

2025 APN

Introducing Operation-type PPP Projects in Korea

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Chapter. 1

Need for Introducing Operation-type PPP Projects



1. Need for Introducing Operation-type PPP Projects

Need for Managing Aging Infrastructure.

- + Infrastructure built in the 1970s is now aging, making systematic and long-term maintenance essential.
- + As of 2020, 17.5% of all facilities have been in service for more than 30 years since their completion, indicating growing structural and operational challenges.
- + After 2030, the proportion of aging infrastructure is projected to increase rapidly.

1. Need for Introducing Operation-type PPP Projects

Need for Managing Aging Infrastructure.

After Completion	Bridge	Tunnel	Harbor	Dam	water supply and sewerage	Others	Sum
30 years more	6,319 (19.1%)	697 (14.2%)	108 (21.8%)	390 (63.4%)	505 (21.5%)	19,978 (16.8%)	27,997 (17.5%)
21~30 years	10,453 (31.6%)	874 (17.8%)	141 (28.4%)	77 (12.5%)	575 (24.4%)	30,788 (25.9%)	42,908 (26.8%)
11~20 years	12,146 (36.7%)	1,666 (33.9%)	129 (26.0%)	72 (11.7%)	733 (31.1%)	34,360 (28.9%)	49,106 (28.1%)
10 years less	4,199 (12.7%)	1,683 (34.2%)	118 (23.8%)	76 (12.4%)	541 (23.0%)	33,753 (28.4%)	40,370 (27.9%)
Sum	33,117 (100%)	4,920 (100%)	496 (100%)	615 (100%)	2,534 (100%)	118,879 (100%)	160,381 (100%)

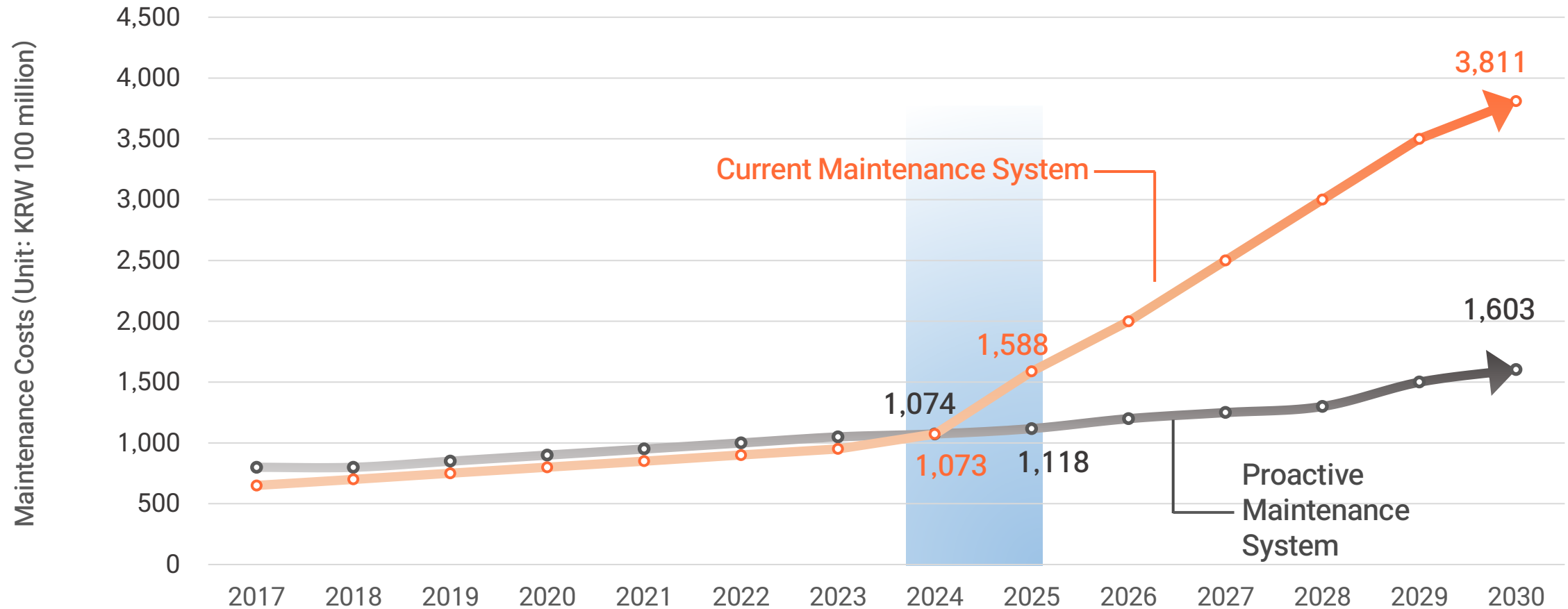
1. Need for Introducing Operation-type PPP Projects

