JICA Assistance Program for Quality Infrastructure Investment

2017 Feb. 21

JICA Philippines Office

Index

1. JAPAN/JICA assistance policy / program

Philippine-Japan Strategic Partnership

- President Duterte visit in Japan 2016 October
- Prime Minister Abe visit Philippines in January 2017(3rd Summit Mtg)

GOJ Commitment for Infrastructure Development on Summit Mtg

■Expand Infrastructure Investment
-Investment1trillion yen in 5year （ODA・Private Investment)
-Establishment of infrastructure development committee.
■Practical use of Japanese Technology for infrastructure development
-Metro Manila transportation, national high way, power, Metro Manila, Clark ‘green city ‘ rail road development study by JOIN
■Peace and development of MINDANAO
-Davao city MP, Flood control and irrigation
-Road power, sanitation, education in Pansamolo.
■Bilateral agreement for Joint Crediting Mechanism
-Trading carbon emission reduction volume

■President Duterte in Japan

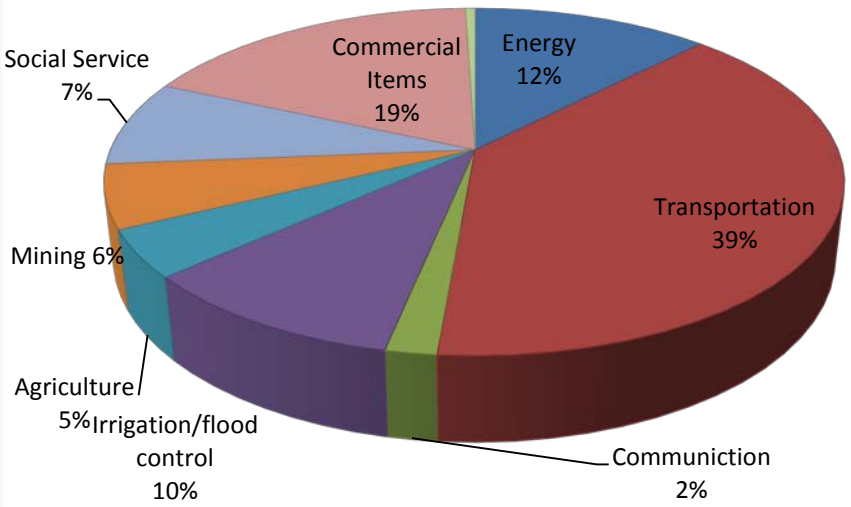
■Prime Min. Abe in Philippines

JICA Performance in Philippines

Yen Loan

- 2015Y : 275.7billionYen（commitment）
  27.9billionYen（disbursed）
- Number of project : 21
- Assistance Sector

Total:2.4trillionYen in 1971-2014
（Commitment ）



Giant Aids

- 2015Y:7.2billion
- Number of project:6
- Assistance sector: Water Supply, Shipping, Disaster, Education etc
- Total:166billionYen（～Y2014）

Emergency Grant Assistance of Medical l team and emergency items after Yolanda Typhoon

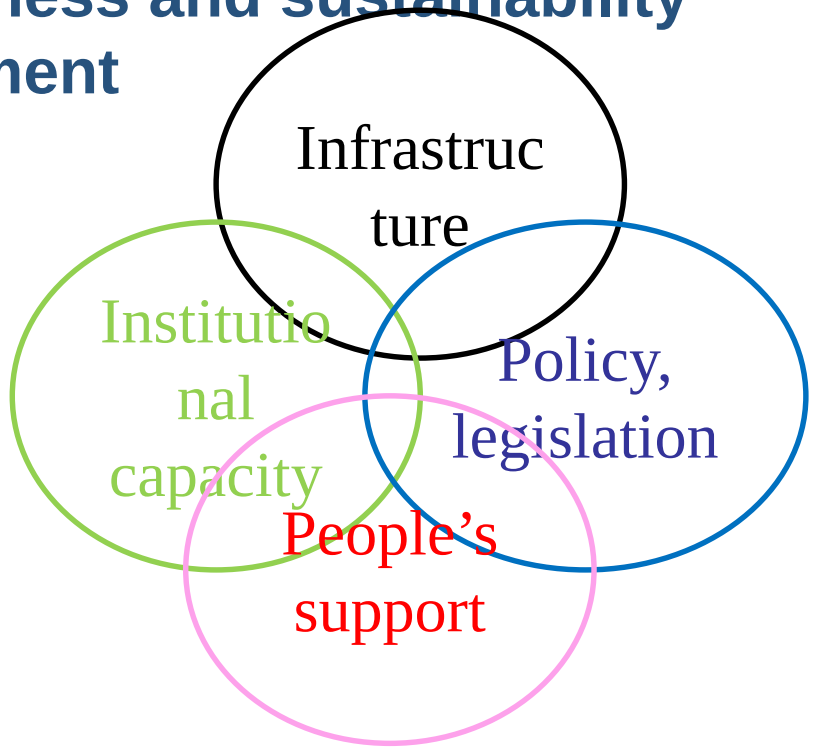
Technical Cooperation

- Y2015 5.6billionYen
- Number of Projects:28
- Sectors: Public sector, Agriculture, Mining, Energy, Commercial, Tourism, Human Resource, Health,Medical, Social Welfare
- Total:219billionYen（～2014Y）

■One Stop Shop of Japan's ODA

JICA is a "one stop shop" of Japan's ODA, providing a wide range of assistance;

■Integrated approach for maximize effectiveness and sustainability development



2.JAPAN/JICA assistance scheme for Quality Infrastructure

２－１．Partnership for Quality Infrastructure Investment for Asia's Future

G7 Summit Consensus for Quality infrastructure

-Easy to use,durable of disaster resilient, as well as environmentally friendly
-Cost-effective in the long run. enhancing connectivity among Asian countries
- Creating jobs for local people, increasing local skills and improving people's lives

First Pillar: Expansion and Acceleration of Assistance through the Full Mobilization of Japan's Economic Cooperation Tools
Second Pillar: Collaboration between Japan and the Asian Development Bank (ADB)
Third Pillar: Measures to double the supply of funding for projects with relatively high risk profiles by such means as the enhancement of the function of the Japan Bank for International Cooperation (JBIC)
Fourth Pillar: Promoting "Quality Infrastructure Investment" as an international standard

JICA 's assistance for Quality Infrastructure Investment

1.Expanding and acceleration of ODA assistance: JICA schemes in collaboration with "Yen Loan" ,"PSIF", "Grant Aids" and Technical Cooperation

2.Collaboration between Japan and ADB: JICA collaborate with ADB to develop financial mechanism for PPP infrastructure investment utilize Private Sector Investment Fund

2－2. Yen Loan（STEP rule）

■Purpose

-Promoting Japanese assistance utilize Japanese prior technology and know-how through technology transfer to developing country　since 2002 July

■Advantages

-First truck procurement

-Low rate interest

-Lending percentage: Maximum 100 % of project cost

■Target sector

-Bridge, Tunnnel, Corridor incursion of resilient technology

-Sea Port, Air port, Urban traffic management system

-Communication, broadcast, public information

-Electricity, distribution network,

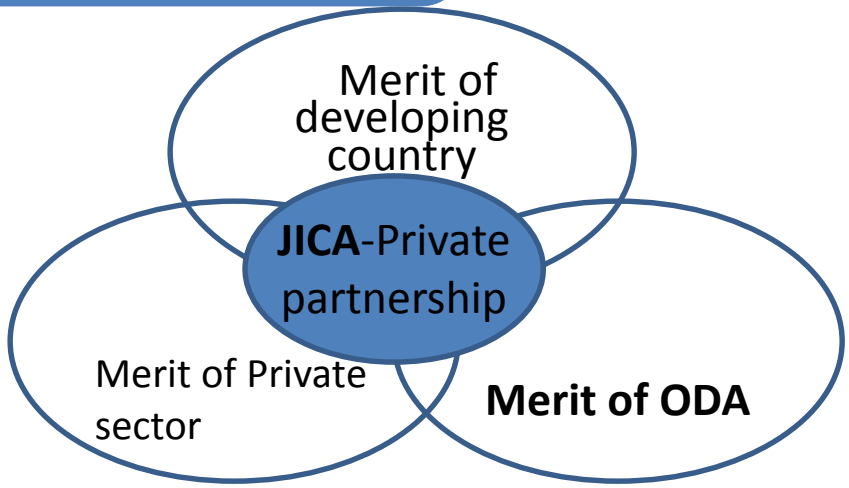
-Flood control, disaster management system/equipment

-Environmental management (air pollution, water pollution, waste management, recycling, recovering energy etc

Other technologies in cases which required and utilize actively in developing countries.

