will no longer be adopted for PPPs in the United Kingdom.

5.5 Examples of PPP projects in the U.K.

In this section, data which proves the huge magnitude of PPP projects in the U.K. will be explained:

1. Tables 7, 8, and 9 show the main English hospitals, executed as PFI contract projects, with capital going beyond £50 million:

Table 7 The major PFI English hospitals with a capital exceeding £50 million [30]

Financial Close	Project Name	Capital Cost	Authority	Sector	References
1997	Darent Valley Hospital, Dartford	£94m	Dartford and Gravesham NHS Trust	Health	[31]
1998	Norfolk and Norwich University Hospital	£229m	Norfolk and Norwich University Hospitals NHS Foundation Trust	Health	[32]
1999	Great Western Hospital, Swindon	£148m	Great Western Hospitals NHS Foundation Trust	Health	[33]
2000	University College Hospital, London	£422m	University College London Hospitals NHS Foundation Trust	Health	[34]
2001	Russells Hall Hospital, Dudley	£137m	Dudley Group NHS Foundation Trust	Health	[35]

Table 8 The major PFI English hospitals with a capital exceeding £50 million [30]

Financial Close	Project Name	Capital Cost	Authority	Sector	References
2002	University Hospital Conventry	£440m	University Hospitals Conventry and Warwickshire NHS Trust	Health	[36]
2003	Royal Derby Hospital	£333m	Derby Teaching Hospitals NHS Foundation Trust	Health	[37]
2004	Royal Manchester Children's Hospital	£500m	Central Manchester University Hospitals NHS Foundation Trust	Health	[38]
2005	King's Mill Hospital, Ashfield	£300m	Sherwood Forest Hospitals NHS Foundation Trust	Health	[39]
2006	Royal London Hospital	£650m	Barts Health NHS Trust	Health	[40]

Table 9 The major PFI English hospitals with a capital exceeding £50 million [30]

Financial Close	Project Name	Capital Cost	Authority	Sector	References
2007	Royal Stoke University Hospital	£370m	University Hospitals of North Midlands NHS Trust	Health	[41]
2008	Tunbridge Wells Hospital	£230m	Maidstone and Tunbridge Wells NHS Trust	Health	[42]
2010	Southmead Hospital, Bristol	£430m	North Bristol NHS Trust	Health	[43]
2013	Royal Liverpool University Hospital	£429m	Royal Liverpool and Broadgreen University Hospitals NHS Trust	Health	[44]
2015	Royal Papworth Hospital, Cambridgeshire	£165m	Royal Papworth Hospital NHS Foundation Trust	Health	[45]
2016	Midland Metropolitan Hospital, smethwick	£297m	Sandwell and Well Birmingham Hospitals NHS Trust	Health	[46]

2. Table 10 shows the major PFI Scottish hospitals, every project with respect to its year:

Table 10 major PFI Scottish hospitals with a capital exceeding £50 million [30]

Financial Close	Project Name	Capital Cost	Authority	Sector	References
1998	Royal Infirmary of Edinburgh	£180m	NHS Lothian	Health	[47]
1998	University Hospital Wishaw, North Lanarkshire	£100m	NHS Lanarkshire	Health	[48]
1998	University Hospital Hairmyres, South Lanarkshire	£68m	NHS Lanarkshire	Health	[49]
2006	Stobhill Hospital, Glasgow	£100m	NHS Greater Glasgow and Clyde	Health	[50]
2007	Forth Valley Royal Hospital, Falkirk	£300m	NHS Forth Valley	Health	[51]
2009	Victoria Hospital, Kirkcaldy	£170m	NHS Fire	Health	[52]

3. Table 11 indicates some main PFI projects in sectors other than Health:

Table 11 Major PFI projects in other sectors [30]

Financial Close	Project Name	Capital Cost	Authority	Sector	References
1998	National Physical Laboratory, Teddington	£96m	Department of Trade & Industry	Central Government	[53]
2000	Ministry of Defence Main Building, London	£531m	Ministry of Defence	Central Government	[54]
2001	The STEPS Contract	£370m	Inland Revenue	Central Government	[55, 56]
2003	Skynet 5	£1.4bn	Ministry of Defence	Defence	[57]
2004	Colchester Garrison	£540m	British Army	Defence	[58, 59]
2006	Project Allenby Connaught	£1.6bn	British Army	Defence	[60]
2008	Future Strategic Tanker Aircraft	£2.7bn	Royal Air Force	Defence	[61]
2012	Streets Ahead, Sheffield	£369m	Sheffield City Council	Local Government, Highway Maintenance	[62]

5.6 PPP in the United States of America (U.S.): An Overview

It is to be particularly stated that the application of the new PPP form goes back to the U.S., which, in turn, initiated the Power Purchase Agreements in the 1980s that put up a binary compensation approach: one is the available potential payment, and the other is the actual utilization payment [63]. Incidentally, it is customary to designate PPP as P3, or Triple Ps in the United States [64].

The United States lacks a general PPP definition or legislation which could be adopted by all states. In other words, states differ with respect to: the range of transactions which the state may utilize to procure from, or partner with, and the principles of infrastructure delivery and operation [65].

In the history of the U.S., the sector which has mostly benefited from PPP projects is transportation. PPPs are also widely implemented in projects concerning other sectors such as: water, desalination, wastewater, and social infrastructure projects. Up to 2017, 37 American states had issued P3-enabling legislation [66].

5.7 P3 Legislations in the U.S.

Generally speaking, states follow more than one route in order to apply PPP legislations/laws [65]. These ways/routes could be one of the following:

1. 37 states have applied specific PPP legislation applicable to them only.
2. Others have depended on legislation relevant to their procurement authorization, and general law.
3. In some cases, the P3 permitting legislation is restricted to a certain type of infrastructure projects, example: transportation projects in some states. In other states, the PPP legislation is applicable to all types of infrastructure projects (no restrictions are imposed).
4. As it is known, a P3 project is a partnership between public and private parties. Due to that, not only does the lack of a general P3 executing, operating, delivery, etc. legislations exist, but also types of the public infrastructure that could be executed as a P3 project differ from one state to another. Accordingly, if a public infrastructure project is to be enacted as a P3 one in a certain state, it should be guaranteed that such a state allows this public infrastructure type to be executed as a P3 project.

5.8 Some Set Backs of PPPs in the United States

Despite the fact that the United States is a leading country economically, and population wise; besides it has had so many successful PPP projects. In the past years, however, it had faced a number of problems related to some P3 projects as illustrated below [65]:

1. In August 2019, Denver International Airport declared the end of its P3 contract with Great Hall Partners (the reason is not mentioned), and the completion of the project has been transferred to other contractors with a different delivery form.

2. In December 2019, the Mayor of St. Louis cancelled her backing of the St. Louis Lambert Airport project which St. Louis had waited for, for so long, that meant freezing the project's procurement process [65]. This project was supposed to employ FAA's (Federal Aviation Administration) Airport

Investment Partnership Program. This program had been utilized successfully only 3 times in the past, although it has been available in books for more than 20 years.