Necessity of Preventive Maintenance

- + The aging of infrastructure facilities necessitates a transformation in maintenance paradigms.
- + Through proactive management, we aim to reduce life-cycle costs and enhance facility performance before deterioration progresses.
- + To this end, the government enacted and has implemented the 'Infrastructure Management Act' in 2018.

1. Need for Introducing Operation-type PPP Projects

Necessity of Proactive Maintenance



1. Need for Introducing Operation-type PPP Projects

Shrinking Infrastructure Budget

(unit=1 Trillion KRW, %)

- + In the 2025 budget, across the 12 major categories,
 - the health, welfare, and employment sector showed the largest increase (+ 11.1 trillion KRW) compared to the previous year,
 - while the infrastructure sector was the only sector with a reduction (– 1.0 trillion KRW).
- + The infrastructure budget declined by 1 trillion KRW, representing a 3.8% reduction from the previous year.

Categories	2024 Budget (A)	2025		Budget change		
		Government Plan(B)	The Final (C)	National Assembly Budget (C-B)	Compared to the previous year (C-A)	(C-A)/A
1. The Health, Welfare and Employment	237.6	249.0	248.7	△ 0.3	11.1	4.7
2. The education	95.2	98.5	98.5	△ 0.0	3.3	3.5
3. The Culture, Sports and Tourism	8.7	8.8	8.8	△ 0.1	0.1	1.1
4. The Environment	12.5	13.0	13.0	△ 0.0	0.5	4.0
5. The R&D	26.5	29.7	29.6	△ 0.1	3.1	11.7
6. The Industry and Energy	28.0	28.3	28.2	△ 0.0	0.2	0.7
7. The SOC	26.4	25.5	25.4	△ 0.0	△ 1.0	△ 3.8
8. The Agriculture·Forestry, Fisheries, and Food	25.4	25.9	25.9	△ 0.0	0.5	2.0
9. The National Defense	59.4	61.6	61.2	△ 0.3	1.8	3.0
10. The Diplomacy and Unification	7.5	7.8	7.7	△ 0.1	0.2	2.7
11. The Public Order and Safety	24.4	25.1	25.0	△ 0.1	0.6	2.5
12. The Administration	110.5	111.3	110.7	△ 0.6	0.2	0.2
Total Expenditure	656.6	677.4	673.3	△ 4.1	16.7	2.5

1. Need for Introducing Operation-type PPP Projects

Introducing Private Investment in Operating and Improving Infrastructure Facilities

- ✦ For infrastructure facilities, continuous operation and management are required after construction, leading to expenses for operation, maintenance, and major repair or replacement.
 - If the government directly operates all infrastructure facilities, its capacity for new investment in infrastructure will decline.
- ✦ In this context, the introduction of private investment is critical for support the maintenance, improvement, and expansion of aging facilities.
 - Private sector operates facilities over the long term under contractual agreements, bringing in creativity and efficiency.
 - Increased private sector participation promotes competition not only among private sector but also with public operators.
 - As a result, operational inefficiencies are reduced, and the quality of infrastructure services is enhanced.