2－3. Private Sector Cooperation

Purpose	• Private sector development is necessary for sustainable and inclusive growth in developing countries. ODA could not cover all of development agenda. It is important to promote collaboration between ODA and private conpany
Direction	•Strengthen partnership of private company and private business partnership, as well as speedy improvement of business environment of private company will achieve win –win –win relationship of developing country, private company and ODA



Methodology

（**1**）Strengthen point of viewing of private partnership

（**2**）Strengthen communication and grasp needs of private sector

（**3**）Improving condition of promoting private partnership

（**4**）Materialize individual private partnership project

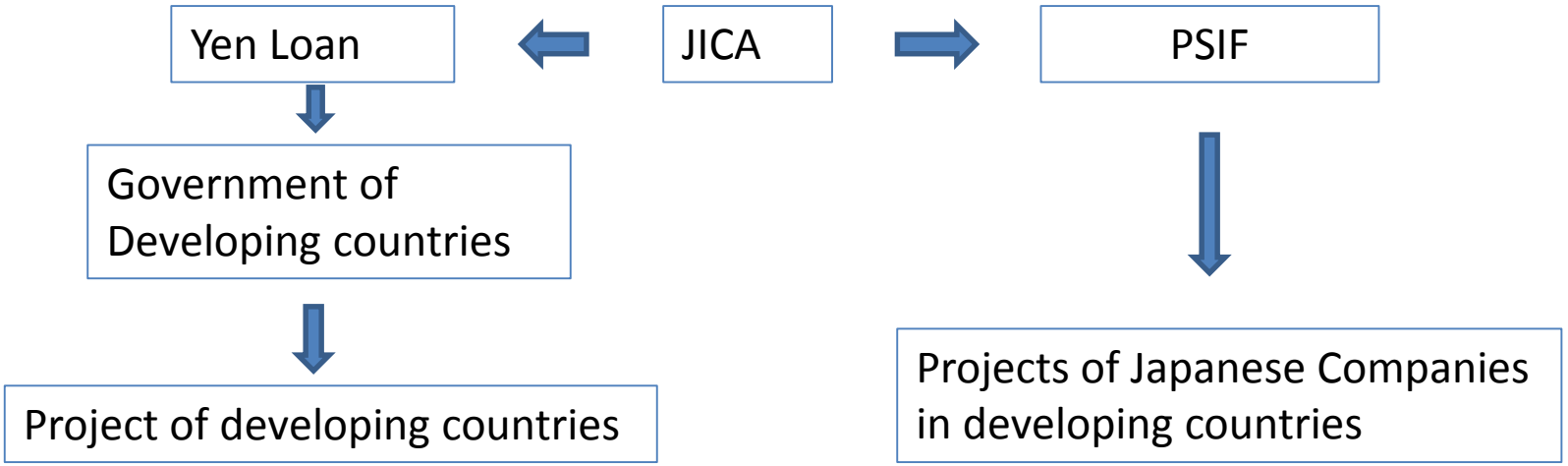
（**5**）Formulating new Private Sector Investment Finance

（**6**）Promoting public relatonship

1）JICA Private Sector Investment Finance

●Loan/investment for private companies (including SPC of PPP) benefit to developing country

●Projects that has difficulties to put loan by private bank, JICA will take risks and support for enforcement materialization.

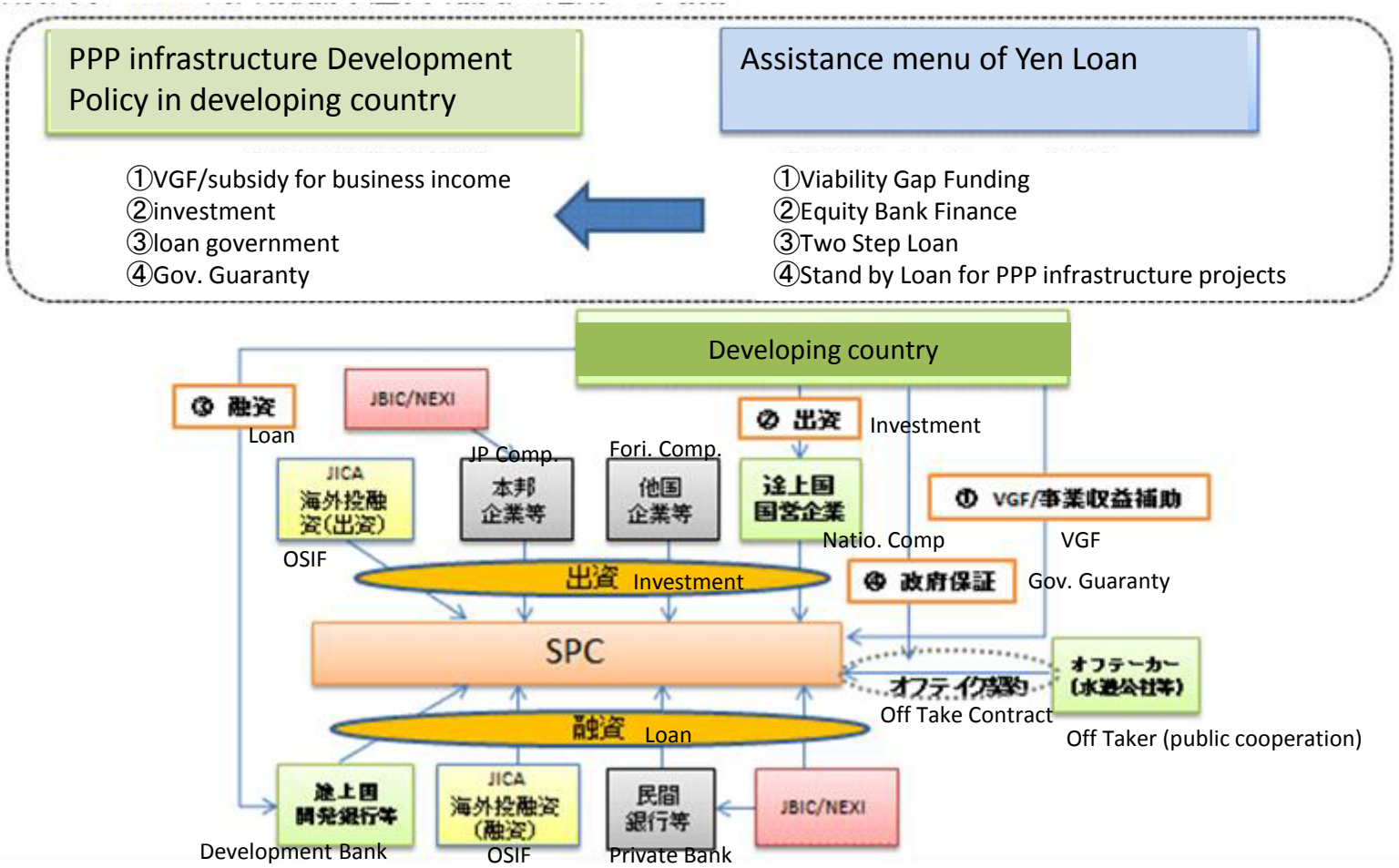


Project of（①Infrastructure, acceleration of economic growth, ②MDG・poverty, ③Climate change）

Funding condition: fixed rate、loan period(long term: 20-25Y), grace period 5years, currency(Yen / recipient country currency)