5.9 A General View of P3 models in the U.S.

As has already been pointed out in the overview, the United States' P3 legislation differs from one state to another, which means that there is no standard P3 legislation for all states. However, that does not prevent having a general view of some P3 model types used in the U.S. for the execution of P3 projects. As presented in the "Development Finance Conference NYC 2014", P3 delivery models, risk allocation, contractual structure, payment mechanisms, and the financial structures can be viewed briefly in the following figure [67]:

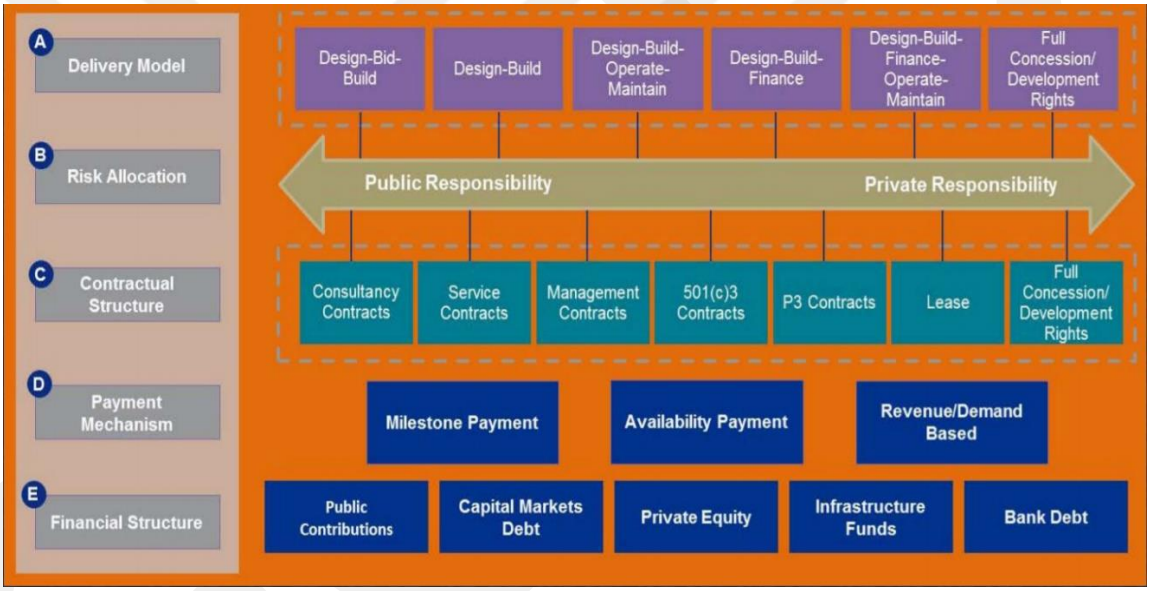

Figure 21 Flexibility of P3 delivery models and structures [67]

5.10 How Does the U.S. Benefit from P3 Projects?

If a project is determined to be executed as a P3 one, this will be of a tremendous advantage for the country and the investors in various ways. The following parameters show these advantages [68, 69]:

1. **The cost**: The cost of a successful P3 project is 20% lower than a traditional design-bid-build (DBB) one.

2. **The speed**: As soon as P3 contracts end, the delivery of the project will often be faster than it is in the traditional governmental procurement. This is due to the fact that the private sector pays harsh penalties if they do not meet the scheduled dead line.
3. **The risk sharing**: When an infrastructure project is being built and operated totally by the public sector, and its costs go beyond the estimated amount; with having lower than the expected revenue, then taxpayers are obliged to bear these risks. But, if the project is a P3 one, those risks will be assigned to the private sector, partially or as a whole.
4. **The infrastructure maintenance**: Usually, there is no specification in government budgets for matters concerning infrastructure maintenance. However, in the well-structured P3 contracts, the situation is different: the private sector cares to meet the required quality and specifications which are agreed upon in the contract. This makes it possible to avoid paying penalties, or having a bad reputation. As a result, the private sector usually hires specialized teams to do the infrastructure maintenance.

Figure 22 shows the differences between the traditional and P3 delivery methods in the U.S. [67]:

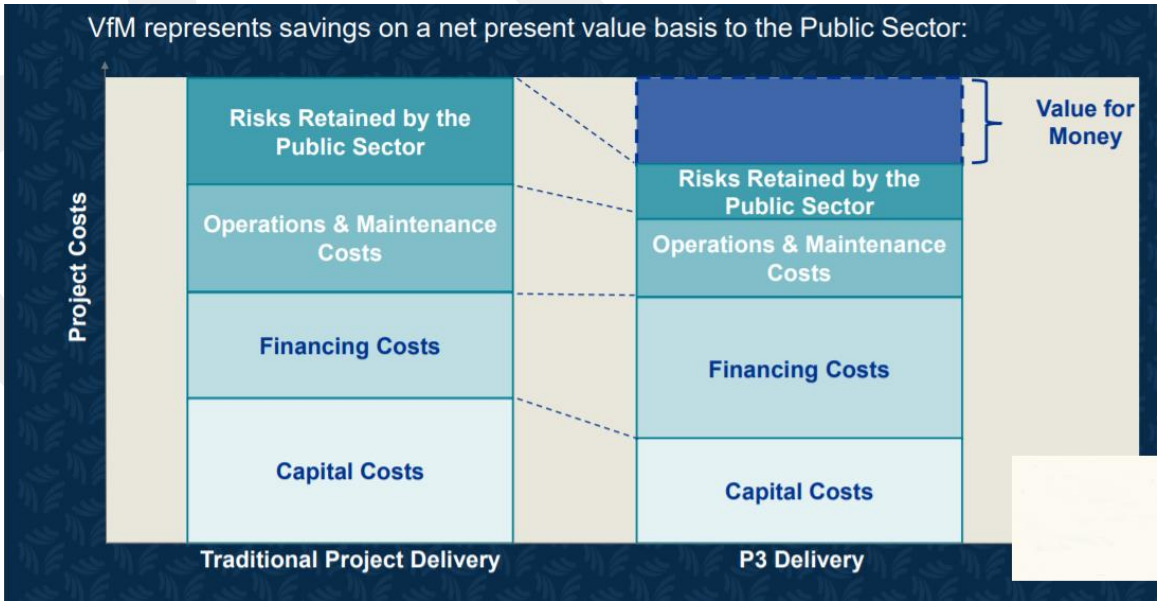

Figure 22 A comparison between Traditional and P3 delivery methods [67]

5.11 A General Financial View with P3 Examples in the U.S. (Up to 2020)

It's regrettable that the political situation in the U.S. has negatively affected the P3 market. This is evidenced by the fact that many projects have been either cancelled or put off, examples are: the Houston Justice Complex, the US Route 460 Corridor Improvements, and Philadelphia's Southport Marine Terminal Complex. Additionally, the PPP market in the U.S. has not yet been developed enough to reach a stage in which the procurement process is adequately institutionalized to be immunized against political intervention [65].

Despite what has been said, the new federal administration has announced a plan of US$1 trillion infrastructure investment (but the reference that has provided this information, does not have enough details to be announced) [65].

Promising News!

The list below includes the latest updates on PPP projects in the United States:

- In the period between 2001 and 2016, the USAID (United States Agency for International Development) had established 1,500 PPPs with more than 3500 private sector agencies [70, 71]. The main aim of these 1,500 PPPs is to supply market-based resolutions for problems encountered in developing countries.
- On Tuesday, Jan 30 2018, in the State of the Union Address, former President Donald Trump asked a combination of federal, state, and local government sources for $1.5 trillion to be spent on infrastructure projects by cooperation with the private sector agencies [72, 73].
- According to the ASCE (American Society of Civil Engineering) report (Report Card on America's Infrastructure), the amount of money that only the U.S. needed for the investment in infrastructure by 2020 was $3.6 trillion [74, 75]. This huge number increases the opportunity for applying P3 infrastructure projects in the United States.

