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Can PPP Contracts Improve the Performance of the National Road Sector?

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ABSTRACT:

Objective:

This article attempts to answer two questions. The first is whether Public-Private Partnership (PPP) contracts can be easily implemented for national road preservation projects. The second is how the PPP contracts can increase the value for money (VfM) of the national road preservation budget.

Design/Methodology/Approach:

The institutional environment of national road sector is discussed first in order to highlight the particular role of road preservation contracts between the Government and the business sectors in that environment. Then, the discussion continued with types of contracts that have been used in this sector, historically. At the time of this writing, PPP contract has not been used in this sector. To approach this matter the next discussion is about PPP and VfM definition in the current regulation as well as their features in literature. Based on this discussion, characteristics comparison of the available types of contract is developed, including how these types of contracts, especially KPBU contracts, can be used to achieve VfM. The following section presents a simple simulation method to assess VfM achievement based on comparison of present value cost of public service comparator and PPP. The simulation is used to understand how the variables that determine VfM interact with each other in determining the final result. Finally, the last section contains the conclusions on how PPP contracts can increase the VfM of national road preservation project.

Findings:

Value for Money can be achieved using PPP contract if risks transferred from the Government to business / private entity is significant enough so that the combination of both incentives and the entity's capability can reduce the total cost of risks more than to compensate the difference between the entity's cost of capital and the Government cost of capital. In this case, the scale of the project is also important, given the complexity of PPP contract resulted in relatively higher transaction costs compare to other types of contracts.

Research Limitation:

This article does not discuss the design of performance-based incentive-oriented contract for national road preservation projects. In addition, the risks analysis done in the numerical simulation is simplified and, thus, requires further data collection for more detailed application. The externalities come from the construction phase to the operational and maintenance phase have not yet based on empirical evidence in this sector. This article also does not address issues on how to

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create level of competition in the procurement stage as well as in the operational stage that can promote value for money. Lastly, the risks discussed in the types of contracts only limited to supply risks.

Practical Implication:

The use of PPP contracts to replace conventional procurement contracts will not automatically reduce primary balance deficit. Assessments and steps to ensure the achievement of value for money from the PPP contract must be done and planned in advance.

Originality/value:
This is the first article discussing value for money from PPP contract for Indonesian national road preservation projects.

Keywords:
PPP, performance-based contract, Value for Money, risk allocation, public service comparator

BACKGROUND

In order to fulfill its obligation to provide public services, the Government of Indonesia (GOI) builds infrastructure. One of the most important infrastructures provided by the Government is the national road. Through the provision of roads, the GOI provides basic services of mobility that can encourage interactions, collaborations, and transactions in the society. Those fruitfull activities from the basic services will in turn promote the country's economic and social growth.

Over the period of 2015 - 2019, the GOI has a target to build 2,650 km of roads, improve 3,073 km of road and reach 47,017 km of maintained road. In 2019, the GOI also has a target to reach: 98% of roads in stable condition, 2.2 hours / 100 km travel time in the main corridors, and 133 billion vehicle kilometres of traffic flow level.

The estimated total budget required for maintaining, improving and constructing roads over the above period is Rp. 221.3 trillion (Ministry of Public Works and Public Housing (MPWPH)'s Strategic Plan for 2015-2019, 2015). Nevertheless, it is recognized that accurate estimations of road maintenance budget, especially in the two main corridors, is not easy to be done. The reason is that there are risks factors that increase the costs required to maintain the roads conditions, such as: overloading, inadequate quality of design and construction, poor drainage conditions, unfavorable weather conditions and ineffective previous maintenance activities. Those factors – added with limited available budget - are also making it difficult to make appropriate expenditure planning to avoid delays in maintenance. As a result, the roads remaining service life are becoming shorter than planned

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performance and the long run costs to preserve steady roads conditions are becoming higher.

This has been the concern of the Directorate General of Highways (DGH) for many years. DGH has been developing norms, standards, criteria, procedures, coordinates with related stakeholders and implements certain types of contracts with business entities. This type of contracts are aimed at optimizing the value of every one rupiah budget used for roads construction, improvement and preservation. Traditionally the type of contract used is *swakelola* (direct labor-based force account system). However, due to large coverage areas and the existence of regional autonomy policies, this centralistic system should be more selectively used. Types of contracts that are commonly used – by using local resources - are Design-Bid-Build (DBB) contract. In this contract, the scope of work of the business entities includes reconstruction, rehabilitation and then continued with 1 to 3 years maintenance period.

In 2011, DGH decided to conduct trial of Performance-Based Maintenance Contract (PBMC). With this type of contract, it was expected that innovations emerging from the competition can help DGH to save national road maintenance budget. However, due to variable remaining service life of road segments, the scope of the contract is then expanded to include construction work (betterment or reconstruction). Trials were done on several national road segments in North Java and one road segment in Central Kalimantan.

Based on the trial experiences, it turns out that it was not easy to formulate a performance-based contract that is clear for both contracting parties and in accordance with road conditions as well as the existing regulatory environment. The DGH finally decided not to use this type of contract, at least in the near future. In addition, the National Audit Board (Badan Pemeriksa Keuangan / BPK) requested the MPWPH to reconsider the utilization of this type of contract because it was not supported by the existing legal framework.

To replace the PMBC contract, DGH decided to use the Long Segment contract. The duration of this contract is shorter than the PMBC contract - that can reach 10 years -, ie 1 to 3 years. Selected business entities are expected to undertake routine and large maintenance within that timeframe of approximately 200 km of roads. This type of contract has performance-based properties for routine maintenance activities but there are additional payments based on the volume of works for large maintenance jobs. This contract returns some of the risks that have been allocated to the business entity through the PMBC contract back to the government.

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In 2017, DGH - with consultation with the Ministry of Finance and Bappenas - intends to conduct a PPP-typed contract trial. In contrast to previous types of contracts that are within the conventional / traditional procurement regulatory environment[1], the PPP contract is within the PPP regulatory environment[2]. This latter regulatory environment makes it more possible to apply performance-based contracts that are not based on inputs or methods[3]. Efficiency and effectiveness - or in this case often referred to as Value for Money (VfM) - is the goal of PPP contract implementation by way of optimal allocation of risk. In PPP contract, the scope of work of business entity includes: design, finance, construction and maintenance; in a relatively long period of time. The business entity will receive payment in the form of Availability Payment (AP) if the service provided complies with the specified standard stipulated in the PPP agreement.

The question is, whether the application of PPP contract can be easily done in the national road sector? The second question is, how far the PPP scheme can increase VfM of the national road maintenance budget? To answer both questions, this article discuss related issues in the following order: (1) an overview of national road sector institutional environment; (2) types of road maintenance contracts that have been used by DGH; (3) PPP and VfM definition in the current regulation and in the literature; (4) comparison of the contracts characteristics including VfM assessment for PPP contract; (5) a quantitative approach to calculate VfM from PPP contract compare with Public Service Comparator cost for road preservation contract that include initial betterment / renconstruction works; and lastly (6) conclusion and limitation of the discussion.

AN OVERVIEW OF NATIONAL ROAD SECTOR INSTITUTIONAL ENVIRONMENT

A contract will not be able to work easily if it is not fit with its institutional environment. The infrastructure sectors in Indonesia - transportation, roads, irrigation, drinking water, electricity - have their own legislation and historical developments. With these differences, implementation of a type of contract, such as a PPP contract, on each sector will vary in the degree of ease.

[1] Presidential Regulation No. 54 Year 2010 and its amendments
[2] Presidential Regulation No. 38 Year 2015 that replaced Presidential Regulation No. 67 Year 2005
[3] To reduce the risk, this needs to be confirmed by the CPC as the APBN expense inspector for Availability Payment

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According to Law on Road[4], Road is defined as land transportation infrastructure covering all sections of the road, including complementary construction and equipment intended for traffic, except railroads, lorries roads, and cable roads. The state controls the Road and the authority is given to the GOI to carry out the national road network management and development. GOI has the authority to regulate, develop, construct, preserve and supervise the national road network[5].

GOI is mandated to ensure the ongoing role of roads: as transportation infrastructure and in the distribution of goods and services; that affecting people's prosperity through economic, socio-cultural, environmental, political, defense and security developments. GOI can delegate the authority to regional agencies or business entities. Nevertheless, the responsibility remains in the hands of the GOI.

The norms[6], standards[7], criteria[8] and guidelines[9] for management and development of roads are set by the MPWPH by considering inputs from the public. Within the MPWPH organization, the authority to manage and develop national roads is delegated to the DGH. The DGH performs the functions of[10]: (1) policies formulation and implementation; (2) formulation of norms, standards, procedures, and criterias; (3) technical guidance and evaluation provider; and (4) administration. The scope of road under the authority covers national, provincial, district, city and village roads.