2）Comprehensives Yen Loan support facilities for PPP （Public Private Partnership) infrastructure projects

-Preparing comprehensive support menu for preparing and implementation policy of PPP infrastructure projects in accordance with the needs of developing countries.
-In collaboration with the assistance for developing countries, supporting Japanese private company/Banks with JBIC loan/ , NEXI　trading guarantee and JICA PSIF loan/investment

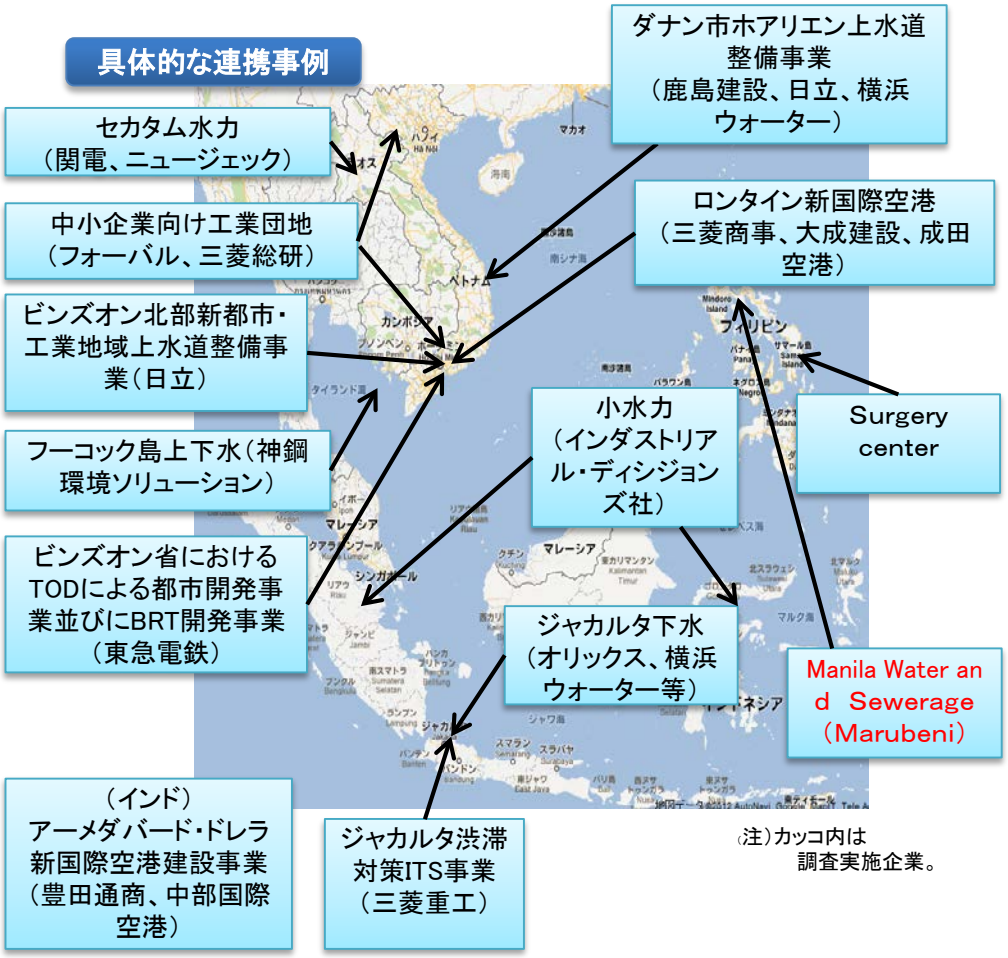


3）Preparatory Study of PPP Infrastructure Projects

Purpose: Based on the proposal of Japanese Companies, to find out feasibility of the project for Yen Loan /Private Sector Investment Finance

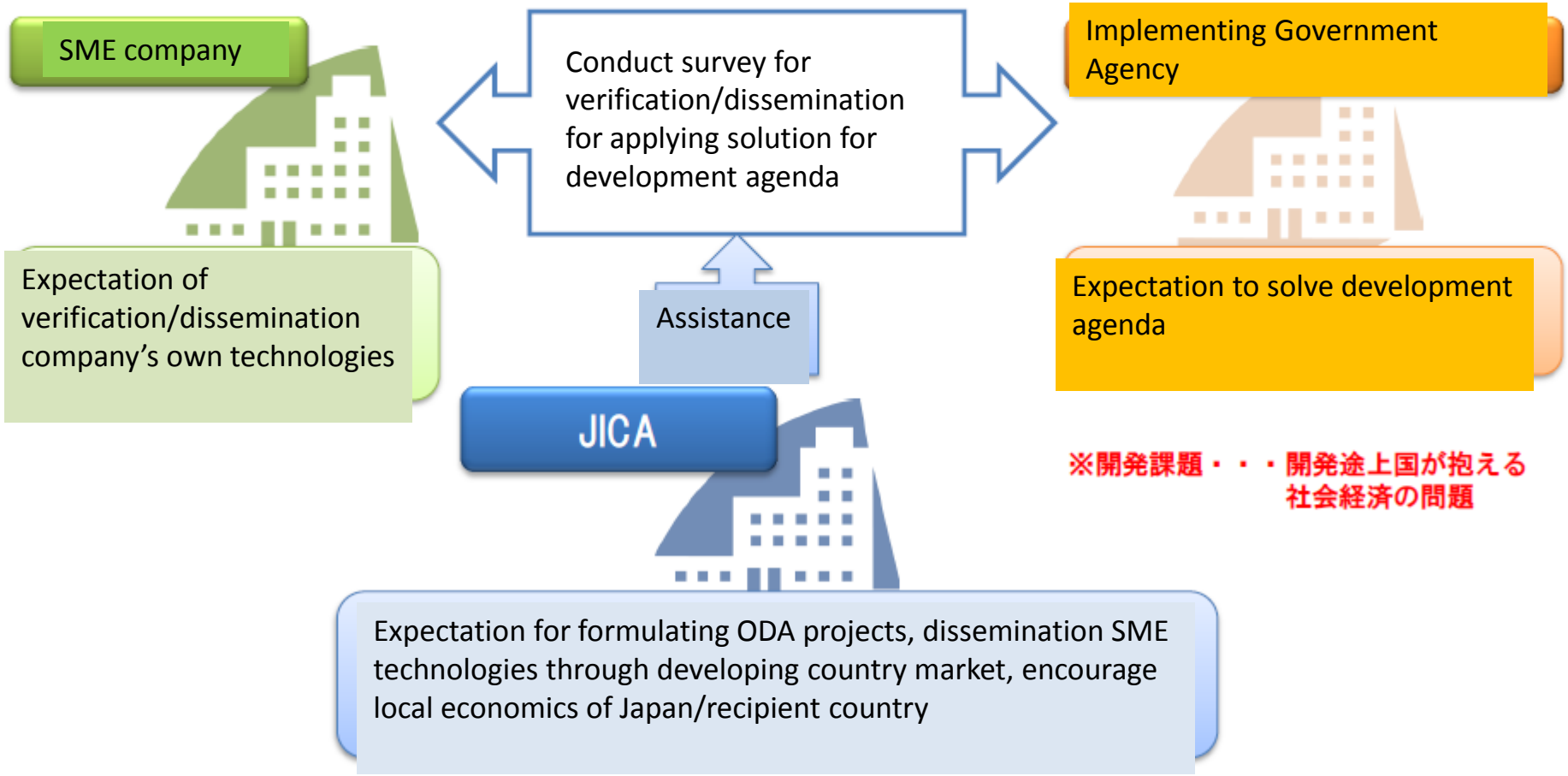
Targeted PPP project
-Economic and social sustainable development in developing country
-In line with Japanese and development countries assistance policy
-Possibility to formulate Yen Loan/PSIF
-Proposed company intend to invest proposing PPP infrastructure projects

Point
-Formulating preferred PPP projects
-JICA support for Gov.-private cooperation
-Utilize know-how of Japanese LGUs
-Reinforcement project materialize



4）JICA SME support survey for project formulation / verification (pilot project)

Based on SME company proposal, JICA support to conduct survey and dissemination of SME technology which apply solution for targeting development agenda .