5.11.1 Distribution of Some P3-Exissting and New-Projects in the U.S.

Building on the fact that transportation is the major sector in which most P3 projects have been used, the present section will shed light on surveying these transportation

projects. According to a study updated by the Office of Innovative Program Delivery in October 2019, in a joint work with the Federal Highway Administration [76], the distribution of the existing P3 transportation facilities is to be shown in Figure 23, and the P3-New-Build-Transportation-Facilities are to be shown in Figure 24:

1. The Existing P3 Transportation Facilities: The following map displays the distribution of existing-P3-transportation-facilities amongst states, up to 2019 [77].

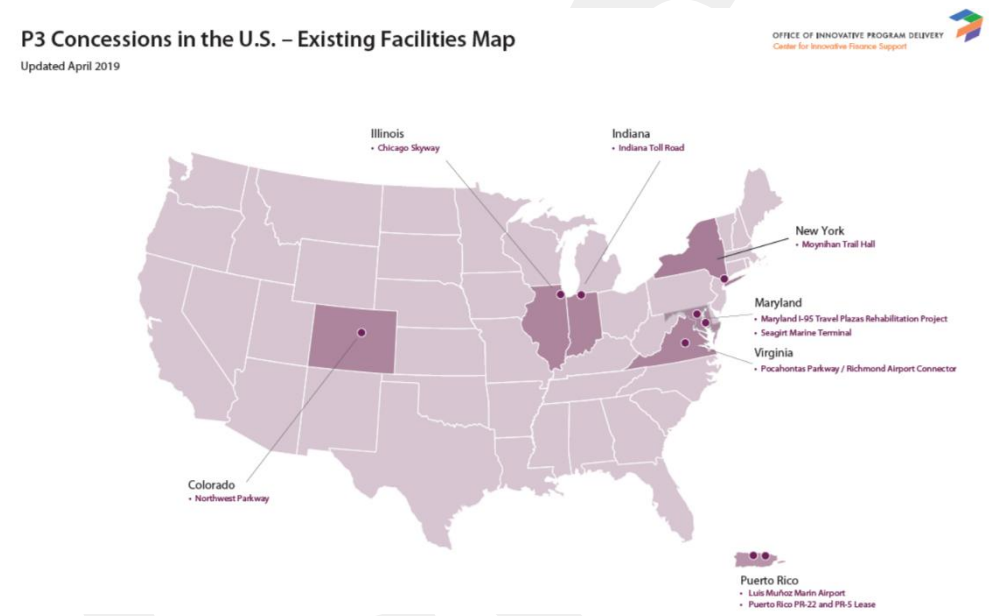

Figure 23 P3 Concessions in the U.S. – Existing Facilities Map [77]

2. The New P3 transportation facilities: the following map displays the distribution of new P3 transportation facilities amongst states, up to 2019 [78].

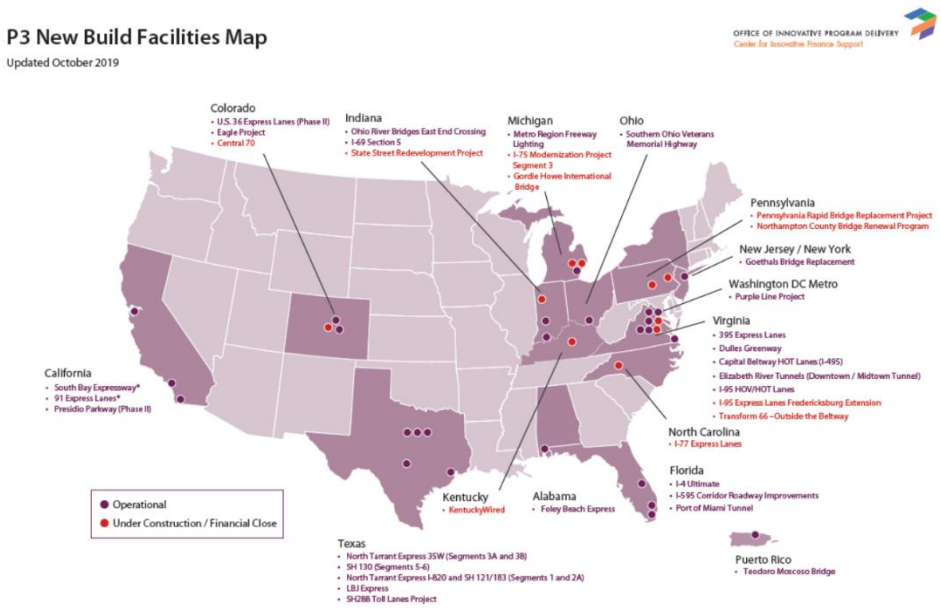

Figure 24 P3 New Build Facilities Map [78]

5.11.2 Examples of P3 Projects in the U.S.

The U.S. has a tremendous number of P3 projects. Here in this section, a group of these projects will be shown as follows:

1. The UC (The University of California) Merced 2020 Project: This project is the largest PPP- social-infrastructure project in the U.S. history. The completion of this project was announced in 2020, and it was officially handed to the University of California exactly on the 1st of June 2020. It is to be mentioned that the size of this P3 project is 1.2-million-gross-square-foot whose cost was $1.3 billion [79].

Figure 25 UC Merced 2020 Project [79]

2. 91 Express Lanes Project: This is a highway project of 10-miles in length, and four-express-toll-lanes, in the Orange County, California. The delivery method of this project was Design-Build-Finance-Operate-Maintain (DBFOM), in the period between 1995 to 2003, with a total purchase cost of $207.5 million [80].

Figure 26 Ninety-one (91) Express Lanes Project [80]

3. Teodoro Mosco Bridge Project: This project is a tolled bridge of 1.4-miles, and of two lanes in each direction, connecting Luis Muñoz Marín International Airport and PR-26 in the north to PR-181 south of the San José Lagoon. The delivery method of this project was Design-Build-Finance-Operate-Maintain Toll Concession whose period was 35 years originally, but later on lengthened to 52 years in 2009. It is of $126.8 million cost in San Juan to Carolina, Puerto Rico area [81].

Figure 27 Teodoro Mosco Bridge Project [81]

4. Elizabeth River Tunnels Project: This project is formed of 5 construction components including 3 facilities in the Hampton Roads region of Virginia. Its delivery method was Design-Build-Finance-Operate-Maintain Toll Concession for 58 years, with a cost of $2.1 billion [82].