For the implementation of roads management and development in all of the regions, the DGH has eleven regional implementation offices that are called *Balai Pelaksanaan Jalan Nasional* (BPJN) or National Road Implementation Offices. Each BPJN has the duty to carry out: planning, procurement, capacity improvement and preservation of roads, implementation of quality management system and

[4] Law No. 38 Year 2004 on Road

[5] Law No. 38 of 2004 on Road regulates the authority of GOI as follows:

- Regulate: planning policy formulation, developing general planning, and drafting of national road legislation.
- Develop: developing standards and guidelines for techniques, services, human resources development, researches and development of roads.
- Construct and preserve: programming and budgeting, technical planning, construction implementation, and operation and maintenance of roads.
- Supervise: ensuring orderly regulation, development, construction and preservation of roads

[6] Binding rules or conditions

[7] Technical specifications as a reference

[8] Standards as basis for assessment on how well the stages in management and development of roads have been implemented

[9] General references for management and development of roads

[10] Article 332 Regulation of the Minister of Public Works and Public Housing. 15 Year 2015

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quality control, and provision of road and bridge materials and equipments[11]. There are two types of BPJN: type A (large BPJN or BBPJN) and type B (BPJN). Figure 2 shows list of BPJNs and their regions.

Eventhough the DGH has the authority, the management and development of roads can only be conducted successfully with coordination with other ministries[12] as well as local governments, especially in dealing with risk factors under authorities of those ministries and local governments. In addition, there is also the role of the National Audit Board (BPK) which conducts audits on the efficiency and effectiveness of the use of government budget.

In the 2015 – 2019 strategic plan, the Government planned to spend about Rp. 221,3 trillion during the period for maintenance, improvement and construction of roads (Table 1). In 2016, the budget of Rp. 55.7 trillion is equivalent to 21% of total GOI infrastructure budget or 82% of total GOI capital expenditure. In addition, the strategic plan also has targets of achieving 77% national roads connectivity level and 98% national roads in steady condition by 2019.

Table 1: Strategic Plan for Maintenance, Enhancement and Development of National Roads

Strategic Plan	2015	2016	2017	2018	2019
Maintenance and improvement (km)	38,292	47,595	47,700	47,813	47,718
New construction (km)	355.98	453.228	454.16	454.802	456.073
Total budget (Rp trillion)	46.45	55.70	39.54	44.91	34.67

By the end of 2016, the MPWPH has managed to achieve 75.35% connectivity level and 89.38% roads in steady condition. Roads in steady condition are those in good (B) or moderate (S) conditions according to their pavement design life and following standards given by Table 2 below.

Table 2: Road Condition Based on RCI, IRI and Annual Average Daily Traffic (AADT/LHRT)

[11] Article 128 Regulation of the Minister of Public Works and Public Housing. 34 / PRT / M / 2015
[12] For example with Ministry of Transportation related to traffic management, with Ministry of Finance related to budgeting, and with Ministry of National Planning (Bappenas) related to planning.

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RCI			IRI			Lalu Lintas Harian Rata – Rata Tahunan (LHRT) [SMP/Hari]							
						0-100	100-300	300-500	500-1,000	1,000-2,000	2,000-3,000	3,000-12,000	> 12,000
7.26	≤RCI<	10.00	0	≤IRI<	3.5	B	B	B	B	B	B	B	B
6.93	≤RCI<	7.20	3.5	≤IRI<	4	B	B	B	B	B	B	B	S
5.74	≤RCI<	6.87	4	≤IRI<	6	B	B	B	B	B	B	S	S
4.76	≤RCI<	5.69	6	≤IRI<	8	B	B	B	B	S	S	S	RR
3.94	≤RCI<	4.71	8	≤IRI<	10	B	B	S	S	S	S	RR	RB
3.27	≤RCI<	3.91	10	≤IRI<	12	S	S	S	S	RR	RR	RB	RB
2.24	≤RCI<	3.24	12	≤IRI<	16	S	RR	RR	RR	RB	RB	RB	RB
1.54	≤RCI<	2.22	16	≤IRI<	20	RR	RR	RB	RB	RB	RB	RB	RB
0.95	≤RCI<	1.53	20	≤IRI<	25	RR	RB	RB	RB	RB	RB	RB	RB
	RCI<	0.94		IRI≥	25	RB	RB	RB	RB	RB	RB	RB	RB

B: Good S: Moderate RR: Lightly Damaged RB: Heavily/Severely Damaged
RCI: Road Condition Index IRI: International Roughness Index
Source: Permen PU No. 13 Tahun 2011

In particular, the strategic plan pays attention to two main corridors: the 1.300 Km-long East Trans Sumatra road along the eastern coast of the island of Sumatra (*Jalintim*) and the 1.000 km-long Java North Coast Road along the northern coast of the island of Java (*Pantura*). Both corridors are always of national concern as they are the route through which 30% - 40% of the goods are transported from north to south of Sumatra Island and from west to east of Java Island (Tamin RZ et al., 2011). The GOI has a target to reduce the travel time of the two main corridors from 2.7 hours / 100 km in 2015 to 2.2 hours / 100 km in 2019. Although the Trans Java toll road has been completed, the *Pantura* line remains the preferred route for trucks because it offers more flexible stopping location and many of the trucks have only short travel distance[13].

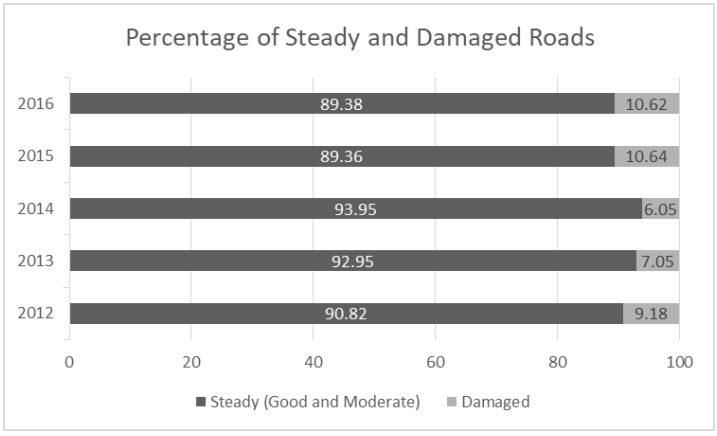

Figure 1: Percentage of Steady & Damaged Roads 2012 - 2016

[13] https://finance.detik.com/wawancara-khusus/d-3911206/upaya-perbaikan-jalur-pantura-lepas-dari-stigma-proyek-abadi

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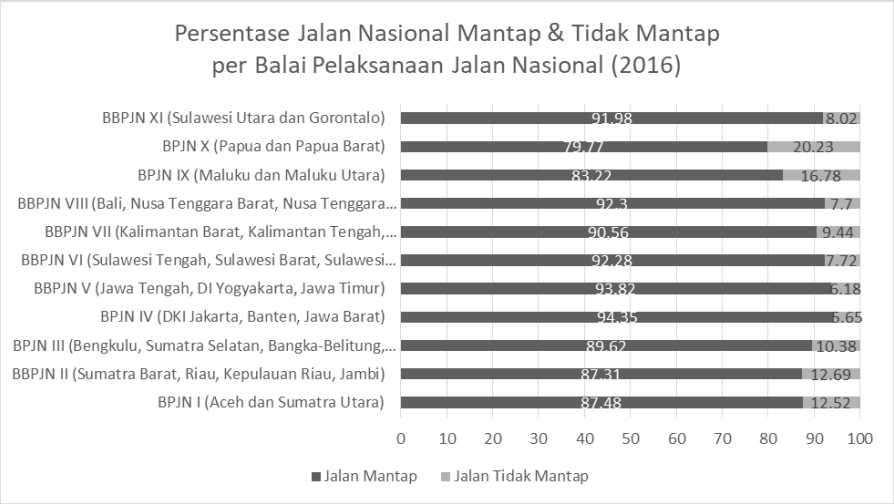

BBPJN = Balai Besar Pelaksanaan Jalan Nasional; BPJN = Balai Pelaksanaan Jalan Nasional

Figure 2: Percentage of Steady and Damaged Roads Managed by BPJNs in 2016

Road management consists of construction and preservation. Preservation is the management of roads aimed at prevention, maintenance and repair to maintain road conditions in order to achieve planned performance. Preservation activities include: routine maintenance, periodic maintenance, rehabilitation and reconstruction[14]. In contrast with the first three preservation activities, the last activity is an investment activity with capital expenditure. Often the preservation work includes reconstruction work due to heavily damaged condition of the road structures. Figure 3 shows the scope of road preservation activities according to Regulation of Minister of Public Works No. 13 / PRT / M / 2011 on Road Maintenance and Examination Procedures.

[14] Minister of Public Works Regulation no. 13 Year 2011 defines:

- Routine maintenance: activities to maintain and repair road segments with steady (good and moderate) condition
- Periodic maintenance: activities to to prevent widespread damage and any types of damage estimated in the design stage in order to restore planned performance
- Rehabilitation: activities to prevent extensive damage and any types of damage that is not taken into account in the design stage in order to restore planned performance from lightly damaged conditions in parts of the road segment
- Reconstruction: structural improvement to restore planned performance from heavily damaged conditions in parts of the road segments.