3.Overview of water and sanitation in Philippines

Issues of Water Supply in the Philippines

	Level 3	level2	Level 1	Others
All country(%)	43	10-15	25	8-15
Urban(%)	61	31		9
Rural(%)	26	65		9
manila(%)	89	11		
Cebu(%)	28	27	3	42

	Coverage ration	House Connection	NRW	Tariff P/m³	Production Cost	Number of staffs/1000connections
All counbtry	65	43	29	13.08	0.85	7
Manila	90	90	32	32.92		
Cebu	43	28	30	13.6	0.70	4.6
LGU	57		36	7.22	1.18	9
CBO	66		16	7.99	0.87	6.6
WD	69		26	17.82	0.7	6.8
PO	66		26	15.37	0.74	5.8

Shortage of Water Supply Volume in Urbanized Cities

Piping water connection is still behind

Behind piping water High NRW ratio make worse effect on water business

Disproportion of performance and financial stability of water Agencies

Issues of sewerage system in Philippines

・Behind of sewerage system improvement, Public Water Contamination

-37 of 172 rivers are progressing severe pollution

- 70% of water pollution comes from gray water

・Access Population for Sewerage system -4%

・11 sewerage system, 14% HH coverage in Metro Manila, very few other local area

Access population for iimproved sanitation toilet－74%

Toilet Access 87% in Urban, 67% in Rural

Septic tank 92% Sewerage 4%, no toilet facility 4%

Only 10% of septage are proper treated and discharge in public water area

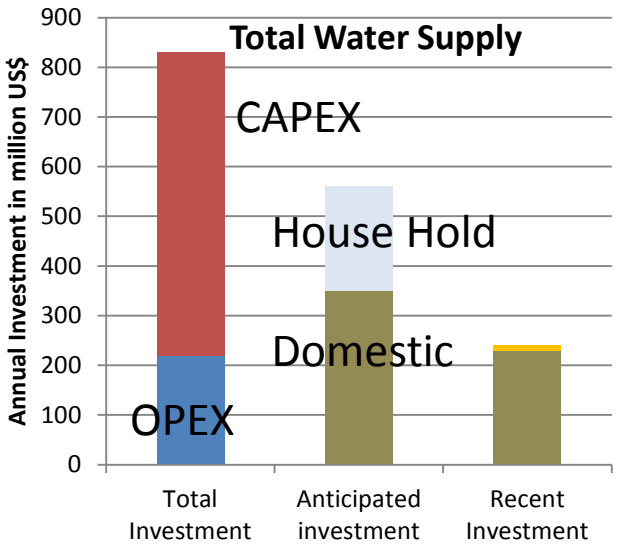
・ Even 94% of population uses septic tank toilet, regular sludge discharge and maintenance has just started in few major cities

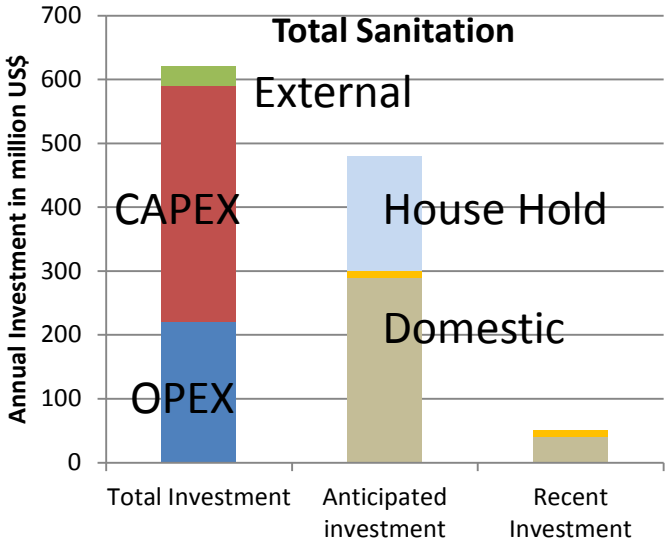
（East Asia and the Pacific Region Urban Sanitation Review: Philippines Country Study, The World Bank, 2013)

Investment Gap in Water Sector

millionUSD

	Annual CAPEX requirement		Anticipated Public CAPEX 2012-2014			Anticipated HouseHold	Annual Difect
	Total	Public	Domestic	External	Total	CAPEX	
Total Water Supply	838	503	331	7	338	217	-283
Rural Water Supply	324	189	29	3	32	23	-269
Urban Water Supply	514	315	302	4	306	194	-14
Total Sanitation	619	285	286	11	296	183	-140
Rural Sanitation	182	12	1	0	1	20	-161
Urban Sanitation	437	274	284	11	295	163	21

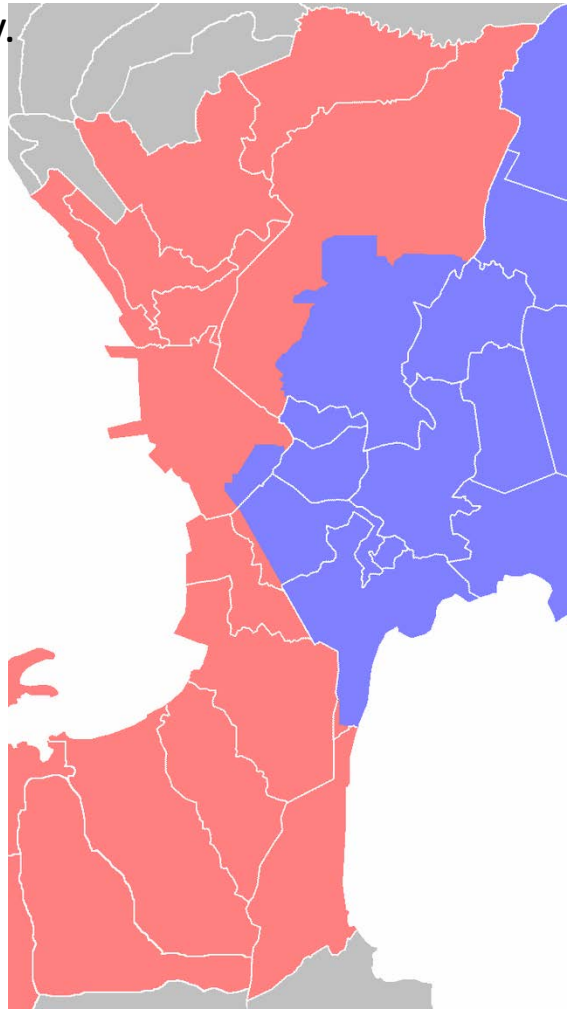




Concession in Manila

Largest concession of the world

The concession contracts were expected to last for 25 years and included targets concerning coverage, service quality, and economic efficiency.