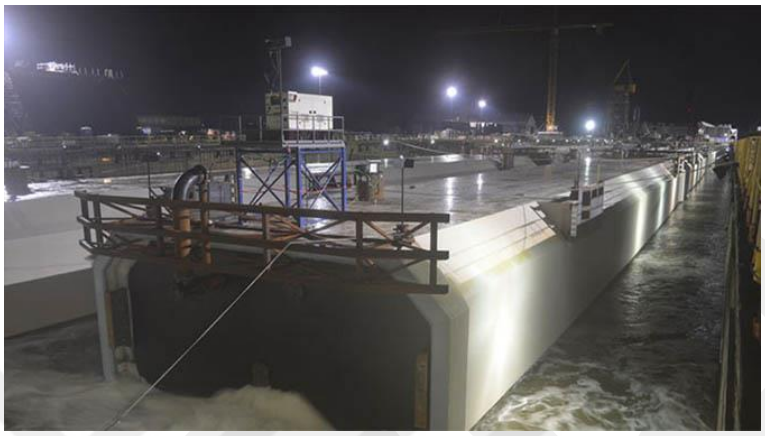

Figure 28 Elizabeth River Tunnels Project [82]

5. Eagle Project: This big project is a part of Fas Tracks initiative, which comprises 122-miles of daily traveler rail and light rail, 18-miles of bus-fast-transit-service, redevelopment of Denver Union Station (DUS), and 21,000 new parking areas with other developments [83].

Figure 29 Eagle Project [83]

6. Gordie Howe International Bridge Project: The delivery method of this project is a Design-Build-Finance-Maintain Availability Payment Concession, with a

duration of 36 years. The total cost of this project was $4.415 billion, including $2.68 billion as the cost of a Design-Build contract. This lies in the area of Windsor, Ontario reaching to Detroit, Michigan [84].

Figure 30 Gordie Howe International Bridge Project [84]

7. Port of Miami Tunnel Project: This project is located in Miami, Florida. It is a Design-Build-Finance-Maintain Availability Payment Concession contract to go for 30 years, with a cost of $1,072.9 million [85].

Figure 31 Port of Miami Tunnel Project [85]

8. Purple Line Project: The characteristics of this project are as follows [86]:
    i) Location: Washington DC Metro Region / Central Maryland.
    ii) Cost: $2,650 million.

iii) Delivery Method: Design-build-finance-operate-maintain. Availability Payment Concession.
iv) Duration: 35 years.

Figure 32 Purple Line Project [86]

In the previous discussion a small number of P3 projects in the U.S. have been demonstrated. It is important to keep in mind that an exhaustive display of these projects is beyond the capacity of this work. This is due to the fact that the number of PPP projects is tremendous, considering the widespread nature of these projects over a large country consisting of 50 states.

CHAPTER 6

PPPs IN CHINA AND INDONESIA

When the word "China" is mentioned, a whole continent by itself is visualized; the country is about to be number one world-wise with respect to its population and capacities! Therefore, it is a fertile land for investment in infrastructure projects especially those which adopt the PPP delivery systems.

Indonesia is another important country which has various characteristics expected to make it an important country with respect to the implementation of PPP projects. These contain oil, natural gas, forests, and metals.

In this chapter, the overviews, the stages, the current situation, the problems, and the final situation of PPPs in China, and Indonesia are to be illustrated.

6.1 PPPs' Overview in China

Implementing forms of PPP as delivery methods for mega projects in China requires a partnership between the government and the private capital. Whether the project's area belongs to a county or a higher-level government, it is the area's government which is responsible for implementing the PPP project in their territory. The private capital comprises local and national companies functioning as legal authorities. These companies can be one of the following [87,88]:

1. State-owned companies
2. Private companies
3. Two-sided companies, and other types of companies
4. Local government platform companies: these companies have founded an advanced enterprise system and have been acquainted with the market-oriented practices, in addition to being responsible for the debts of the government which have been assigned to the government budget. Following that, the government declared that no more borrowing will be undertaken by these local government companies in the future, but to consider this money as a private capital.

5. Foreign investors' participation: foreign investment parties are to obey specific policies which are enforced for PPPs in the country.

   The following table summarizes the possible sources of PPPs' private capital in China:

Table 12 Private capital sources in China

No.	The possible private capital source
1	State-owned Companies
2	Private Companies
3	Bi-lateral Companies
4	Local Government Platform Companies
5	Foreign investors' participation

6.2 Public Private Partnership (PPP) Stages in China

The implementation of PPP in China has undergone 3 stages [87, 88]. These stages can be briefly described as follows:

1. The First Stage: This stage started during the 1990s by adopting the Build-Operate-Transfer (BOT) model in the building of power stations, and later on to be followed by toll-road investments [87, 88].
2. The Second Stage: The second stage commences with the landmark issuance of a managerial law by the Ministry of Construction at that time, which was in 2004. This new law admitted the implementation of BOT, transfer-operate-transfer (TOT), build-own-operate (BOO), and other delivery methods in the execution of projects concerned with the field of public utilities, including: roads, gas stations, sewage or garbage treatment plants, and water supply facilities [87, 88].
3. The Third Stage: This stage is considered as the beginning of a huge PPP burst in China. By the end of 2013 and the beginning of 2014 [87, 88, 90], the government began to encourage PPP in more public sides concerning fields of public production and public services. The numerous PPP models were

adopted to include a wider range of sectors where the public services were expected to be fulfilled. This range comprised many sectors such as: transportation, energy, science, forestry, technology, agriculture, medical treatment, public health, education, culture, and others. For example, by 30 October 2019, the Ministry of Finance (MOF)'s PPP assimilated a library of an information platform for a total number of 9299 PPP projects [87, 88]. The following table summarizes each stage in relation to its period:

Table 13 PPP stages in China

Stage No.	Year(s)
1	1990s
2	2004-2013
3	By the end of 2013

6.3 The Current Status of PPPs in China

Presently, China lacks a basic law concerning PPP. But, the framework of the current PPP legislation in the country is composed of relevant laws, regulatory documents, and regulations [87, 88]. In July 2017, the Legislative Affairs Office of the State Council has circulated the PPP regulations as follows:

i. Regulations of infrastructure, and public service fields have been announced in the form of a draft document (draft for comments). Keeping in mind that the period allowed for comments has ended [87, 88].
ii. The full text of the solicited opinion from all departments of the society [87, 88].
iii. Regulations of the State Council Legislative Work Plan of PPPs in 2018 [87, 88].

After closing the allowed period for comments (as already mentioned in item (i)), the concerned authorities were supposed to adopt a modified draft after taking the

comments of the public into consideration. It is essential to remember that when these data were being collected, the modified draft was not formally being announced, but it was already included in the legislative plan [87, 88].

6.4 Problems of PPPs in China and their Rectifications

For every success there will always be some drawbacks, as it was the case with PPPs in China. Some problems encountered the execution of public private partnership projects in that country [87, 88]. List below includes the problems and their suggested solutions:

The problems

- The misuse of PPPs
- The appearance of loans which were illegally guaranteed by false PPPs
- Non-standard problems such as: going beyond the red line of the financial spending

All of the problems mentioned above have brought out invisible risks which in turn have stopped the progress of some PPP projects [87, 88].

- Some local governments took advantage of PPPs as "disguised channels" or "hidden means" to collect debts from: PPPs themselves, the funds which were originally specified for government investment, and the procured services of the government [90].

Suggested Solutions

After the aforementioned problems had been recorded with the realization that they presented major sources of risks, the respective authorities have taken measures to rectify these problems, and to eliminate the risks. They have decided that 2017, and 2018 will be the years of reforming the framework of PPPs and developing their standards in China [90]. The solutions which included the year 2019 also were the following [87, 88]:

1. Two main rectifying procedures related to PPPs in China were carried out by the Ministry of Finance (MOF); the State-Owned Assets Supervision and Administration Commission (SASAC); National Development and Reform

Commission (NDRC); and other institutions. These two procedures were the following:

   i. Issuing a series of standard charters and management needs for PPPs.
   ii. Following up with the processes of implementing and managing PPP projects in a very tight manner.