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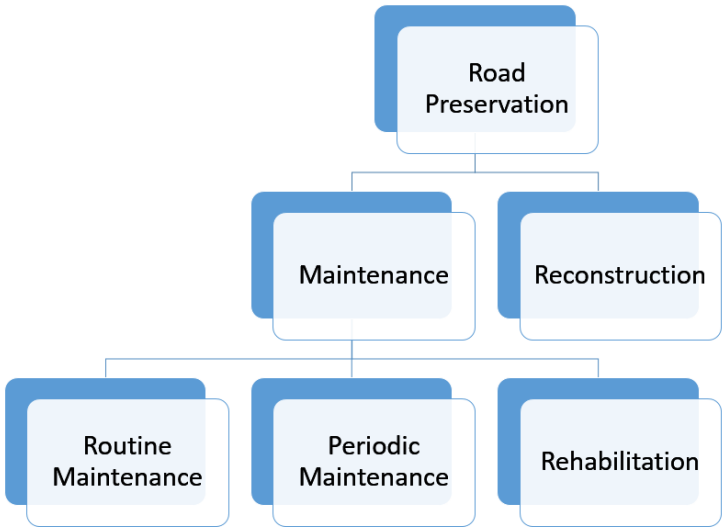

Figure 3: Scope of Road Preservation Activities

The high cost characteristic of road preservation, especially in the two main corridors mentioned above, is contributed by risks factors such as: high overloading, high side disturbances, high groundwater level, poor base soil conditions, poor drainage conditions, wide variation of horizontal alignment conditions and structural road pavements, and limited available road preservation historical data. The costs from the resulted risks add to the burden of road maintenance costs. To reduce maintenance costs, the costs of these risks need to be minimized.

Figure 4 shows one way of categorizing risk in road preservation projects. Legal and political risk is related to legal and regulatory framework, law enforcement, dispute resolution, central and local government policy, taxation, expropriation and nationalization. The main risks sourced from this category are: high overloading, high side disturbances, high groundwater level and poor base ground conditions. High overloading can not be addressed by DGH without cooperation with the Ministry of Transport and local governments; including with those that related to the planning of alternative modes of transportation. High side disturbances is influenced by the role and authority of the local governments. The next two risks are related to the roads intial design and previous decisions by the Government.

The second category is a commercial risk that is similar with market risk, project risks or internal risk (OECD, 2008). Commercial risk is divided into demand risk and supply risk. Demand risk is risk of demand-side operations, such as changes in people's interest in using the services provided. While the supply risk is related to the ability of the road operator to provide services according to the pre-determined

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standards. Supply risk is divided into construction risk and supply-side operating risk. Construction risks are all risks that can hinder completion of construction on time, on budget, with the right quality. While the supply-side operating risks are all risks that can prevent attainment of pre-determined performance standards. Factors affecting the supply include the availability of required: budget, resources, people, materials, methods, processes and technologies.

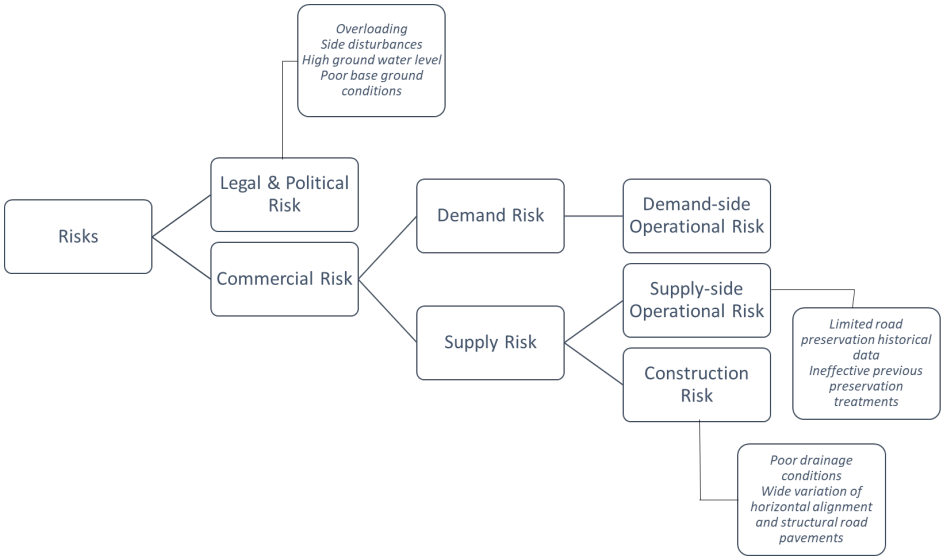

Figure 4: Road Preservation Project Risk Category (Adapted from OECD, 2008)

After the main risks that can prevent the attainment of targeted road service level have been identified, the next step is to allocate those risks to corresponding actors that have the best ability to mitigate those risks compare to others. This is done using public ordering or private ordering. Through private ordering, those risks can be mitigated using contracts with business entities in the industry. For example, risks associated with supply risk can be chosen to be fully managed by BPJN in the regions or some of the risks are transferred to business entities through contracts. A type of contract that can best minimize the total cost of risk can be called a contract that can best provide VfM. But before coming to that conclusion, one should be able to compare risk management capabilities available in the public sector with those available in the market (business / private sector). As part of long-term sector performance improvement, the MPWPH through Directorate General of Construction Development can cultivate necessary capabilities in the market that are able to manage certain risks- such as those under supply risk category - that will be transferred the government.

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The DGH has been using several types of contracts for road preservation: *swakelola*, Design-Bid-Build (DBB), Performance-Based Maintenance Contract (PMBC), and Long Segment contract. It can be said that the choice of contract is determined based on the decision on what kind of risks that will be transferred to the business entity. On *swakelola* – typed contracts all risks are allocated to the Government. However, with the development of the industry, some risks can be gradually transferred using other types of contracts.

CONTRACTS IN NATIONAL ROAD PRESERVATION

By using *swakelola*-typed contract, the employer has full control over the execution of planning, construction and maintenance. The methodologies, techniques, procedures, and materials; decided by the employer. Outside experts used as supports on some required work. Traditionally, this is certainly not difficult to do because the norms, standards, criteria and guidelines are determined by the Government (DGH). However, the use of this type of contract is limited to the amount of resources owned by the DGH. In addition, with the existence of regional autonomy, the adoption of this contract is primarily for routine maintenance in remote areas (Tamin et al, 2011).

Traditional/Conventional procurement contract involving construction is DBB contract. In this type of contract, the employer – BPJN, for example - prepares the design and the specifications and after that auction off the construction work based on the cheapest price. At the design stage, employers prepare detailed project plan along with the required specifications. In the preparation, the employer may use service from consultants or a consultant company. After the design phase is complete, the employer subsequently conducts the auction for the construction / reconstruction / rehabilitation work. The winning bidder is determined based on the cheapest price because it will only executes the instruction in the contract. After construction work is completed, the contractor has a responsibility of 1 to 3 years maintenance period.

In 2011, the DGH intends to have a contract that can increase the value for each Rupiah used to ensure ongoing planned performance of national roads[15]. This is done by conducting trials on PMBC. With this contract - unlike the pre-existing types of contracts at that time - employers do not set the kind of inputs, methods or processes in order to achieve intended performance standards. These things are left to the business entity. The business entity will be paid on the basis of service performance level stipulated in the contract. In other words, those risks that can prevent accomplishment of these performance standards are allocated to the

[15] This is in line with the GOI planning and budgeting reform policy at that time

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business entity. Competition and market incentives are used to get business entity most capable of managing and controlling those risks.

The first trials were conducted on Ciasem - Pamanukan segment (21.7 km) and Demak - Trengguli segment (12 km). The duration of the contracts are 4 years. The second trials were conducted in 2012 with longer contracts period of 7 years. The road segments are: Semarang - Bawen (22 km), Bojonegoro - Padangan (11 km), Padangan - Ngawi (10.7 km), Sei Hanyu - Tb. Lahung (50.6 km). All of the segments are located on the North Coast of Java, except the last one, located in Central Kalimantan. Winning bidders of these pilot projects are large state-owned contractors.

There are at least two lessons that can be taken from the trials of PMBC. Firstly, changing the way of thinking from input-based contract to performance-based contract needs time. Both public sector and business sector could not immediately reach agreements on new issues regarding: performance indicators, minimum service levels, incentives and disincentives related to the achievement of minimum service levels, and performance measurement procedures. Secondly, on those road segments, reconstruction were needed in order to have uniform remaining service life along the segments. To accommodate the necessary reconstruction, the PMBCs were modified to include the reconstruction works. After the reconstruction has been done, the business entity delivers road maintenance services until the end of the contract period. Tamin et.al (2016) and Wirahadikusumah et.al (2015) describe more comprehensive lesson learned from the PMBC implementation within the period.

In 2015, the DGH intended to conduct other PMBC contracts. However BPK requested the MPWPH to reconsider the use of that type of contract because it is not in accordance with the procurement regulation used as the legal basis[16]. Following this recommendation, the DGH then switched to long segment-typed contracts for national road preservation projects.

Long segment is a road preservation treatment - within one continuous segment – that is implemented in order to obtain uniform road conditions, steady and standard along the segment[17]. Scope of work of the business entity in this type of contract may include: improvement, reconstruction, rehabilitation and maintenance. Construction work on pavement is paid based on the volume of work. While routine

[16] Presidential Regulation No. 54 of 2010 and its amendments. This regulation can be regarded as a conventional procurement arrangement.
[17] SE Director General of Highways No. 9 of 2015

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maintenance is paid on a lump sum basis. In 2016, a total of 256 packages of long segment contracts are executed through BPJNs.