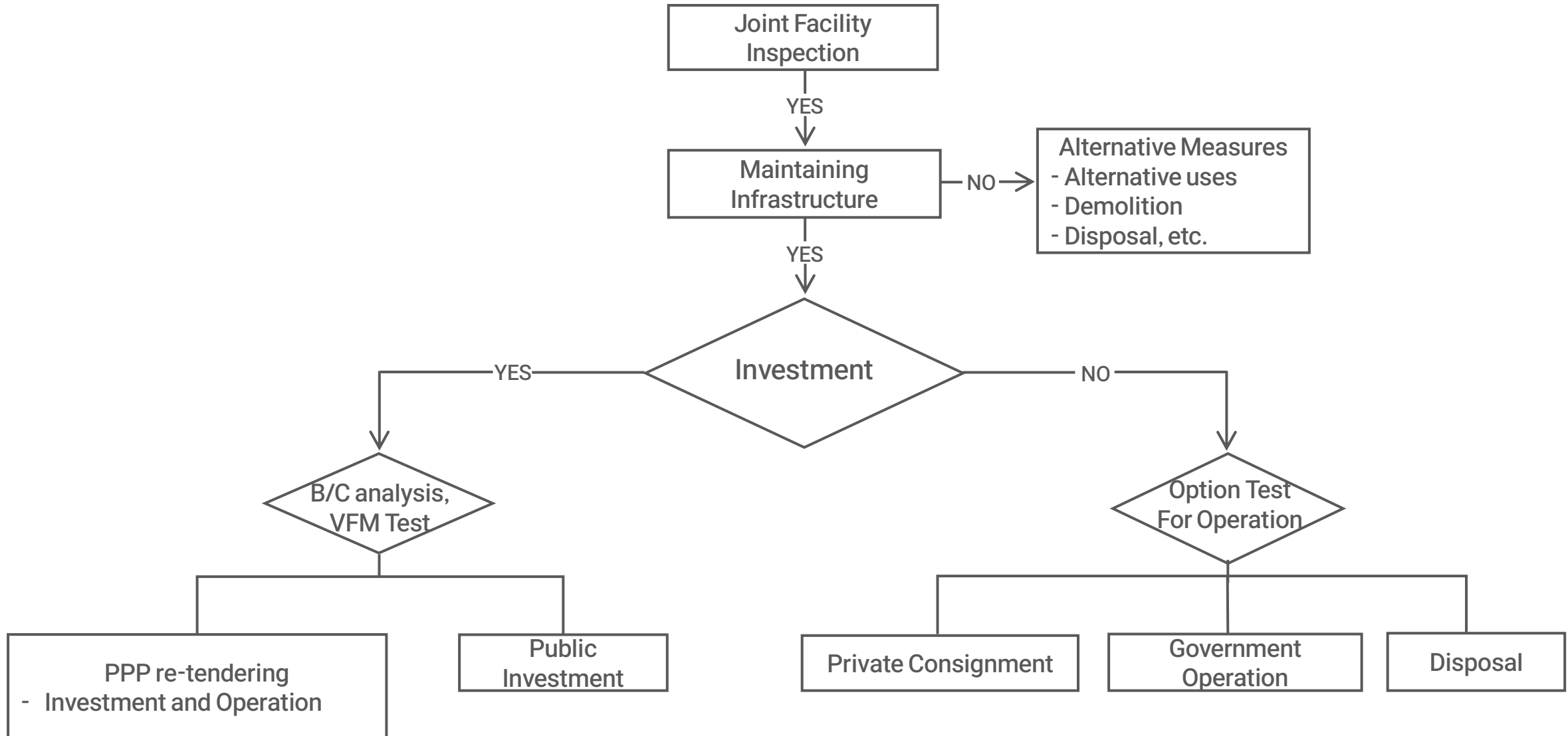
1. Need for Introducing Operation-type PPP Projects

Enhancing the operational efficiency of PPP facilities after concession expiration

- + For projects with expired concessions, operating conditions must be redefined.
- + According to the PPP Basic Plan, the competent authority and the concessionaire conduct joint inspections and are required to establish Post-Concession Management Plan 3~4 years before the concession period ends.
- + The Post-Concession Management Plan should determine whether the facility will remain in use and assess the appropriateness of available operation options.
- + The operation method must be selected from among PPP, traditional public procurement, private consignment, or disposal.