2. The MOF and NDRC, in 2019, went on an additional plan for rectifying and systemizing PPP projects in China.
3. In 2019, the Chinese Supreme Court considered PPP agreements as governmental agreements, and that was the most remarkable concern in that year.
4. The MOF announced their implementing opinions concerning encouraging the controlled development of PPP (CAIJIN [2019] No.10) on 7 March 2019. The main purpose of such an announcement was to increase the regulations respecting the implementation of the Public Private Partnership in China.
5. The NDRC declared their publication which concentrates on tightening the management on the areas related to investment and construction of PPP projects (FAGAITOUZIGUI [2019] No.1098), that was on 21 June 2019.
6. As stated in the MOF and NDRC policies in 2017, concerning the implementation of PPP projects in China, if any conflict arises between the successful bidder and the private capital; without having the ability to solve the dispute by negotiation, the two parties can apply for arbitration or register a civil lawsuit.

Finally, it can be considered that the year 2019 was a remarkable year which comprised updated PPP policies of those which had taken place in 2017, and 2018 [87, 88]. However, the PPPs continue to function in China, increasing some years, and decreasing in others, but the certain point is that these projects will continue facing challenges and problems. Due to that, there will be updated policies and legislative systems to deal with them [87, 88].

6.5 PPPs in China up to 2020

It was not easy to find authentic data on the total pricing of PPP investment in China, and the total number of PPP projects there. However, as revealed in some references, the data were the following:

i. There are nearly 14,220 PPP projects which exist in China at the moment, with a total investment of $2.7 trillion [90, 91, 92].

ii. China has about 7,000 PPP projects which are being implemented right now, with a total investment of about 1.28 trillion U.S. dollars [93].

iii. The number of PPP projects that have reached their financial close is 1,872. The following figure shows these projects with respect to their sectors [94]:

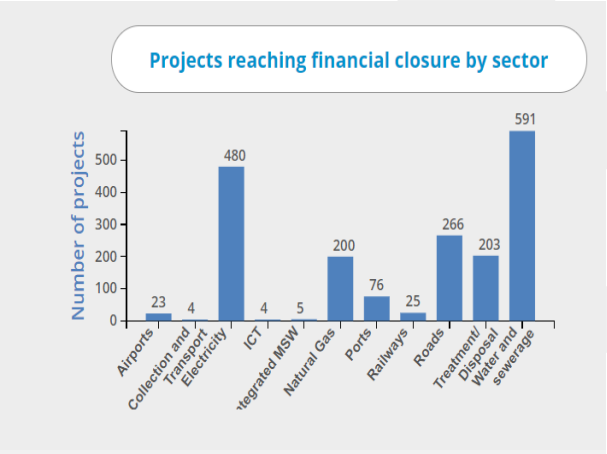

Figure 33 PPP projects that have reached their financial close in China [94]

iv. The number of projects which have been cancelled or have been under distress up to 2020 is 36 projects, that represents 2.1% of the total PPP investment [94].

A general distribution of PPP projects amongst sectors in China can be shown in the following figure [95]:

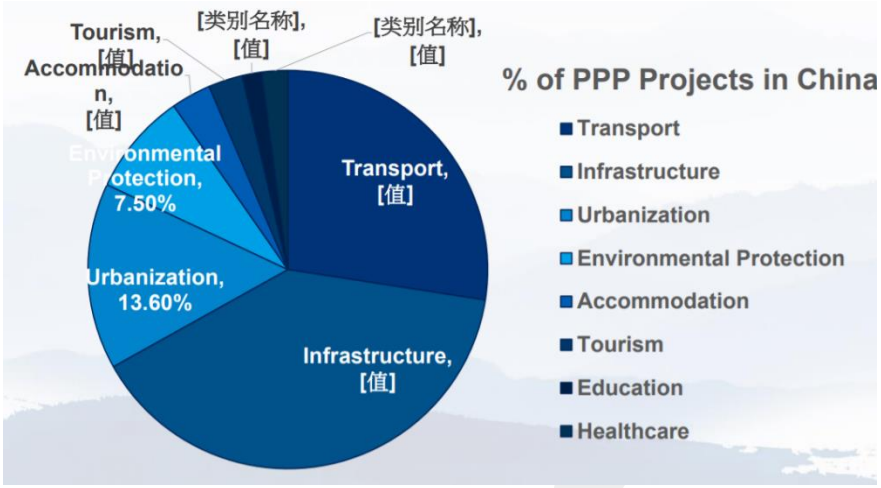

Figure 34 The distribution of PPP projects in China amongst sectors [95]

6.6 Examples of PPPs in China

Since China is a big power country on both population and economic sides, this is naturally to be reflected in the implementation of its infrastructure projects. Of these infrastructure projects, PPP ones are a primary type which is vital to be illustrated. Tables 14, and 15 reflect some of these PPP projects:

Table 14 The largest PPP projects in China [89]

The Largest Projects

The Project Name	Sector	Financial Closure Year	Investment ($US Billion)
Hangzhou – Shaoxing – Taizhou Railway	Railway	2017	$6.882
Laos-China Railway	Railway	2019	$5.700
China United Communications	ICT	2000	$5.653
China Mobile Ltd.	ICT	1997	$3.970
Project for connection between Yibin and Zhaotong Expressway	Roads	2018	$3.804
Zhangzhou Houshi Power Plant	Electricity	1999	$3.200
Yunnan Province National Expressway	Roads	2018	$2.987
Yibin to Yiliang Expressway	Roads	2014	$2.685
Qingdao Metro Line 4	Railway	2016	$2.654
Beijing Subway Line 14 Part B	Railway	2013	$2.419

Table 15 The recent PPP projects in China [89]

Most Recent Projects

The Project Name	Sector	Financial Closure Year	Investment ($US Million)
Fenhe Reservoir Section of National Highway 241 and Provincial Highway Lanma Line		2020	$570
Xi'an domestic waste incineration power plant		2020	$226.8
Linyang Grid-Parity Solar		2020	$170
Xinghe Avenue		2020	$169.5
Sewage treatment integration project in Jintan District		2020	$146
Jining Yanzhou Waste-to-Energy Plant		2020	$116
Chuxiong Yi Autonomous Prefecture, Chuxiong City, Water Sewerage Treatment Plants		2020	$112
Pingxiang City sewage treatment facilities and pipeline network		2020	$99.98
Zhangqiu WtE plant Phase II		2020	$91.40
Shenqiu Waste-to-energy Project		2020	$91.04

6.7 An Overview on Public Private Partnership in Indonesia (up to 2017)

Despite the fact that the private sectors' involvement in the public infrastructure dates back to more than one hundred years ago, Indonesia started using PPP projects, in a formal manner with giving its clear designation, in 2005 only [96]. The first step in implementing such projects in the country was through the initiating of the presidential regulation No. 67 (PR67/2005) in year 2005 by the Government of the Republic of Indonesia [96, 97]. That regulation was meant to deal with the joint infrastructure work between the government of Indonesia and business entities. The already mentioned regulation was substituted by another updated presidential regulation which culminated in regulation No. 38 (PP38/2015), in year 2015 [96, 97].