The purpose of long segment contract is to optimize preservation funds used to maintain steady and standard level of road services. Prior to finalizing the contract, a joint inspection by the employer and the business entity shall first be conducted on the current conditions of the road segment to be included in the scope of the contract. Based on the result, adjustment to contract clauses are made. If the implementation of this type of contract is successful, subsequent PMBC can be done without modification.

In 2017 the DGH consider to use PPP-typed contract for road preservation projects. PPP contract is a performance-based contract, but, unlike PMBC and other existing type of contracts, this contract uses a different legal basis, namely the PPP regulation. Using this regulation, the DGH can make a contract with a business entity that assign the business entity to provide services in accordance with standards set out in the contract. In return, the business entity will receive a payment in the form of Availability Payment (AP) if the service provided meet the minimum required standards.

Another factor driving the use of PPP contract is the GOI's intention to reduce deficit in the primary balance. In order to cut down the deficit, the GOI implement budget efficiency and increase tax ratio. As part of budget efficiency effort, the GOI planned to use business sector funds to finance some of infrastructure projects capital expenditures using PPP contract. However, the PPP scheme will only be chosen if it can be proven that the scheme can provide VfM better than other types of contracts.

Figure 5 shows the existing road preservation contracts and their legal basis. The contracts in that figure are increasingly input or method based when it is more to the left and increasingly performance based when it is more to the right.

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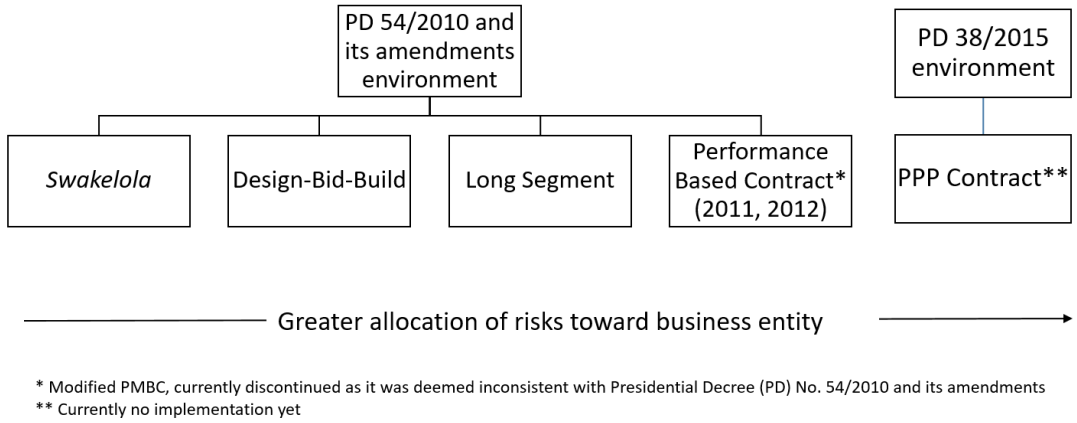

Figure 5: Type of National Road Preservation Contract

KPBU AND VFM IN REGULATION IN INDONESIA

The issuance of the regulation on Availability Payment (AP) in 2015[18] marked a new chapter in the implementation of PPP[19] scheme in Indonesia. The regulation allows projects that do not apply user pay principle can be provided through PPP scheme. In the last two years, there has been a significant increase in the number of PPP projects that has already reached financial close and is in construction phase. One of them is Palapa Ring PPP project using AP[20]. At the same time, the GOI was also trying to find ways to reduce the deficit in the primary balance[21] in order to reduce the debt to GDP ratio. For some, the PPP scheme – in lieu of conventional procurement – is considered capable of being used as one of the ways for that purpose.

[18] Presidential Regulation Number 38 Year 2015 Concerning Cooperation between Government and Business Entities in Infrastructure Provision, Minister of Finance Decree No. 190 Year 2015 Concerning Payment of Service Availability (Availability Payment) in the Framework of Government Cooperation with Business Entities; and then followed by Minister of Home Affairs Regulation no. 96 Year 2016 on Payment of Service Availability (Availability Payment) in the Framework of Regional Government Cooperation with Business Entities in Provision of Infrastructure in the Regions

[19] In the regulation, Public-Private Partnership (PPP) is translated as Government-Business Entity Partnership (*Kerjasama Pemerintah dengan Badan Usaha* (KPBU)). The business entity includes state-owned enterprises other than private corporations

[20] Consists of 3 packages, namely west, middle and east packages. The contracting agency of this PPP project is the Minister of Communications and Informatics. Other PPP projects that have already reached financial close were 8 toll road projects and 1 Drinking Water Supply System project (*SPAM Umbulan*).

[21] The Primary Balance is the difference between the state revenue (mainly from taxes) and the state expenditure (excluding for interest payments). The Primary Balance is an indicator of the current fiscal effort, by eliminating the effect of interest payments resulted from the deficits in the past. The reduction of primary balance deficit is intended to reduce the debt to GDP ratio.

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The implementation of the PPP scheme – which began with a Presidential decree in 2005[22] - is intended to address the financing gap needed in accelerating infrastructure provision. The National Medium-Term Plan (RPJM) 2015 - 2019 estimated the total funding needs of public infrastructure investment was Rp. 5,519.4 trillion, 30.66% of the amount was expected to be secured from the private sector. However, the experience over the past 10 years showed that the effort to attract private financing through PPP scheme was not easy. It is also realized that although through PPP scheme the GOI can save the budget for infrastructure construction, but this option is not necessarily a low-cost option given the cost of capital of a business entity is higher than that of the government. This is where the concept of value for money (VfM) is needed to ensure that the selection of infrastructure provision through the PPP scheme is a more favourable option for the public.

In the prevailing regulation, PPP is defined as a cooperation between the government and a business entity in the provision infrastructure for public interest with reference to pre-determined specification by the Minister / Head of Institution / Head of Region / State-owned Enterprise / Regional Government-owned Enterprise, which partially or entirely utilizes the resources of the business entity by taking into account the distribution of risks between the parties. Whereas infrastructure provision is interpreted as an activity that includes construction work to build or improve infrastructure and/or infrastructure management and/or infrastructure maintenance activities in order to improve the benefit from the infrastructure.

Although the above definition contains keywords common to the literature on PPP; but the essense of bundling, risk transfers, long-term nature of the contract and also type of contract that is performance-based; lacks sufficient emphasis in the regulation. Assuming that this definition can elvove in the future, the next discussion in this article will apply widely used definitions in the literature.

The same treatment applies to the definition of VfM. In the regulation, VfM is translated into *nilai manfaat uang*[23] and *nilai guna anggaran pemerintah*[24].

[22] Presidential Regulation Number 67 Year 2005 Concerning Cooperation between Government and Business Entities in the Provision of Infrastructure replaced by Presidential Regulation no. 38 Year 2015. This is not the only regulation for public-private partnership, however. There are other regulations that govern public-private partnership-typed contracts in some infrastructure sectors such as electricity sector (purchasing power agreement with independent power producer) and toll road sector (toll road concession agreement with business entity).

[23] Presidential Decree No. 38/2015 and Ministry of National Development Planning Regulation No. 4/2015

[24] Ministry of Finance Regulation No. 190/2015

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Ministry of National Development Planning Regulation 4/2015 defines VfM as a measurement of the performance of PPP project based on economic value, efficiency, effectiveness of spending, and quality of service that meets the needs of the public. In the prevailing regulation, VfM becomes one of the criteria used in the preliminary study to assess whether an infrastructure project should be implemented through PPP scheme or conventional procurement scheme. Nevertheless, the role of PPP scheme to filling the financing gap for infrastructure provision acceleration is still more dominant than the achievement of VfM.

CONCEPT OF PPP AND VFM IN LITERATURE

There is no standard definition of PPP. Nevertheless, there are some characteristics of PPP commonly used to explain the concept. Those characteristics are (Yescombe, 2007: Engel, Fischer, Galetovic, 2009; and Iossa, Spagnolo and Velez, 2007):

- A long-term contract between government and business entity;
- The contract is performance-based;
- The scope of works of the business entity comprises: financing, design, construction, operation and maintenance;
- Significant risks transfer from the government to the business entity
- Business entity get paid for the services provided from the infrastructure, either from the public users or the government;
- The infrastructure asset remains in the government ownership or in the control of the business entity until transferred to the government at the end of the contract period.

Table 3 contrasts the difference in characteristics between conventional procurement contract and PPP contract. The conventional procurement contracts usually have shorter period of contract; input or method as the basis of the contract; separate contracts for funding, design, construction, operation and maintenance; no significant risks transfer to business entities; and government as both the controller and the legal owner of the infrastructure asset.

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Table 3: Conventional Procurement and PPP Characteristics Comparison

Characteristic Aspects	Conventional Procurement	Public Private Partnership
Contract duration	Short term	Long term
Contract design	Input / method-based	Performance-based
Scope of works	Separated contracts	Bundled contract
Risk transfer to business entity	Insignificant	Significant
Payment for business entity	From government budget	From public users or government budget (AP)
Control over infrastructure asset during contract period	Government	Government or business entity

Engel, Fischer and Galetovic (2014) gives four additional economic characteristics of PPP:

- The size of the project is large enough so requires independent management;
- The project asset is illiquid and has a low value if the project fails;
- Most production processes, either during construction or operation, are subcontracted;
- Bundling of construction and operating contracts provides efficiency as the business entity -which must internalize operating and maintenance costs - have incentives to minimize project life cycle costs, including to achieve the required performance standards.