1. Need for Introducing Operation-type PPP Projects

Procedures before Concession Expiration



1. Need for Introducing Operation-type PPP Projects

Differentiation from private consignment operation

- ✦ For infrastructure facilities, continuous operation and management are required after construction, which leads to expenses such as operation, maintenance, and major repair or replacement costs.
 - If the government directly operates all infrastructure facilities, its capacity for new investment in infrastructure will decline.
- ✦ Introduce private investment to support maintenance, improvement, and expansion of aging facilities.
 - Private sector operates facilities over the long term under contractual agreements, bringing in creativity and efficiency.
 - An increase in private operators promotes competition not only among themselves but also with public operators.
 - Inefficiencies in operation will be reduced, and the quality of infrastructure services will be enhanced.

1. Need for Introducing Operation-type PPP Projects

private consignment operation

- Contract is short-term, usually within five years.
- A fixed contract based mainly on personnel expenses
- Variable costs (such as other operating costs, parts replacement, and repairs) are later reimbursed by the government.
- Private consignment operator acts mainly as an assistant and receives a fee including a profit margin.
- No liability for operational performance (no penalty for damages).
- Long-term maintenance, including repair, remains the responsibility of the competent authority.
- Systematic maintenance is limited due to staff rotation and budget constraints.

PPP operation

- A SPC is established for construction and long-term operation (15+ years).
- Professional management enabled through construction and operation track record and related databases, tailored to the project's characteristics.
- Maintenance based on Life Cycle Cost (LCC) over the operation period
- As project owner, the concessionaire is responsible for construction, investment, long-term operation and maintenance on behalf of the competent authority.
- Responsible for operational performance.

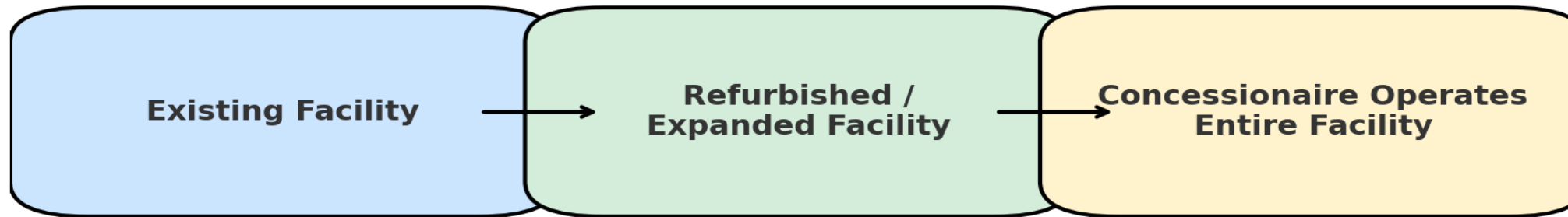
Concept and Categories of Operation-type PPP Projects



2. Concept and Categories of Operation-type PPP Projects

Need to establish legal and institutional grounds for Brownfield PPP project(operation-type PPP projects)

- + In 2022 the PPP Basic Plan was revised to introduce a new method: Refurbishment-and-Operation PPP.
 - The Refurbishment-and-Operation PPP grants the concessionaire the right to operate the entire facility including both existing and refurbished or expanded parts, after completing partial refurbishment or expansion.



*Operation rights granted for both original and improved facilities
← Partial refurbishment or expansion*

2. Concept and Categories of Operation-type PPP Projects

Need to establish legal and institutional grounds for Brownfield PPP project (operation-type PPP projects)

- + For the 'Operation-type PPP', where the concessionaire is granted facility operation rights without refurbishment or expansion, no legal or institutional foundation has yet been established.
- + The current PPP Act and its Enforcement Decree are largely based on 'construction,' so new provisions are needed to accommodate Operation-type PPP projects where existing facilities already exist and new construction is not essential.
 - Therefore, it is necessary to establish a clear legal and institutional framework of Operation-type PPPs, including the project structure, scope, and revenue model.
 - These elements can be developed further through the PPP Basic Plan and detailed implementation guidelines.