The PPPs which mediate between the public and private sectors were named KPBU (Kerjasama Pemerintah dan Badan Usaha) in the Indonesian language [96, 97]. The general characteristic of the PPP delivery methods in Indonesia contains: selecting a private entity by the government to finance, and build the asset, with the possibility of operating and maintaining it [96]. The selection of the private entity is either by public tendering or through a direct appointment [96]. It is also taken for granted that the private sector will recover all the expenses it had spent by the end of the KPBU [96]. As mentioned previously, PPP in the Indonesian language is abbreviated as KPBU,

which means “cooperation between government and business entities”. The term “government” includes the following entities [96]:

1. Ministry
2. Governmental body
3. A local government
4. State-owned enterprises
5. Local government owned enterprises

According to PP38/2015, any KPBU (or PPP) project must be performed based on 6 main basics. Those are illustrated in Table 16 [96]:

Table 16 PP38/2015 main principles [96]

Category No.	The content
1	Partnership means KPBU must be conducted in accordance with law and the parties interest;
2	Benefit means KPBU shall provide social and economic benefit for society;
3	Competitive means the procurement of KPBU was conducted through fair, open and transparent selection by taking consideration the fair competition principle.
4	Risk Control and management means that the Provision of Infrastructure cooperation was conducted with valuing risk, managing strategic development and risk mitigation;
5	Effective means the Provision of Infrastructure can enhance development as well as to increase the service management quality and maintenance of the infrastructure; and
6	Efficient means the cooperation of the Provision of Infrastructure may suffice the sustain funding requirement in the Provision of Infrastructure through funding support from private.

6.8 PPP Regulatory Framework (up to 2020)

There is a plan for the period between 2020 and 2024 for improving the infrastructure quality and accelerating its development in Indonesia, after the fact that the Global Competitiveness Report 2019 announced that Indonesia's index of infrastructure quality had dropped from rank 71st to 72nd globally, and had receded in comparison with other ASEAN countries such as: Malaysia, Thailand, and Singapore [97]. In order to successfully implement the previously mentioned plan, the PPP regulatory framework must be transparent. The following items represent the PPP framework regulations in Indonesia [97]:

1. Regulatory Framework for PPP Scheme Guidelines: the following table includes the items of the regulatory framework concerning the PPP (KPBU) scheme guidelines.

Table 17 The regulatory framework for PPP scheme guidelines [97]

Item No.	The content
1	Presidential Regulation Number 38/2015, issued by the government as replacement of Presidential Regulation Number 67/2005 and its revision, establishing the cross-sector regulation framework for implementing PPPs in the provision of infrastructure. The successive amendments have established clearer and more detailed stipulations about the unsolicited proposal, cooperation agreement, return on investment with the payment by the user in the form of tariffs (user charge) or availability payment, government support and guarantee to project among other points.
2	Minister of National Development Planning Regulation Number 4/2015 regarding operational guideline for PPP on infrastructure provision as amended by Minister of National Development Planning Regulation Number 2/2020.
3	Head of National Public Procurement Agency (LKPP) Regulation Number 19/2015 regarding guideline for procurement of business entity on PPP scheme in infrastructure provision.
4	National Public Procurement Agency (LKPP) Regulation Number 29/2018 regarding guideline for procurement of business entity on solicited PPP infrastructure project.

2. Regulatory Framework for Availability Payment Scheme on PPP Projects: The items of this framework are illustrated in Table 18:

Table 18 The regulatory framework for availability payment scheme on PPP projects [97].

Item No.	The content
1	Minister of Finance Regulation Number 260/2016 as an amendment of Minister of Finance Regulation Number 190/2015 regarding Availability Payment on PPP scheme in Infrastructure Provision.
2	Minister of Home Affair Regulation Number 96/2016 regarding Availability Payment using the local budget (APBD) on PPP scheme in Infrastructure Provision.

3. Regulatory Framework for Government Guarantee on PPP Projects: The items of this framework are given in Table 19:

Table 19 The regulatory framework for government guarantee on PPP projects [97]

Item No.	The content
1	Presidential Regulation Number 78/2010 regarding government guarantee on PPP infrastructure project.
2	Minister of Finance Regulation Number 8/2016 as an amendment of Minister of Finance Regulation Number 260/2010 regarding guideline on a government guarantee.
3	Minister of Finance Regulation Number 30/2012 regarding contingency liability fund.

4. Regulatory Framework for Government Support on PPP Projects: The item of this framework is illustrated in Table 20:

Table 20 Regulatory framework for government support on PPP projects [97]

Item No.	The content
1	Minister of Finance Regulation Number 170/2018 as an amendment of Minister of Finance Regulation Number 223/2012 regarding VGF.

5. Other related regulations: Some other regulations are also used to complete the framework of PPPs in Indonesia. These are mentioned in Table 21:

Table 21 Other PPP related regulations [97]

Item No.	The content
1	Government Regulation Number 27/2014 regarding management of national/regional asset
2	Government Regulation Number 28/2018 regarding regional cooperation

6.9 Examples of PPP projects in Indonesia

Indonesia ranks high in several respects worldwide, both in its population and its area, land and sea: it comes as number 14 in the world with respect to its total land area (1,916,862 square kilometers), and as number 7 with respect to the combination area of land and sea. At the same time, it is the fourth most populous country in the world (266.7 million) [97].

Depending on the previous data, Indonesia has the chance of having a huge infrastructure base by taking into consideration the heavy demands resulting from its enormous population [97]. In several respects, the employment of PPP projects was one of the adopted ways to found a well-designed and established infrastructure. Some of these infrastructure projects are to be displayed in tables 22, and 23:

Table 22 Examples of PPP projects in Indonesia [98]

No.	PROJECT NAME	Sector	PROJECT COST (USD)*
1.	Public Transport of Medan City (LRT)	Transportation	950 M
2.	Makassar-Parepare Railway	Transportation	86 M
3.	Hang Nadim Airport Batam	Transportation	163 M
4.	Sam Ratulangi University Hospital	Education	28 M
5.	Krian Sidoarjo Regional Hospital	Health	25 M
6.	Medan City Hospital	Health	68 M
7	Darmais Jakarta Cancer Hospital	Health	165 M
8.	Zainoel Abidin Hospital Aceh	Health	143 M
9.	Pekanbaru Water Supply Project	Water	54 M
10.	West Semarang Water Supply Project	Water	85 M
11.	Sumatera East Line National Road	Road	228 M
12.	Integrated Social Security System	IT	81 M
13.	Public Road Lighting	Energy Conservation	36 M
14.	Correction Center	Prison	

Table 23 Exapmles of PPP projects in Indonesia [98]

No.	NAMA PROYEK	NILAI PROYEK	Sector
1.	Central Java Power Plant	3 B	Power
2.	East Java Water Project	148 M	Water
3	Bandar Lampung Water Project	79 M	Water
3.	Palapa Ring Fiber Optic – West Part	90 M	Telecomunication
4.	Palapa Ring Fiber Optic – Middle Part	97 M	Telecomunication
5.	Palapa Ring Fiber Optic – East Part	361 M	Telecomunication
6.	Batang – Semarang	774 M	Toll Road
7.	Rad Manado – Bitung	359 M	Toll Road
8.	Balikpapan – Samarinda	697 M	Toll Road
9.	Pandaan – Malang	415 M	Toll Road
10.	Serpong—Balaraja	422 M	Toll Road
11.	Jakarta-Cikampek	1,1 M	Toll Road
12.	Krian-Legundi-Bunder-Manyar	859 M	Toll Road
13.	Rad Serang-Panimbang	801 M	Toll Road
14.	Cileunyi Sumedang-Dawuan	578 M	Toll Road
15.	Probolinggo-Banyuwangi	1,5 B	Toll Road
16.	Jakarta-Cikampek South Side	942 M	Toll Road

6.10 Conclusion on the status of PPP in Indonesia

Through a survey of what has been said, Indonesia is one of the good candidates for the implementation of PPP projects in infrastructure. That is due to both its large

population and its large area. One of the plans to invest in infrastructure and to promote the economic status of Indonesia is setting up a plan to be implemented in the period between 2020-2024. In that plan, the total required budget is 6,445 Trillion IDR (or equivalent to $452,371,328 US), only 37% of it can be covered by the Indonesian government, the rest will have to be funded or covered by the private sectors.