The above characteristics can be used as a logic to estimate whether a PPP contract can provide a better VfM than conventional procurement contract for a given public infrastructure provision, and vice versa. Hart (2003) concludes that in the world of incomplete contracts, bundling of construction contract with operating contract would provide benefits if the quality of the service can be well specified in the initial contract, whereas the quality of the facility cannot be. On the other hand, if the quality of the facility can be well specified whereas the quality of the service cannot be, conventional procurement contract is the better choice. In the case of PPP, the ease of specifying quality of the service – or the ease of making performance-based contract – also makes the business entity cannot ignore its obligation to achieve service quality standards (Engel et al. 2014).

However, Iossa and Martimort (2009) adds that the incentives for the business entity will only materialize if the innovations made at the construction phase have positive externalities at the operational phase. Conversely, if the externalities are negative, conventional procurement contracts will be more efficient because bundling construction contract with operations contract will result with high agency costs. In consequence, PPP contract is only suitable if better quality of infrastructure

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facilities will significantly affect both cost reduction and service quality attainment in operational phase. In addition, the demand for the services – from the infrastructure - should be stable and predictable.

The incentive to minimize the life cycle cost is important because cost of capital of business entity is higher than that of the government. In terms of cost to the public, the choice between conventional provision and PPP is based on the comparison between, on the one hand, conventional provision cost of fund with, on the other hand, combination of incentive contract and the business entity's cost of fund (Engel et al 2014). The incentive contract allocates project risks at every phase in the bundled contract. Using the contract, the combination of risk allocation and higher cost of capital literally used to encourage business entity to make efforts that ultimately result in greater benefits to the public. Futher, Engel et al (2014) concludes that the selection of PPP contract, rather than conventional procurement contract, depends heavily on the economic characteristics of the infrastructure not on how the infrastructure is funded or financed.

The VfM principle is in line with the goal of minimizing lifecycle cost while ensuring service level provided. Butt and Palmer (1985) argues that VfM is built on economic, efficiency and effectiveness. Economics is related to cost and quality of resources. Efficiency is the ratio between output and resources used. Effectiveness is how far the results are achieved in accordance with the target set. Burger and Hawkesworth (2011) states that VfM can be defined as an optimal combination of quantity, quality, features, and cost; which is expected to be earned during the life of the project. VfM focuses on the benefits to the public gained from the projects. The sources of value for the public include: lower cost over the lifecycle of the project, compliance with predetermined specifications, as well as the resulting positive externalities (from economic growth, environmental impacts, fund mobilization, social impacts and sector governance) (Delmon, 2011).

To determine whether an infrastructure should be provided using conventional provision or PPP scheme, a VfM tests are usually carried out. In general, VfM tests can be categorize into four groups (Grout, 2005): (1) full cost-benefit analysis to calculate the highest net benefit options; (2) assessing the cheapest cost of service delivery to the government; (3) comparing the costs among business entities bidders, corrected for differences in service quality; (4) confirming the viability of the chosen project, whether conventional provision or PPP scheme. Each test has its own advantages and disadvantages, but Grout (2005) suggests using test number 3 if there is adequate competition. But in some countries that have been long used PPP contracts - such as the UK, Australia, Canada, South Africa – the number two

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test variations are used. The test is done by comparing the cost of Public Service Comparator with the cost of PPP for the government.

Public Service Comparator (PSC) is the theoretical estimate of total costs for the government to develop and operate infrastructure facilities to deliver public services. The structure of the PSCs in the UK, Canada and Australia (Cruz and Marques, 2013) consists of four components. These components are: (1) raw PSC, (2) competitive neutrality, (3) transferable risk and (4) retained risk. Raw PSC is the present value of all costs incurred during the lifecycle of the infrastructure. Competitive neutrality is calculated to neutralize the bias that occurs due to ownership / control by public sector compared to control by business sector. Transferable risk is the risks allocated to a business entity in the PPP contract. Retained risk is the risks that are still allocated to the Government even in the PPP contract.

Figure 6 shows the comparison between PSC cost and PPP cost in case the payment to the business entity in the form of Availability Payment (AP), not the payment by the users. PPP is an option that gives more VfM if its total cost is less than the cost of PSC. Application of this PSC method is carried out in several countries implementing PPP schemes. However, the application varies greatly, depending on the level of maturity of the PPP scheme in each country. Countries like the UK, Canada and Australia have had detailed implementation. Implementation in these three countries is often used as a reference for other countries developing the PSC methodology (Cruz and Marques, 2013).

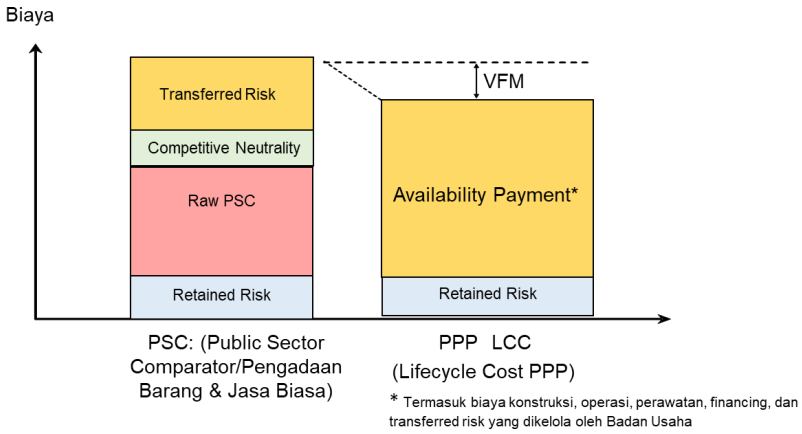

Figure 6: Comparison Between PSC Cost and PPP Cost

However, the quantitative VfM calculation alone is not sufficient to ensure the achievement of VfM. According to the OECD (2008) any type of contract to be selected - whether it be conventional procurement contract or PPP contract – should

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be able to meet affordability principle. The affordability principle is achieved when additional costs arising from an infrastructure project do not cause the present value of state expenditure to be greater than the present value of the state revenue. Which one is chosen between a conventional procurement contract and a PPP contract depends on which one is the most efficient and therefore more affordable. This is in line with the GOI's current efforts to reduce the deficit in the primary balance.

The government may choose PPP scheme to avoid the amount of budget required for the construction of infrastructure so as not to violate pre-determined budget limits. Instead of budgeting large amounts of funds for infrastructure construction, using the PPP scheme, the Government may pay Availability Payment (AP) periodically to the business entity as long as the public services that are expected to be provided have been executed in accordance with the specified standards. The construction cost will be provided by the business entity. The total cost of PPP due to AP and retained risk should not violate the affordability principle. Therefore, efficiency generated through PPP implementation – determined by the ability of the business entity to manage the risks transferred - should be able to compensate for higher transaction costs and credit risk costs.

In addition to risk transfer, OECD (2008) also adds competition as another determinant of VfM. Nothing can replace the role of competition in stimulating business entities to become more efficient. The competition is not only before the signing of the contract but also after the signing of the contract. The existence of this competition will ensure the effectiveness of risk transfer to business entities. Finally, the OECD (2008) also reminds that PPP contracts can not simply be applied to every public service. This is due to the inflexible and long-term nature of the contract.

VFM ACHIEVEMENT ASSESSMENT ON NATIONAL ROAD PRESERVATION CONTRACTS

Table 4 shows the comparison between types of national road conservation contracts. The PMBC contracts in the table are unmodified, such as the contracts tested in 2011 and 2012. The more to the right of the table the greater the risk transfer to the business entity.

The role of roads in the prevailing regulation is as transportation infrastructure - including for distribution of goods and services - that promotes prosperity for the public through economic, social, cultural, environmental, political, defense and security developments. Although measuring the performance of road services in terms of this aspects is not impossible but it is not easy to be done. A more practical approach – though imperfect – to measure the performance of the service is to look

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at its impact on frequency and quantity of mobility and distribution of goods and services. In this respect, the road service performance can be measured based on the capacity to provide economy, convenient, and safety in driving. But this performance is not only influenced by road authority, but also by other authorities that can influence the development of traffic and the area surrrouding the road.

Typically used road service performance measures include (Gajurel A, 2014 p. 49.):

1. Road surface roughness that will affect vehicle operating costs;
2. The absence of potholes and the control of cracks and rutting that may affect the comfort and safety of driving;
3. The right amount of friction between tires and the road surface for safety reasons;
4. Good drainage system to avoid destruction that shortening the remaining life of the road;
5. The retro reflexivity of road signs and marking for road users' safety

With *swakelola* and DBB contracts, DGH or BPJN could deliver the performance required above, provided that the required resources are available. However, using these two types of contracts, all risks that can prevent the achievement of performance standards are in the hands of the government.

The governments may transfer some of the risks to business entities. The objective of this risks transfer is to gain efficiency. In other words, VfM can be achieved by transferring risks to those who are better able to manage the risks. It is important that the government first identifies the availability of risk management capabilities required before offering a form of contract to the market. For example, offering PMBC contracts will be more effective if there are many business entities that can compete in providing mid-term road maintenance services. By using its authority, the government may influence the development of risk management capabilities required in business entities in the market.