East-Manila water

Land Area 1400km2　Service Area 23cities
Total population 6.2 million
1996: Coverage 66%, NRW 60%, 7day/24Hour 26%
2005: Coverage 90%, NRW 11%, 7day/24Hour 98%
2011:
Water Supply : 1600MLD, 813942H.C, 6.2million(99%)
Sewerage : 90292H.C, 0.7million(12%)

West-Maynilad

Land Area 540km2　Service Area 17cities
Total population 9.5 million
1996: Coverage 59%, NRW 60%, 7day/24Hour 32%
2005: Coverage 85%, NRW47%, 7day/24Hour 71%
2015:
Water Supply : 2400MLD, 1265625H.C, 8.9million(94%)
Sewerage : 45166H.C, 1.2million(13%), Septage coverage(33%)

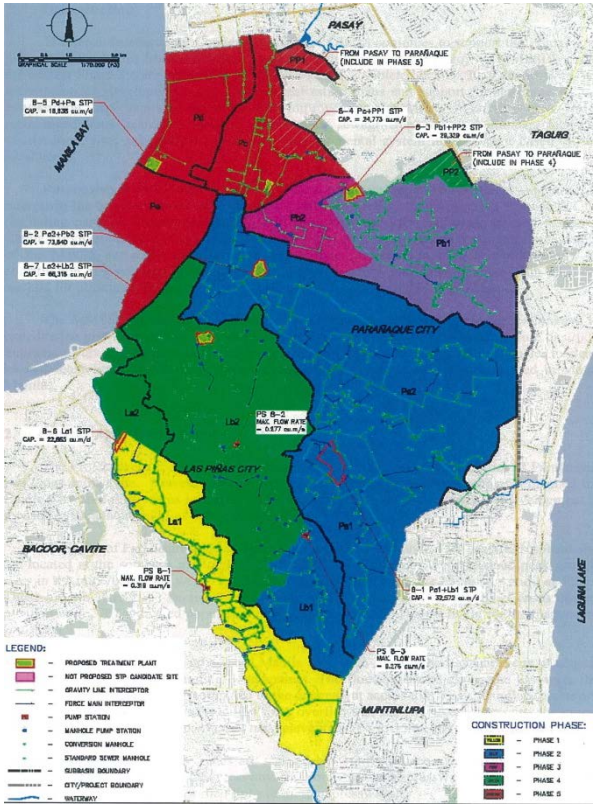
East　: 24Hrs Water Supply 26%(1997)⇒98%（2009）
West: 24Hrs Water Supply 32%(2007)⇒71%（2011）
H.C 67%(1997)⇒86%（2006）

Weakness of Discharger Responsibility

Ex. JICA Preparatory Survey for Metro Manila Sewerage and Sanitation

Purpose of the study: JICA continuous to support the Preparatory Survey for the Metro Manila Sewerage and Sanitation Improvement Project. The study has requested through MWSS to formulate Feasibility study on construction of a sewerage system targeting Paranaque and Laspinas

	Target Y	Location	Capacity (m3/d)	Interceptor Sewer net.	Pomp Station	Land Area(ha)
Phase 1	2016	P-11	77000	48.8km	0	7620
Phase2	2020	L-22	38910	25.3km	1	2100
		L-A	30851	26.3	1	3200
Phase 3	2024	L-C	51934	37.3	1	7000
		P-2	34799	13.1	0	4200
Phase4	2028	P-4	24845	24.7	0	8800
		P-6	13968	3.2	0	13200



<Financial Analysis of Present Tariff System>

- Target Population 1356588pop/271317 HH by 2029
- Average 200PHP/General HH* JICA FS

(million PHP)

		Service Pop.	Serivse HH	Revenue	CAPEX	CAPEX/Year*	OPEX/Annual	Total Expenditure	Revenue-Exp
Ph1	2017	427937	85,587	205	7000	408	70	478	(273)
Ph2	2021	387567	77,513	186	6500	379	60	439	(253)
Ph3	2025	399740	79,948	192	7700	449	50	499	(307)
Ph4	2029	141627	28,325	68	3600	210	30	240	(172)
After12y	2029	1356866	271,373	651	24700	1,441	214	1,655	(1,004)

* 30year5%interest

-Water supply achieve over 98% , 24houes. Now it is more critical to progress the sewerage system development in Manila

-Concession can afford to keep sustainability from costumer charge of water and sanitation.

-Present Environmental Tariff is not sufficient for development and operation of sewerage system in Metro manila

Effluent Standard Compliance with the new effluent standard (DAO 2016 – 008)

Parameter	Unit	Parameter Maximum Value
TSS	mg/L	30
BOD_5 at 20°C *(dissolved and suspended)*	mg/L	30
COD	mg/L	60
Oil and Grease	mg/L	5
pH	-	6.5 – 9.0
Total coliform	MPN per 100 mL	10,000
Sludge	%DS	Not less than 20% dry solids
*NO_3	mg/L	14
*NH_3-N	mg/L	0.5
*Phosphate	mg/L	1

Advanced treatment process is required

* *Future requirements to be used in determining BNR space allocation*

Notes: The parameter listed above shall be statistically interpreted as 90% percentile figures

Revised DAO Effluent Water Quality Standard
Advanced Treatment Process is required in Manila

Issues and Development Agenda of Water and Sewerage System Improvement in Philippines

■Water Supply
-Establish efficient water supply system and reduction NRW
-Promoting PPP water supply project with proper risk allocation
-LCC technologies maximize limited resources and impact for sustainable development

■Sewerage and septage management
-Comprehensive support of technically, institutionally and financially aspect.
-Formulation development mechanism in collaboration of public and private sector
-Conditions of high density, highly environmental consideration in urbanized area us required qualified infrastructure.(minimum foot print, environmental & social friendly)

■Institutional Capacity Improvement
-Improving service will facilitate customer charge collection
-Marge institutional function of Water and Sewerage
-Standardization and disseminate technology & knowhow of qualified infrastructure development and operation

4.JICA assistance cases of Quality Infrastructure Investment in Water Sector

4-1.Water/Sewerage system development in Manila

【Preparatory study for sewerage and sanitation improvement in MetroManila】Feasibility study of sewerage system development in Paranyque and Laspinas city.

【Sewerage Treatment Plant development in Paranyaque(JICA two step loan)】
Based on the JICA FS study. Mainilad conducted LCC reduction bidding for STP construction. Japanese Engineering company award the contract. Financing by DBP loan through JICA Two Step Loan

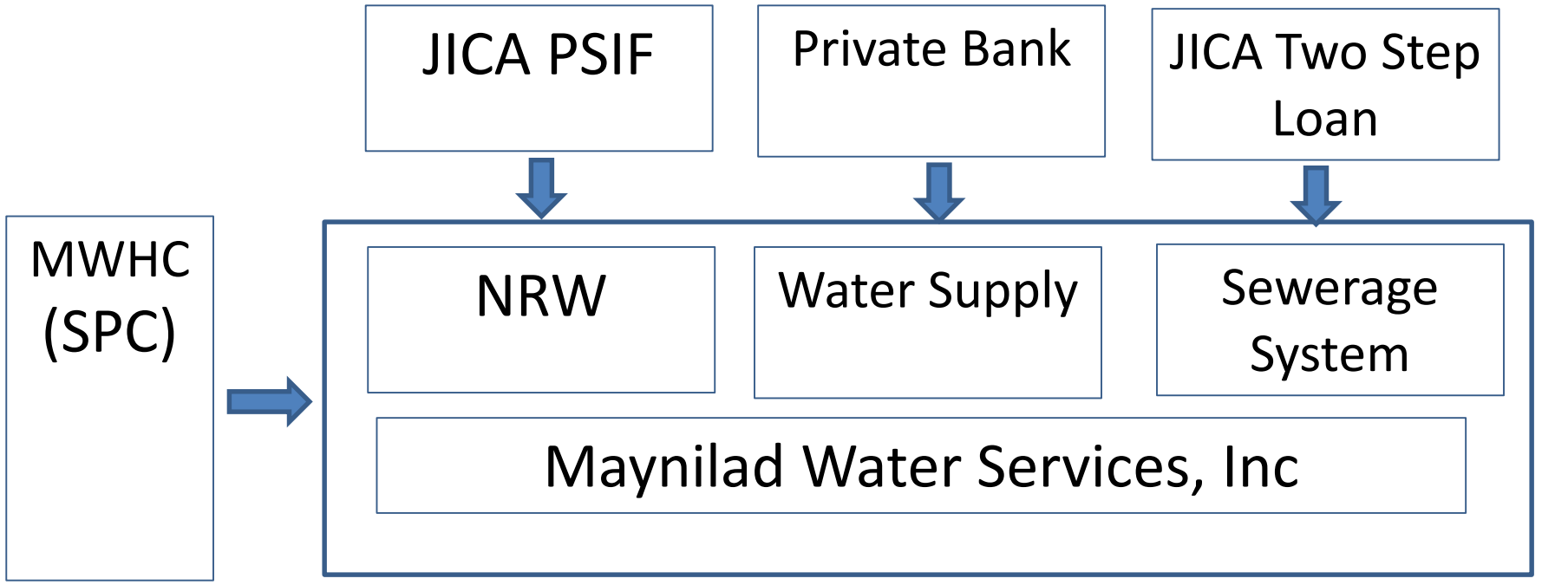
【Preparatory study for water supply and sewerage system development in Metro Manila】Study for NRW project and Sewerage system development in Metro Manila

【Mainilad Company】
・Water and sewerage system concessionaire in west manila. Coverrage17city 9million pop.