To conclude, information in documents concerning Indonesia with respect to PPP projects was not adequate compared with other countries, but it is the hope here that the information provided will depict the right situation of PPPs in Indonesia. A number of 140 projects has been found in the references as the total number of PPP projects in Indonesia [99].

6.11 Discussion of the Results

Depending on the statistics which the present study has offered using various references, the following tables show a simple comparison between the concerned countries:

Country	Total investment (US dollars)	Total number of projects
China	$3.98 trillion	22200
The USA	$3.6 trillion	More than 1500
The UK	$368,6 billion	739
Turkey	$146,078 billion	250
Indonesia	$ 67,274 million	140

Figure 35 The money invested and the number of projects in each country

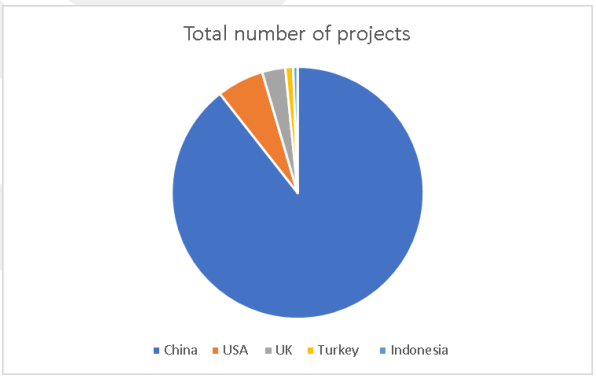

Figure 36 The total number of projects in each country

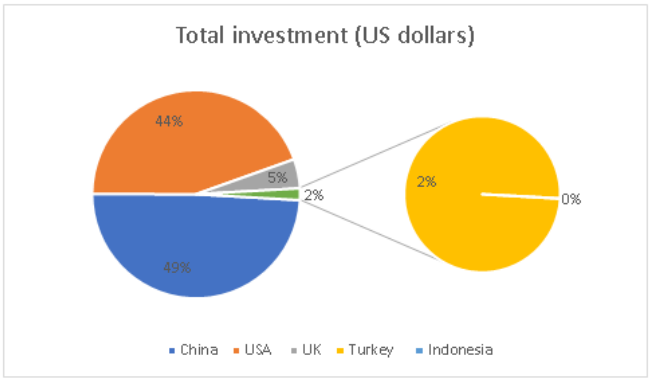

Figure 37 The percentage of invested money per country

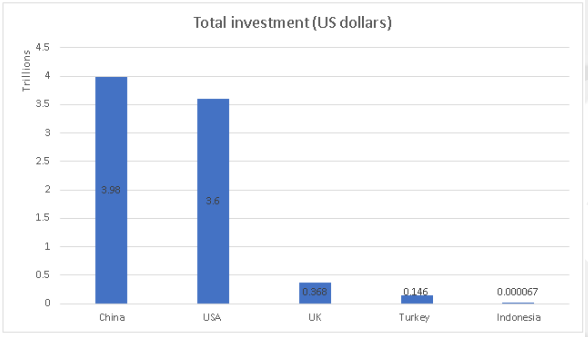

Figure 38 The total invested money per country (in trillions)

The light should be shed on the differences between the PPP models, given earlier on page 11, also repeated now for emphasis in the following figure:

Different Levels of Private sector engagement in PPP contracts

Model	Identify Infrastructure Need	Propose solution	Project design	Project financing	Construction	Operation	Maintenance	Ownership	Concession?
Bid–build	Public sector				Private sector	Public sector			No
Design–bid–build	Public sector		Private sector	Public sector	Private sector	Public sector			No
Design–build	Public sector		Private sector	Public sector	Private sector	Public sector			No
Design–build–finance	Public sector		Private sector			Public sector			No
Design–build–finance–maintain	Public sector		Private sector			Public sector	Private sector	Public sector	No
Design–build–finance–operate	Public sector		Private sector				Public sector		No
Design–build–finance–maintain–operate	Public sector		Private sector					Public sector	No
Build–finance	Public sector			Private sector		Public sector			No
Operation & maintenance contract	Public sector					Private sector		Public sector	No
Build-operate-transfer	Public sector		Private sector					Public sector	Temporary
Build–lease–transfer	Public sector		Private sector			Public sector	Private sector		Temporary
Build–own–operate–transfer	Public sector		Private sector						Temporary
Build–own–operate	Public sector		Private sector						Yes
Market-led proposals	Private sector							Public sector	No

Figure 39 The private sector engagement in PPP contracts [100]

CHAPTER 7

CONCLUSION

Mega projects' spread worldwide these days are the key issues in today's economy. These projects require pools of funding and financing, expressed in millions, billions, and even trillions of dollars (or other currencies). One of the most remarkable of these projects is the PPP set of delivery systems.

Economists have come to realize the merits of such projects which traditional, governmental projects lacked. However, dealing which such projects is not easy to obtain, due to their very nature in their numbers, and delivery systems expected of them.

This thesis has taken the PPP delivery systems as its major concern, although these concerns differ with respect to their sizes and the countries where they are implemented. In this thesis, Turkey, the USA, the UK, China, and Indonesia have been the countries whose PPP projects have been studied with respect to the following items:

i. The overview and nomenclature of PPP
ii. The updated PPP legislation according to countries in which they are established
iii. The nature of the relationship that exists between the public and the private sectors
iv. The setbacks, problems, and challenges of PPPs
v. The total amount of money invested in PPPs
vi. Examples of the implemented PPP projects

Having explored the above given items, a comparison is made among the countries to reveal the PPPs final status:

<u>Turkey</u>

Turkey is a developing country implementing PPP delivery systems in its infrastructure, particularly in mega projects. This outcome is a result of the following observations and facts:

A. Turkey's Gross Domestic Product (GDP) was found to be 5.5% in 2018. With this economic rate, Turkey comes as number 13 amongst the world economies.
B. According to the population statistics of Turkey in 2018, the Turkish population is estimated to increase by 1 million annually to reach 92 million in the year 2028, and 100 million in year 2040. This population growth mirrors the increase in infrastructure needs, and as a result of that, the number of PPP projects in Turkey.
C. Turkey has a strategic location that lies at the crossroads between Europe and Asia, and close to the energy resources and international trade routes. This has been reflected in a remarkable shift in its trade growth from $88 billion in 2002 to $391 billion in 2018. It is important to draw attention to the fact that whenever there is an increase in the trade volume growth of a country, there will be an increase in its projects and investments. In other words, this may raise the number of the PPP projects in which Turkey is a sharing member.
D. The total number of PPP projects up to the year 2020 was 250, with a total amount of money invested coming up to $146,078 billion.