Table 4: Comparison of National Road Preservation Contracts

Characteristic	*Swakelola*	DBB	Long segment	PMBC	PPP
Contract Duration	Short term (1 year)	Short term (2 - 4 years)	Short term (1 - 3 years)	Medium term (4 - 10 years)	Long term (15 - 20 years)
Contract Design	Based on input / method	Based on input / method	Based on input and method, except for routine maintenance (based on performance)	Based on performance	Based on performance
Scope	Flexible	Reconstruction, rehabilitation, routine maintenance, periodic maintenance	Rehabilitation, routine maintenance, periodic maintenance	Rehabilitation, routine maintenance, periodic maintenance	Financing, design, reconstruction, rehabilitation, periodic maintenance, routine maintenance
Risk tranfer to business entity	None	Cannot work out methods and provide inputs in accordance with the contract	For routine maintenance: not achieving minimum service level standards. Other than routine maintenance: unable to work out methods and provide inputs in accordance with the contract.	Not achieving minimum service level standards	budgeting risk, design risk, reconstruction risk, performance risk during operation/maintenance period
Payment to business entity	Based on completion of ouputs	based on completion of outputs	For routine maintenance: LS payment based on performance. Other than routine maintenance: based on volume of works / outputs	LS payment based on performance	Availability Paymet based on performance
Economic ownership (control) during contract period	Government	Government	Government	Business entity	Business entity
Project size	Flexible	Flexible	Moderate	Moderate	Large
Business entity	consultant or contractor based on demand	Consultant (design), contractor (reconstruction, rehabilitation and maintenance)	Road maintenance service ompany (for rehabilitation, periodic maintenance and routine maintenance)	Road maintenance service ompany (for rehabilitation, periodic maintenance and routine maintenance)	Business entity, formed by sponsors, responsible for financing, construction, operation and maintenance of roads
sub-contracting	None	None	None	None	Yes
Lifecycle cost minimization insentif	Do not exist	Do not exist	Do not exist	Do not exist	Exist
Reconstruction funding/financing	Government budget	Government budget	Government budget	Government budget	Business entity

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The transition of risk management responsibilities from government to business entities means there is also organizational change in the national road maintenance industry. BPJNs, which traditionally carry out direct preservation of roads, will reduce personnel and equipment for activities to be transferred to business entities. There fore this transition also means a change in the portfolio of resources in government as well as in business entities. The government will increase the allocation of resources for the purposes of monitoring and contract management.

In order for this transition to proceed smoothly, the Government should prepare the development of business entities capable of competing in mitigating risks[25] related to national road preservation services. This is in line with the implementation of long segment contract that transfer routine maintenance risks to business entity. It is expected that many business entities begin to invest in human resources and equipment to carry out road maintenance services.

In the table above, business entities receive the largest portion of risks allocation on PPP contract compared to other contracts. In this type of contract, the risks transferred include: budgeting risks, design risks, reconstruction risks as well as service performance risks during the operation/maintenance period. The implementing business entity is a corporation built by consortium of business entities that have the capability in: mobilizing financing, performing design and reconstruction, and carry out operations and maintenance services. Therefore, transaction costs of PPP scheme will be relatively higher than the other types of contract listed in the table above. VfM can only be achieved if the total cost for risks using PPP contract can be much lower than using other types of contracts. Therefore, the size of the project using this type of contract should be relatively large.

Figure 7 shows a sequence of considerations to be taken to ensure the achievement of VfM from a PPP contract. The first consideration is affordability. In this case, the contracting agency must have sufficient fiscal capacity so as to have the ability to make necessary spending for the provision of infrastructure, or more precisely public service, which are being considered. If the project turns out to be unaffordable then the design of the project should be changed or the agency should choose the next priority project.

[25] Refered to are risks falling into the Supply Risk category showed in Figure 4

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Initially, the conclusion of the affordability consideration should not result in an absolute decision. It could be that a project can be affordable through a PPP contract compared to a conventional provision contract (DBB), and vice versa. This depends on subsequent considerations showed in Figure 7. The next consideration is the characteristics of the project. PPP contract need to be contemplated if the project under examination has the following characteristics:

1. Focus on public services from the infrastructure
2. It is easy to specify an incentive-oriented performance-based contract
3. There is a positive externality from the construction phase to the operation and maintenance phase
4. Demand of the service is relatively stable and predictable

While the type of conventional contract (DBB) should be considered if the project of concern has the following characteristics:

1. Focus on the quality of the infrastructure facilities
2. It is difficult to specify an incentive-oriented performance-based contract[26]
3. There are no positive externalities from the construction phase to the operation and maintenance phase
4. Demand risk is high

In the context of PPP project development process in accordance to the current regulation, the above considerations can be qualitatively carried out in the planning phase, in the development of preliminary study. Quantitative data for these purposes will be more available in the project preparation phase. The third consideration is quantitative estimation of VfM achievement. The methodology that is often used is to compare PSC cost with PPP cost. If the PPP cost is lower, it can be said that PPP contract gives more VfM than conventional provision contract, and vice versa.

The fourth consideration is the existence and the level of competition. The contracting agency should ensure that there will be adequate levels of competition in the procurement phase as well as in the contract implementation phase. In the procurement phase, competition is used to obtain the most efficient business entity that at the same time can also provide high quality services. While at the time of contract

[26] DGH and BPJNs have been accustomed to making input/method-based contracts to ensure the quality of infrastructure facilities

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implementation, competition is utilized to ensure that the business entity will not use its monopoly power to become inefficient. This can only be accomplished if there is an opportunity for other players in the market to replace the contracted business entity in the event that certain conditions set out in the contract are not met. With availability of such competitions, the efficiency gain expected to be obtained from business entities can emerge not only on paper but also in reality.

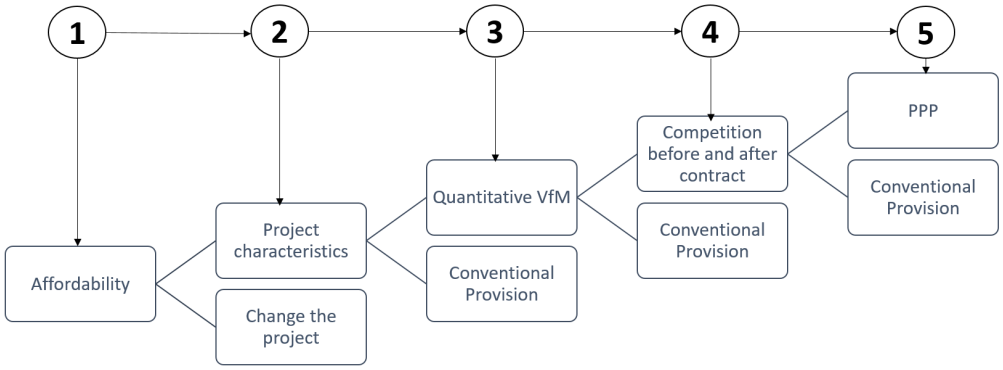

Figure 7: Estimating and Ensuring VfM Achievement

QUANTIATIVE VFM SIMULATION

This section focuses on the third stage of Figure 7 above. The data used here is hypothetical data from a national road preservation project involving reconstruction activities. The methodology uses calculation and comparison of PSC costs with PPP costs. Here are the assumptions used in the simulation:

- General assumption:
  - Cost inflation rate: 5% / year
- PSC assumption:
  - Government cost of capital/ risk free rate: 7.5% / year
- PPP assumption:
  - Debt to capital ratio: 70%
  - financing fee: 1.5%;
  - loan interest rate: 9%
  - unlevered cost of equity:12%;

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  - Depreciation period: 15 years
  - Tax rate: 25%
- AP assumptions:
  - fixed payments paid based on service availability until the end of contract period
- Competitive neutrality is not taken into account in this simulation

The steps undertaken in this quantitative VfM simulation are as shown in Figure 8. The steps can be done by BPJNs or the DGH to examine which road segments under their authority that are more suitable using conventional provision or PPP scheme to deliver public services.