F/S for Quality Infrastructure Investment

1）Non-revenue water improvement project in the West zone of Metro Manila

- 24hours water supply achieved 99%
- NRW is still high as 34%, for the efficient water supply system and NRW project is required
- Project will improve distribution pipe, SCADA system, water meter installations.



Supporting finance for private sector

2）Sewerage system development in Paranaque (Two Step Loan)

Orderer	Maynilad
Process	Conventional Activate Sludge
Period	Construction 540days Test Operation 90days Verified Operation 365days
Treatment Volume	76,000 ㎥/day
Finance	JICA EDP (DBP two step loan)

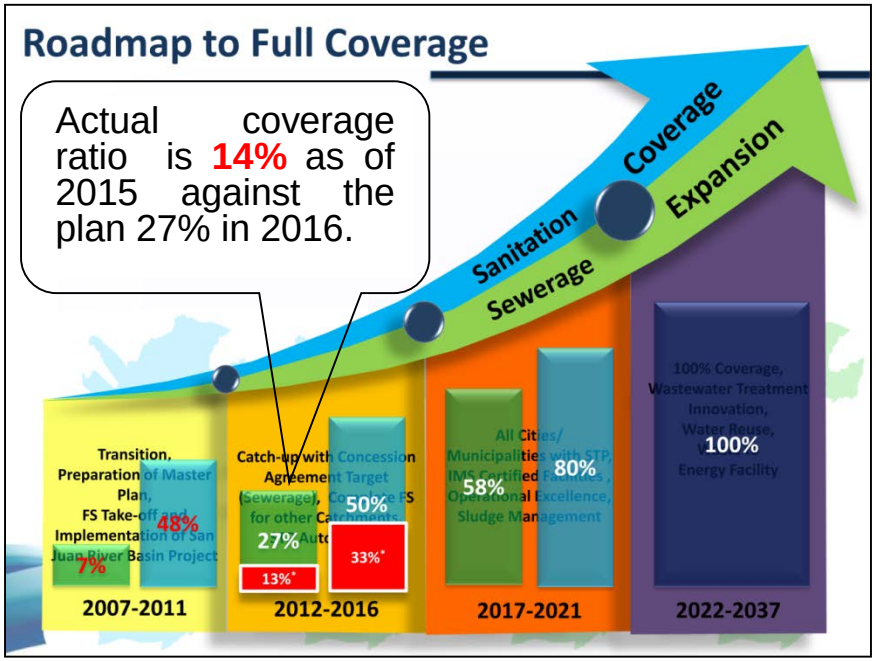
Selected LCC bidding

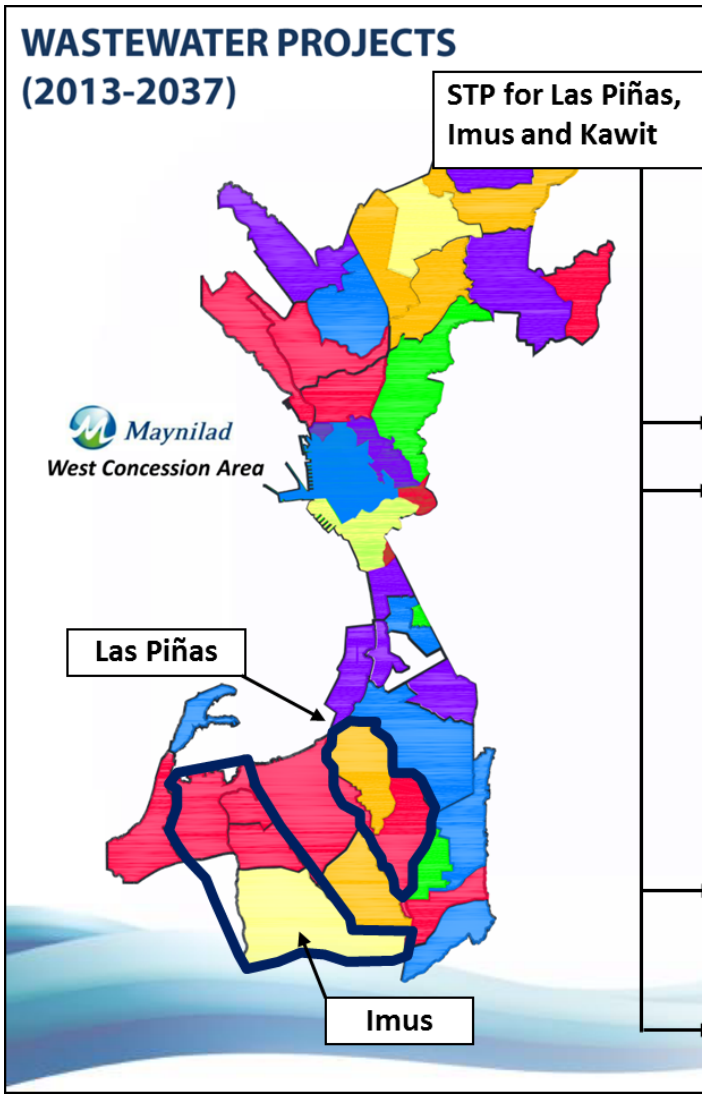
- Comparison type of bidding

Items	Open Competitive	LCC
Back ground	Major type of bidding . Implementation Agency have responsible to Construction and O&M.	IE conduct Performance evaluation . Engineering companies express their technological advantages and efficiency of OM.
Type of Ordering	Specification order	Performance order
Cost evaluation	Planning-Designing, Construction, Occupancy & Equipments	+ Operation and Maintenance (human, electricity, chemicals and spare parts) in depreciation years
Designing methods	Detail Designing of specifications Separate bidding of construction	Design and Build

Preferable technology and cost effectiveness in LCC

3)Data Collection Survey for Sewerage Systems in West Metro Manila (Mar. –Sept. 2016)