2. Concept and Categories of Operation-type PPP Projects

Concept of Operation-type PPP Projects

- ✦ Operation-type PPP projects could apply to government-owned facilities that have been constructed.
 - These may include government-financed project facilities or PPP facilities whose ownership has been transferred to the government.
 - Facilities owned and operated by public enterprises or institutions are also eligible.
 - In all cases, construction must have been completed.
- ✦ In Operation-type PPP projects, the concessionaire would make investments for various purposes, including:
 - Acquisition of operation rights
 - Refurbishment and expansion of facilities
 - Maintenance and operation of facilities

2. Concept and Categories of Operation-type PPP Projects

Rate of Return and User Fee Calculation Formula in Operation-type PPP

$$\sum_{i=0}^n \frac{IC_i + OC_i}{(1+r)^i} = \sum_{i=n'}^N \frac{OR_i - OC_i}{(1+r)^i}$$

- n: the time point at which the total project cost investment is completed
- n': the commencement of the concession
- N: the end of the concession period
- OR_i: the annual operating revenue (in real terms)
- OC_i: the annual operating cost (in real terms, excluding corporate tax)
- r: the pre-tax real IRR of the project

✦ In Operation-type PPP projects, the total project cost consists of:

- Investment Cost (IC): the monetary payment made by the concessionaire to the government for acquiring operation rights
- Rehabilitate Cost (RC): the investment cost for facility expansion and refurbishment

2. Concept and Categories of Operation-type PPP Projects

Category(1): Operation-type PPP Project (with construction)

$$\sum_{i=0}^{\pi} \frac{RC_i}{(1+r)^i} = \sum_{i=\pi'}^N \frac{OR_i - OC_i}{(1+r)^i}$$

- + The concessionaire undertakes major repairs, expansion, and refurbishment, along with the required investment.
- + In return, it is granted the right to manage and operate the entire facility and to collect revenues during the concession period.
- + This category was already introduced in 2022 as Refurbishment-and-Operation PPP.

2. Concept and Categories of Operation-type PPP Projects

Category (2): Operation-type PPP project (without construction)

$$\sum_{i=0}^n \frac{IO_i}{(1+r)^i} = \sum_{i=n'}^N \frac{OR_i - OO_i}{(1+r)^i}$$

- + No new construction involved
- + The concessionaire pays the value of operation rights to the competent authority.
- + For example, this category may apply to facilities for which users pay charges.
- + In return, it is granted the right to manage and operate the facility and collect revenues during the concession period.
- + The value of operation rights depends on project profitability.

2. Concept and Categories of Operation-type PPP Projects

Category (3): Hybrid Model for Operation-type PPP projects

$$\sum_{i=0}^n \frac{IC_i + RC_i}{(1+r)^i} = \sum_{i=n'}^N \frac{OR_i - OC_i}{(1+r)^i}$$

- ✦ Combination of Refurbishment-and-Operation-type PPP + Operation-only PPP (without construction)

2. Concept and Categories of Operation-type PPP Projects

Category (4): Operation-type PPP project (without investment)

- + The investment is not needed.
- + For example, this category may apply to facilities for which the government pays service charges.
- + The concessionaire is granted the right to manage and operate the facility and collect operating cost during the concession period.

Expected Benefits of Operation-type PPP Projects



3. Expected benefits of Operation-type PPP Projects

Responding to Paradigm Shifts

- + Government infrastructure policy is shifting from construction to maintenance.
 - As infrastructure ages, proactive management is needed to reduce life-cycle costs and improve performance.
 - With limited maintenance budgets, Operation-type PPPs can diversify government's funding sources
- + Challenges of expiring concessions
 - An increasing number of PPP projects are nearing concession expiration, requiring timely policy responses.
 - Projects without construction cannot continue under PPP; only government operation or short-term private consignment is possible.

3. Expected benefits of Operation-type PPP Projects

Mitigating Fiscal Burden

- ✦ Direct government operation increases maintenance budget pressure
 - Short-term private consignment makes it difficult to achieve stable and life-cycle cost efficiency
- ✦ Expected Benefits of Operation-type PPP Projects
 - Effective alternative for infrastructure management, enhancing fiscal efficiency and service quality
 - Private investment supports maintenance, refurbishment, and expansion of aging facilities, while fostering creativity and efficiency in operations
 - Revenue from the sale of operation rights can be reinvested in other PPP projects

3. Expected benefits of Operation-type PPP Projects

Enhancing Service Quality through Competition

- + Increases private sector participation by adopting Operation-type PPP projects
- + Promotes competition both among private sector and with public operators
- + Reduces inefficiencies from monopolistic or oligopolistic practices by public entities
- + Improves the quality of infrastructure services