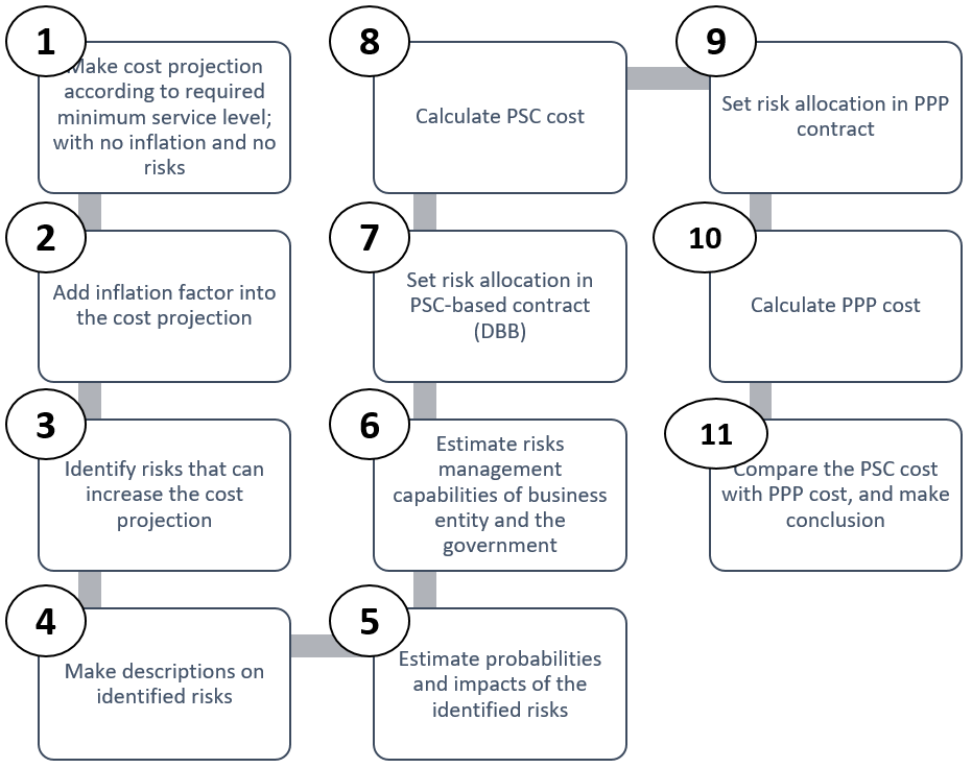

Figure 8: Stages of Quantitative VfM Assessment

Here is a summary of the stages in Figure 8:

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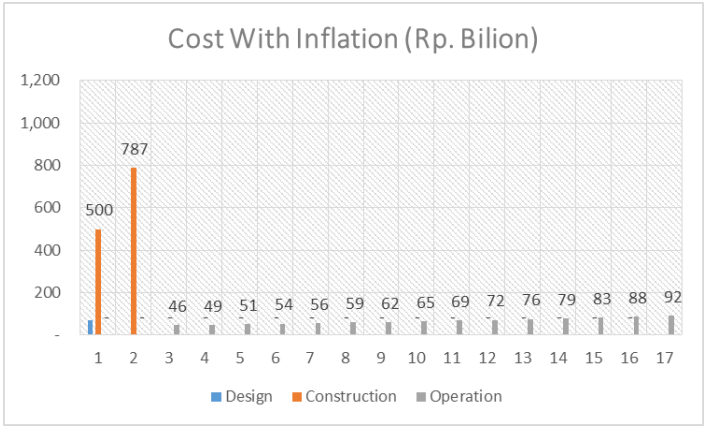
1. The cost projection can only be done after the minimum service levels are decided. In order to focus on the service level and the cost needed[27], inflation and risks factors will be considered later. Figure 9 shows the cost projection that contains: design cost (Rp 66 billion), (re)-construction cost (Rp. 476 billion plus Rp. 714 billion) and operation/maintenance cost (Rp. 40 billion per year).

Figure 9: Projected Costs in Accordance with Minimum Service Levels

2. The next step is adding the inflation factor into the cost projection. This step changes the real projection in Figure 9 into nominal projection in Figure 10. It is assumed that each year the cost is inflated by 5% per year.



[27] Including design, re-construction, operation, and maintenance costs.

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Figure 10: Cost Projection With Inflation

3. The third step is identification of risks that may affect costs in project phases. For example design failure risk may affect reconstruction cost and operation/maintenance cost. Due to limited historical data, experienced personnel at the DGH and BPJNs are the main sources for risks identification.

4. Risk analysis involving several experienced personnel requires collective concurrence on how to explain identified risks using appropriate description. This can be done by conducting focus group discussions involving those personnel, to produce mutually agreed descriptions.

5. Once the descriptions are available, the next step is to estimate behavior of those risks. In this simulation, the behaviour is expressed in terms of probability and impact on project costs. Table 5 shows estimates of risk costs. The estimates are calculated from the weighted average multiplication between probability and impact; expressed as a percentage of affected costs.

Table 5: Identification, Description and Risk Assessment

No.	Risks	Description	Impacted Project Phase	Impacted Cost	Unit of Impact	Estimated Risk Cost (% of Impacted Cost)
1	Design failure risk	Design failure result in higher construction than the initial estimate	Construction	Reconstruction cost	%Biaya (Rp)	15%
2	Construction cost overun	Increase in construction cost due to inadequate project management	Construction	Reconstruction cost	%Biaya (Rp)	20%
3	Increase in operational/maintenance cost	External (for example: overloading) and internal (managerial) factors increase the operation/maintenance cost	Operation/maintenance	Operation/maintenance cost	%Biaya (Rp)	100%

6. The next stage is an assessment of risk management capabilities owned by the government and those owned by business entities, in the context of PPP contract. The capability is decided on the ability to reduce the cost of the corresponding risk. In this simulation, the cost of risk in the PSC is based solely on the ability of the government to perform the risk management. Whereas in PPP, the risks are allocated to the party most capable of performing the risk management so that the allocation of risk is selected based on which party has the lowest risk cost.

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7. Following the risk allocation for PSC – which is in this case 100% allocated to the government – the projected cost is adjusted using the resulted risk cost. The projected cost after inflation and risk cost is presented in Figure 11. However, the cost of capital of the government funding has not been taken into account. This will be considered in the subsequent step.

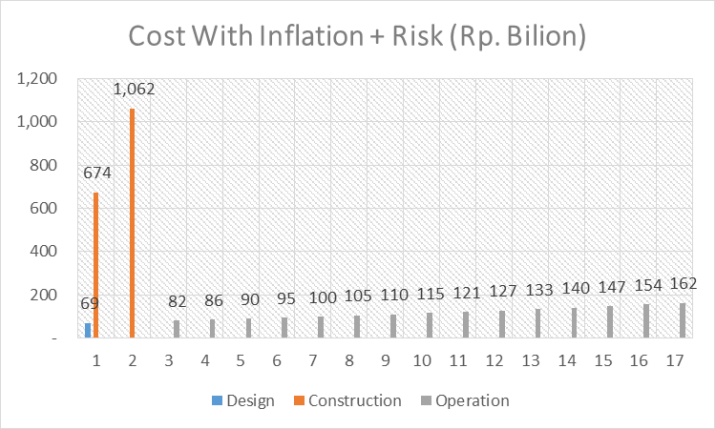

Figure 11: Government Infrastructure Provision Costs Before Financing Cost

8. Suppose for design and reconstruction spending, the Government must issue loan. Therefore, there is an additional cost beyond the costs already calculated in the previous PSC estimate. This is the cost of government financing, which depends on the financing strategy used. For simplicity, in this simulation it is assumed that this cost is related to government borrowing during design and reconstruction period. Loan is repaid after the reconstruction is completed. Different financing strategy will result in different amount of financing cost.

   Figure 12 shows the final estimation of present value of PSC cost. The present value of PSC cost is the sum of present value of: base PSC (inflation-adjusted cost), cost of risks, and financing cost. The discount rate used is the risk free rate (7.5% per annum), to avoid double counting of risks. In this simulation, the total present value of PSC cost is Rp. 2,623 trilion.

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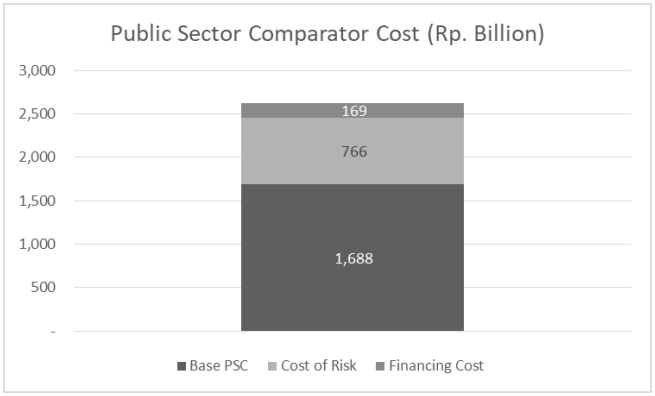

Figure 12: Public Service Comparator Cost

9. As in the estimation of PSC cost, the estimation of PPP cost begins with the determination of risk allocation between the government and the business entity in accordance with the type of the contract. For this purpose, risk allocation principle is used. In this simulation, it is assumed that business entity is more capable to manage design failure and reconstruction cost overrun risks. Thus, those risks are allocated to the business entity. On the other hand, no party is better able to manage the risk of operating / maintenance cost escalation. This risk is shared by both parties (50%:50%). The present value of PPP cost, after adjusting project cost with the risks costs, is presented in Figure 13. The discount rate used is the risk free rate.