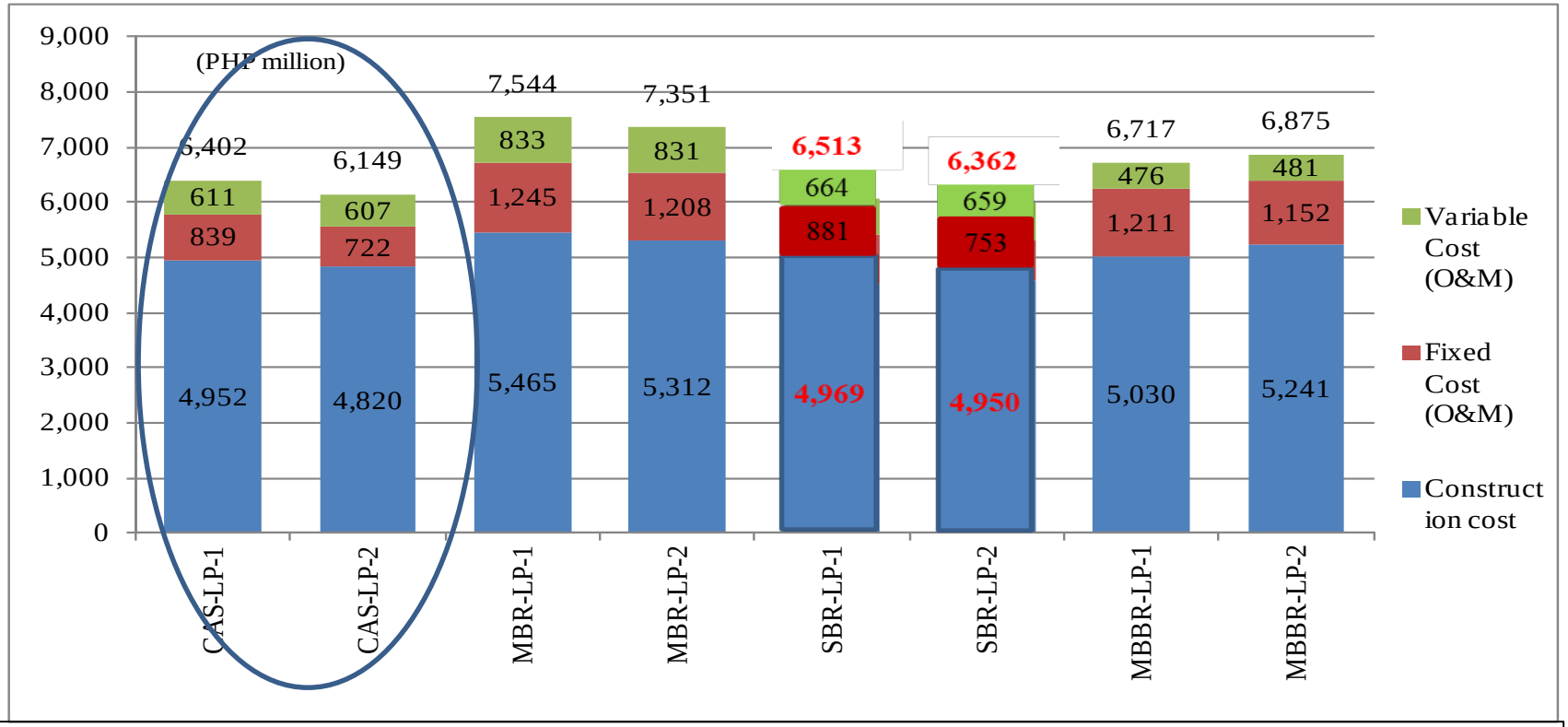




to introduce the innovative and appropriate sewage treatment process and technologies which can be applicable to the conditions in Metro Manila to minimize the land space and reduce the number of STP in the target area with integrating the catchment area .

Case Study on STP Plan

☐ LCC Las Pinas City



Advanced STP Technology showed superiority in LCC Limited Foot Print in High Urbanized Cities

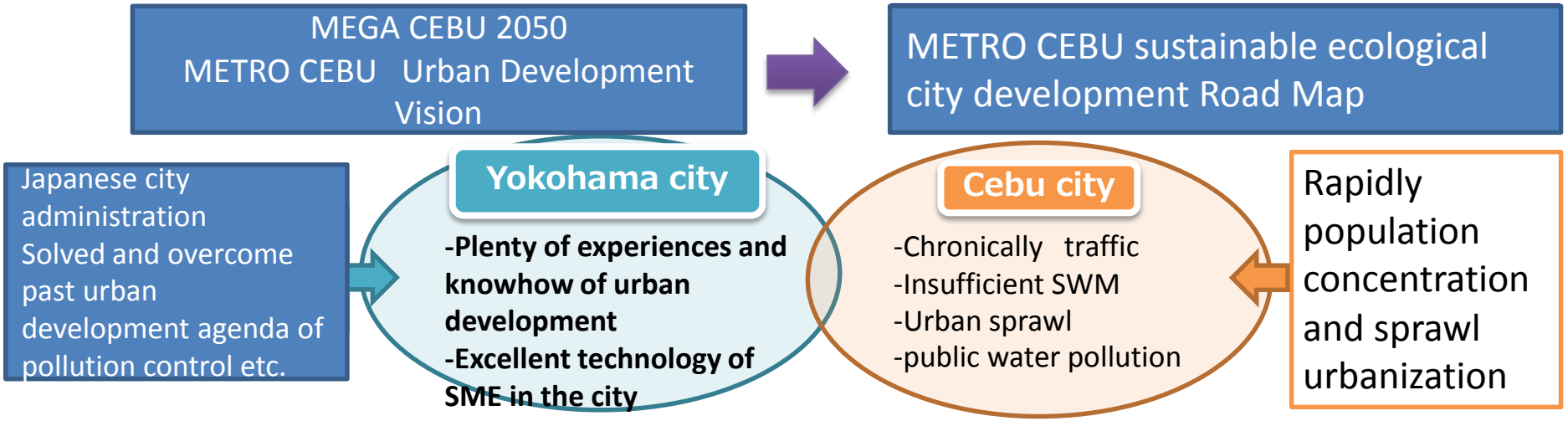
LCC =Land price + Capital cost + OM cost (in 5years construction and 15years operation)

Advanced STP technology is applicable for new effluent standard of DENR.

4-2.JICA assistance for “METRO CEBU ROADMAP”

1)Roadmap Study for Sustainable Urban Development in Metro Cebu (Metro Cebu Roadmap) [October 2013 – June 2015]

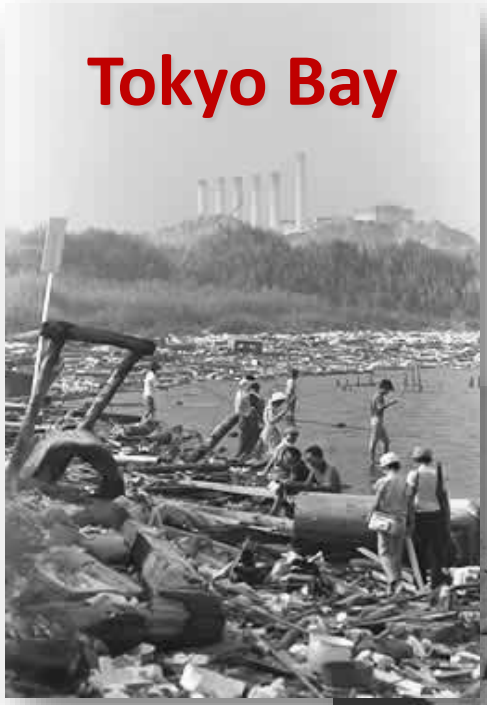
The study was initiated in 2013 by Metro Cebu Development and Coordinating Board (MCDCB) in collaboration with JICA and Yokohama City, Japan to attain the **“MEGA CEBU VISION 2050”**, the city's blueprint for sustainable economic development.



Comprehensive Approach for Development Agenda

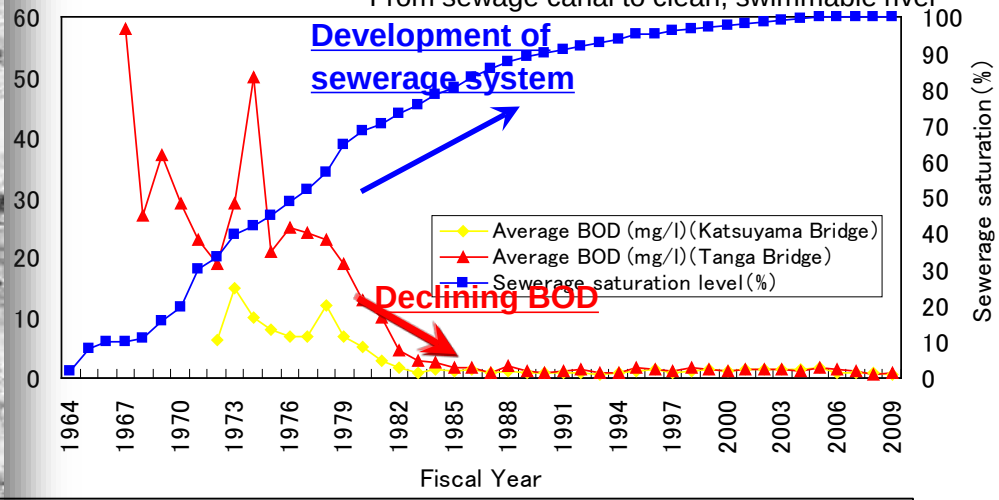
Improvements in Water Quality

◆ **Dramatic environmental rebirth with more than 40 years of improvements of the sewerage system in Japan**



From sewage canal to clean, swimmable river

A river in Tokyo



Utilize knowhow of Japanese LGUs for overcoming developing agenda

Water/Sanitation Sector Development direction of Mega Cebu Road Map

1)Water Supply
- Water Resource Development (MANAGA DAM Ⅱ,
-Deep Well development, MCWD water supply system improvement
-Metro Cebu NRW improvement for producing 50000㎥/day
-North, South surface ground water development (survey)
2)Sewerage and septage mangement
S-T: Septage management 100% coverage
M,L-Term: Sewerage system development 90% by 2050
3)Waste Management
-MRF construction and operation under 3R program
-Rehabilitation of existing landfill(consolasion etc.) .Closing and environmental recovery of Inayawan
-Developing and proper operation of Regional Landfill
-Introducing WtE technology for reducing disposal volume

JICA Project in Cebu

2) Water Supply System Improvement for MCWD

E/N; 2014 March 25th

Period; 2015 Feb.-2016 Mar.