It is important to note that the preffered PPP delivery systems in Turkey include BO, BOT, BLT, and TOR.

<u>The United Kingdom</u>

It is well known that the United Kingdom is one of the leading developed countries in the world. This is reflected in its history of having a huge economy, and infrastructure projects, including the projects which follow PPP delivery systems. The status of PPP in the UK was different: earlier, the public private partnership used to be designated as PFI from the year 1992 to the year 2012, after that it has been renamed as PF2 from the years 2012 to 2018.

After terminating the work according to the PF2 in 2018 for already mentioned reasons in this study, it was necessary to find alternative PPP models. Scotland, Wales,

Northern Ireland, and the transport for London initiated the use of alternative PPP as presented below:

A. The NPD Model: Some of the governments used the NPD model initially, but it turned out later that this model limits the excess profits only to the governments, and unjustly makes the private sector somewhat a loser party in this respect. The attractiveness of using this NPD model has been reduced because of the reclassification depending on the changes of the European rules. As a result of these changes, this model has been classified as an “on balance sheet” one, which in turn increases the governmental debts despite the fact that the public sector, or government is the party which gains excess profits.
B. The MIM Model: This model has been used by some governments as provided in various studies. In this model, both the government and the private sector have mutual benefit: the task of the private sector is to build and maintain an asset, while that of the government is to pay a fee for the private sector as a way to make up for constructing, maintaining, and financing the asset. When an MIM contract is over, the ownership of the asset is handed back to the government.

Now, with the cancellation of PFI, PF2, and the appearance of NPD, and MIM, a question arises "Are these the final forms of PPP in the U.K.?" The answer is simply no! These two new models NPD, and MIM may not be able to cover some huge and long-term infrastructure projects. As a result of that, the United Kingdom has to find other alternatives. There are newly discussed ways for facilitating the operation of forming other PPP models in the U.K., but some of these may not be appropriate and may cause economic troubles for the government as has been illustrated in the aforementioned discussion in this study.

It looks like the final status of adopting new PPP models in the U.K. is still uncertain. The main reason of the delay in adopting new PPP models is attributed to the U.K. Brexit event that was agreed upon on the 31st of January 2020. The direct cause of this Brexit was the success of the Conservative Party in the elections of 2019. The Brexit in its beginnings appeared as an "in principle" withdrawal agreement, required to be

ratified by both the EU and the U.K., at the same time, it was agreed upon that there could be a transitional period that enables the parties to form a Post-Brexit trading model. It was not clear whether this transitional period will end on 31 December 2020 or to be extended.

Due to the uncertainty which was caused by the Brexit, matters are not settled in the United Kingdom (depending on the references that have been used in this thesis). As a general overview, matters are in a state of flux. New risk allocations, clear PPP legislation, and clear PPP models' names have to be provided in order to form an obvious vision about the PPP situation in the United Kingdom.

Taking into account the unstable situation that PPPs face in the UK, it was not easy to decide the amount of money invested on these projects. However, what this study has reached was as stated below:

1. As of November 2010, the United Kingdom announced that it owed PFI a total amount of £267 billion.
2. Between the years 2012-2018, the PF2 had been chosen 6 times for implementing PPP projects. The total amount of money incurred by PF2 was £900 million.

So, the total amount of PPP money invested in the UK was found to be £267.9 billion. The number of PFI contracts which have been signed between 1997 and 2010 was roughly estimated to be 55 contracts annually, and between 2010 and 2012, the number was 9 contracts a year. In other words, a total number of 733 PFI contracts have been signed in the UK. PF2 has been used only for 6 projects. There were no data concerning other PPP alternatives in the UK.

The United States of America

The USA is the initiator of the PPP latest form, which in turn, initiated the Power Purchase Agreements in the 1980s that put up a binary compensation approach: one is the available potential payment, and the other is the actual utilization payment. Public Private Partnership is also designated as P3, or Triple Ps in the US. Although the US is the initiator of the latest PPP form, it lacks a general PPP definition or legislation which could be adopted by all states. In other words, states differ with respect to: the

range of transactions which the state may utilize to procure from, or partner with, and the principles of infrastructure delivery and operation. In the present study, section 5.7 presents a comprehensive view of the possible routes which states use in the application of PPP in the United States, taking into account that 37 states have applied specific PPP legislation applicable to them only.

Figure 60, mentioned earlier in section 5.9, presents a general view of the used PPP models in the US, which includes DB, DBB, DBOM, DBF, and DBFOM. Within these models, many PPP projects have been implemented with gigantic amounts of money. But, the total number of these projects, and their specific costs were not easy to be definitely stated. According to the references used in this study, the total number of the PPP projects is higher than 1500 with a cost roughly estimated to be $3.6 trillion up to 2020.

China

The situation in China is a little different. Implementing the PPP projects requires a partnership between the government and a private capital. The set of private capital is not restricted to a private party, and it might be one of the following:

A. State-owned companies
B. Private companies
C. Two-sided companies
D. Local government platform companies
E. Foreign investors' participation

Implementing PPP projects in China includes many models such as BOT, TOT, BOO, and others. Presently, China lacks a basic law concerning PPP, but the framework of the current PPP legislation in the country is composed of relevant laws, regulatory documents, and regulations as illustrated in section 6.3 of this study.

As issued by many references, there are nearly 14,220 PPP projects which exist in China at the moment, with a total investment of $2.7 trillion. It has about 7,000 PPP projects which are being implemented right now, with a total investment of about 1.28 trillion U.S. dollars. So, the total amount of money invested as PPP projects in China is estimated to be $3.98 trillion, with a number of 22,220 Projects.

Indonesia

The PPP is named KPBU (Kerjasama Pemerintah dan Badan Usaha) in the Indonesian language, which is the commonly used designation for PPP there. According to the set of PPP regulations, the KPBU concept is built on a partnership between the Indonesian government and business entities. These business entities are private entities as stated in the references of this study, the general characteristic of the PPP delivery methods in Indonesia contains: selecting a private entity by the government to finance, and build the asset, with the possibility of operating and maintaining it. The selection of the private entity is either by public tendering or through a direct appointment. It is also taken for granted that the private sector will recover all the expenses it had spent by the end of the KPBU.

It is important to note that when the expression "government" is used it could mean one or more of the following:

A. Ministry
B. Governmental body
C. A local government
D. State-owned enterprises
E. Local government owned enterprises

There is a plan for the period between 2020 and 2024 for improving the infrastructure quality and accelerating its development in Indonesia, after the drop in the Indonesian index of infrastructure quality as illustrated in section 6.8 of this study. This, in turn, will tremendously increase the adoption of PPP in Indonesia. It was so difficult to find numbers which show the financial situation of PPPs in Indonesia. Two references concerning the PPP investment in Indonesia were found covering the amount of $452,371,328 US for enacting the plan between 2020 and 2024, and $ 67,274 US millions. The total number of PPP projects in Indonesia was found to be 140.

To conclude, it is hoped that this study has offered substantial information about the PPP situation in the selected countries. It is suggested also that there should be an accurate PPP information website which functions as a comprehinsive reference

concerning these mega projects (PPP projects). This website has to be under the supervision of an international specialized committee to provide accurate and authontic data about the numbers of projects with their investments since our time is the era of such mega interprise.

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