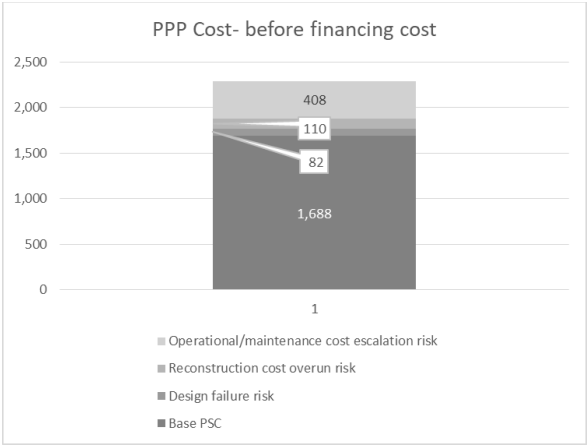

Figure 13: PPP Cost Before Financing Cost

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10. The next step is to add of business entity's financing cost. The assumption of the debt structure is as follows:
    a. Financing fee: 1.5%, on time cost
    b. Debt / total capital: 70%
    c. Interest rate (including interest during construction): 9% per annum
    d. Principle repayment: 10 years after COD, bullet payment

    The unlevered cost of equity is 12% per annum. Adjusted Present Value method is used because of its suitability of dealing with cash flows with changing leverage. The amount of Availability Payment required is calculated using iteration so that for the business entity, the present value of revenue equal to the present value of expenditure, or NPV is equal to zero. In this simulation the Availability Payment is assumed to be the same every year until the end of the PPP contract period.

    Figure 14 shows two stacked columns of PPP cost. On the left-hand side, the PPP cost composes of base PSC, cost of risks and financing cost. While on the right-hand side, the PPP cost composes of Availability Payment and retained risk (50% of operation/maintenance cost escalation risk). The total PPP cost in this simulation is Rp. 2,698 billion.

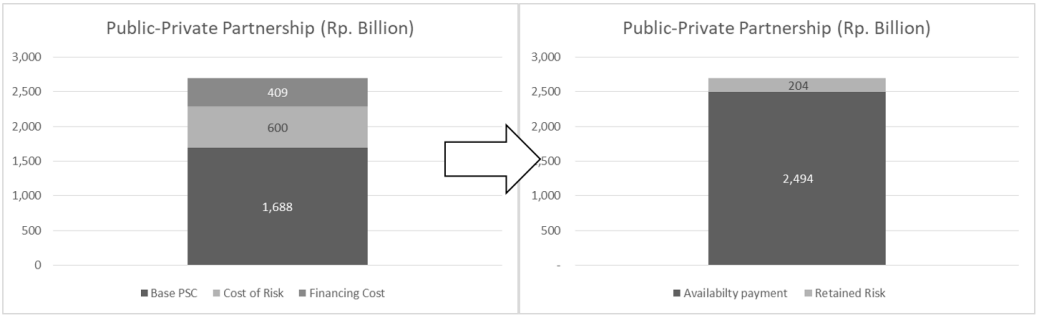

Figure 14: PPP Cost

11. The last step is comparing the PSC cost with PPP cost. Figure 15 depicts the costs during the contract period. By using PPP contract, a contracting agency may avoid the high outlay at the beginning period used for reconstruction, which may exceed the budget limit threshold. But this does not mean PPP is a cheaper option. Figure 16 shows the comparison between present value of PSC

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cost and present value of PPP cost. It turns out the present value of PPP cost is slightly higher than the present value of PSC cost.

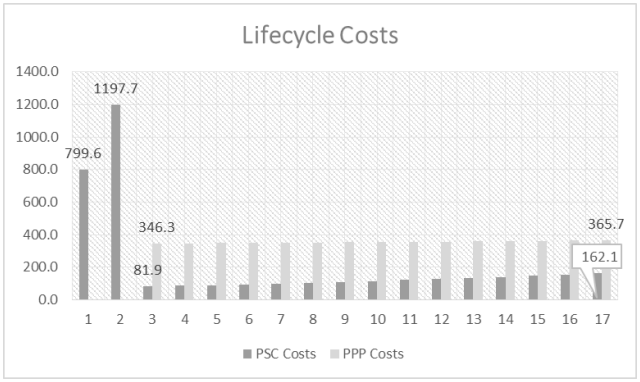

Figure 15: PSC Cost vs PPP Cost During Contract Period

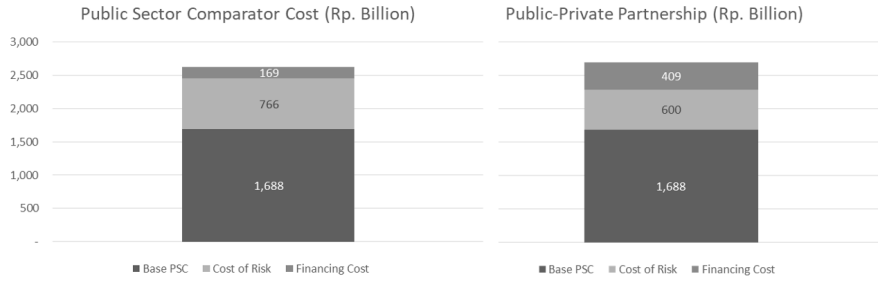

Figure 16: PSC Cost vs PPP Cost

From the simulation exercise, it can be concluded several important points related to the achievement of VfM through PPP contract:

- The accuracy of the VfM calculation depends heavily on the availability of adequate data of risks. The data at least includes: types of risks, risks descriptions, and empirical data of the risks. When available data is inadequate, the next best alternative is to extract it from the knowledge of experienced experts who understand the risks of preservation of a particular road segment.
- The assessment of cost of risks, ideally, results from analysis of empirical data that can illustrate the ability of the parties – the government and the business entity – to manage risks. Due to lack of adequate data, particularly the business

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entities' risk management capability in PPP scheme, assessment from experts are needed in estimating this.

- The assumption of both government funding/financing strategy and the business entity's financing strategy will affect the final outcome of PSC cost comparison with PPP cost.
- Using the PPP scheme, the government does not have to make large expenditures for infrastructure construction. While this saves government spending during the construction period, this does not necessarily mean that PPP is the least expensive option in terms of infrastructure lifecycle costs. The amount of risk reduction must be greater than the increase in financing cost. This issue depends not only on the business entity's risk management capabilities, but also on the ability of contracting agency to make appropriate performance-based incentive contract.

CONCLUSIONS AND POLICY RECOMMENDATIONS

Whether the application of PPP contract would become an easy effort or not, depending on the readiness and characteristics of the sector. The trials of PMBC contract in the national road sector preservation shows that the development of performance-based contract for this sector is not a straightforward activity that takes time to develop. However, the experience will be of some help to the authority in developing PPP contracts. It should be note that PPP contracts are in a regulatory environment that puts forward performance-based principles. But this contract is more complex than the previous contracts because of greater risks transferred to the business entity.

In order to develop a PPP contract that can offer VfM, based on the explanation in this article, here are some issues that policy makers need to consider with regard to this sector:

1. Reduction in primary balance deficits does not necessarily occur by replacing conventional procurement with PPP procurement. The horizon of this deficit reduction assessment needs to be extended to cover the entire life cycle of the project
2. The decision to use a PPP scheme should be based on minimization of cost of risks to the achievement of certain public service performance standards. The public service should be clearly defined and its specifications can be properly articulated in the contract.

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3. Availability of data on risks and on risk management capabilities is a challenge in conducting the VfM quantitative assessment. The sector authority should undertake means to ensure availability of these data in the framework of developing sector performance by allocating risks to those most able to manage the risks. In this context, PPP contract is an option of modalities that can be utilized to improve sector performance.
4. The principle of risk allocation should be used in determining what risks to be allocated to a business entity. The use of the principle should, at least, consider:
    a. availability of intended risk management capabilities in existing business entities in the market
    b. the amount or risk transferred should be significant enough to compensate for higher financing cost of the business entity
    c. The risk allocation should be supported by relevant performance-based incentive contracts as well as backed by competition in the procurement and implementation phases
5. Each type of road preservation contract has their own advantages and disadvantages in improving public service performance from the sector. The use of PPP contracts should be based on consideration of the conditions under which such contracts may increase VfM. The conditions are:
    a. There is an opportunity to increase affordability of a project by using PPP contract;
    b. The focus of the project is on the performance of its public services rather than on the methods or inputs that should be used;
    c. It is not difficult to create performance-based and incentive-oriented contract spesifications;
    d. There is a positive externality of the construction phase in the operating phase that becomes benefit for the business entity;
    e. Demand for such public service is stable and predictable;
    f. It can be proved on paper that PPP cost is cheaper than the cost of using other types of contracts;
    g. Adequate levels of competition can be ensured to occur, at the procurement phase dan implementation phase of the PPP contract.
6. There should be a common understanding between stakeholders in the public sector, including auditors, on how to assess performance of a PPP project.

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There are some issues that have not been discussed and can be a follow up of this article. Firstly, this article has not discussed the design of PPP contracts that are suitable for national road preservation projects. The contract should contain clear spesifications of performance service standards and incentive structures that are able to stimulate business entities to achieve those standards. Secondly, the risk analysis carried out in the above simulation is still uses a lot of simplification. For more detailed calculation, the availability of risks data – including their descriptions, behaviors, and interactions – is crucial. Thirdly, this article also does not address kinds of externalities – and also their magnitudes – that arise from the construction phase at the operational phase, which business entity can retain. Positive externalities are required to provide sufficient incentives for bundling of construction works with preservation works. The next issue that can be discussed further is how to make arrangements that can ensure adequate levels of competition at procurement stage as well as at contract implementation stage. This is needed to ensure that the available incentives are effective. Lastly, the contracting agency should set up ways to manage retained risks, such as legal and political risk – and also demand risk in case of PPP with AP. This still requires further discussion.

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