Project Cost; 529mill PHP

Purpose;

-Installing accuracy and immediate water supply monitoring system for efficiency water supply control of delivery flow, water pressure and NRW.

Component

-Central Monitoring System

-Well pumping control system

-Monitoring devise set up

-O&M training

No-nsuspension watter Method

Monitoring point

Real Time Central Monitoring system

3)JICA Preparatory sutudy for Septage management project in CEBU

MEGA CEBU Road Map2050

Septage management coverage 100% by 2030 for 50% proper treatment of waste waster

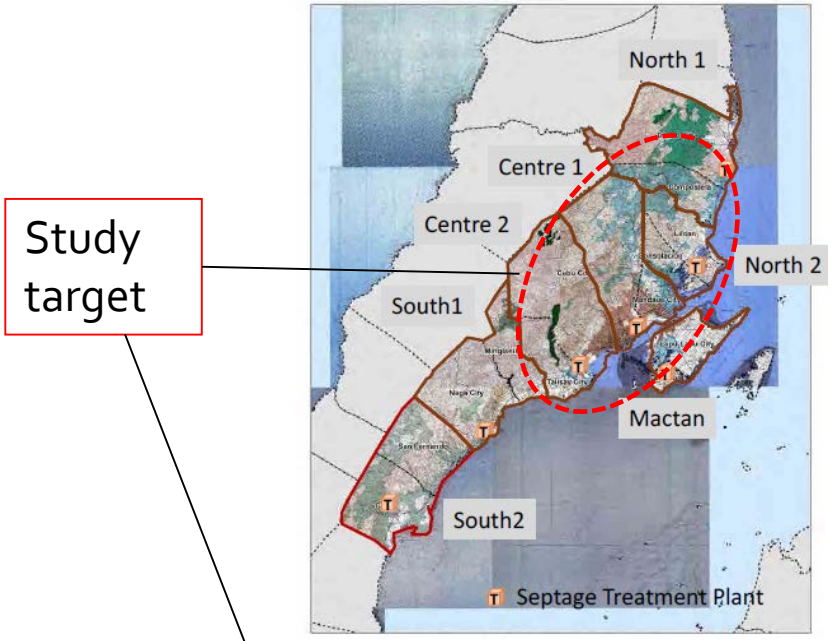
Study items

Duration: 2017-2018

-Construction plan of Septage Treatment Facility in Metro Cebu

-Establish Septage Collection system

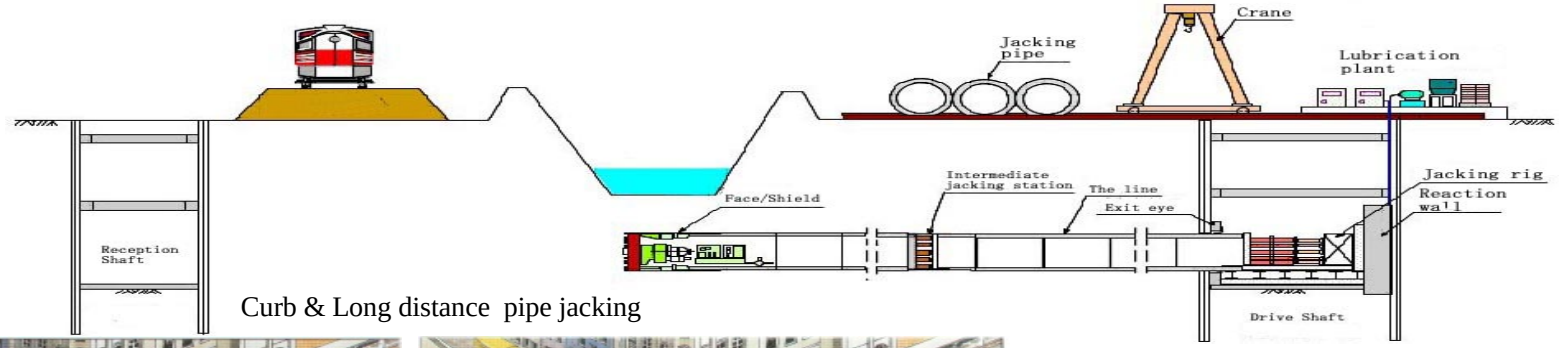
-Septage collection and treatment operation & Management system in Metro Cebu



	Phase1	Phase2
MCWD	806m3/d	1034m3/d
LGU/WD	563	761
Total	1369	1795

4-3.Underground Trenchless Construction Technology

Curb & Long-distance Pipe Jacking Method



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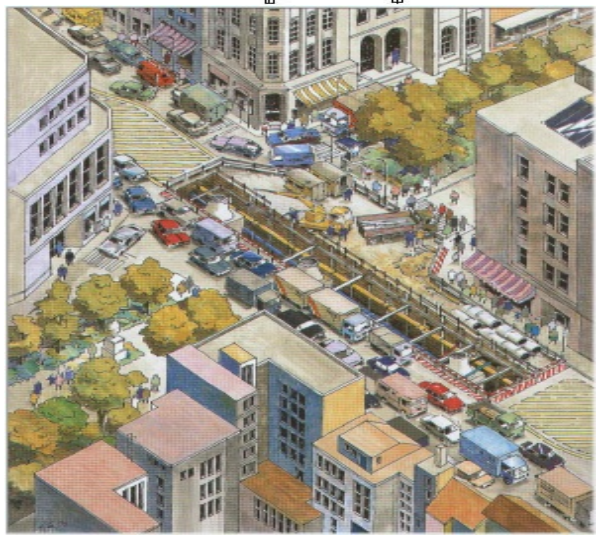
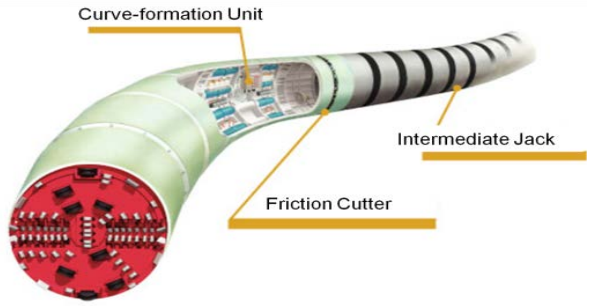


Curb & Long distance pipe jacking



Utilize Private Sector Engineering Technology

Underground River Channel Construction Technology

Feature of Quality Infrastructure>

1. Accommodate Development Agenda: Effectiveness in high urbanized and flooding weakness in Asian city * Utilize technical acknowledgment of flood control MP
2. Reduction of Environmental and Social cost: Micro Tunneling Engineering Technology

○Developing Under Ground Tunnel River for reduction flooding damage in High urbanized city

○Effective utilize Japanese advanced micro tunneling technology of Shield/Pipe Jacking

Tokyo Metro Polis Outer Flooding Channel

10.9m width 6.3 km length tunnel under 50m*Largest in the world

Chiliun river underground discharge channel in Jakarta

JICA SME pilot project for

Pipe Jacking Methods for Sewerage Works

Demonstration of Superiority of the curve, long-distance jacking method on Sewerage Work in Jakarta, Indonesia

Chiliun river underground water channel Construction(DPWH)

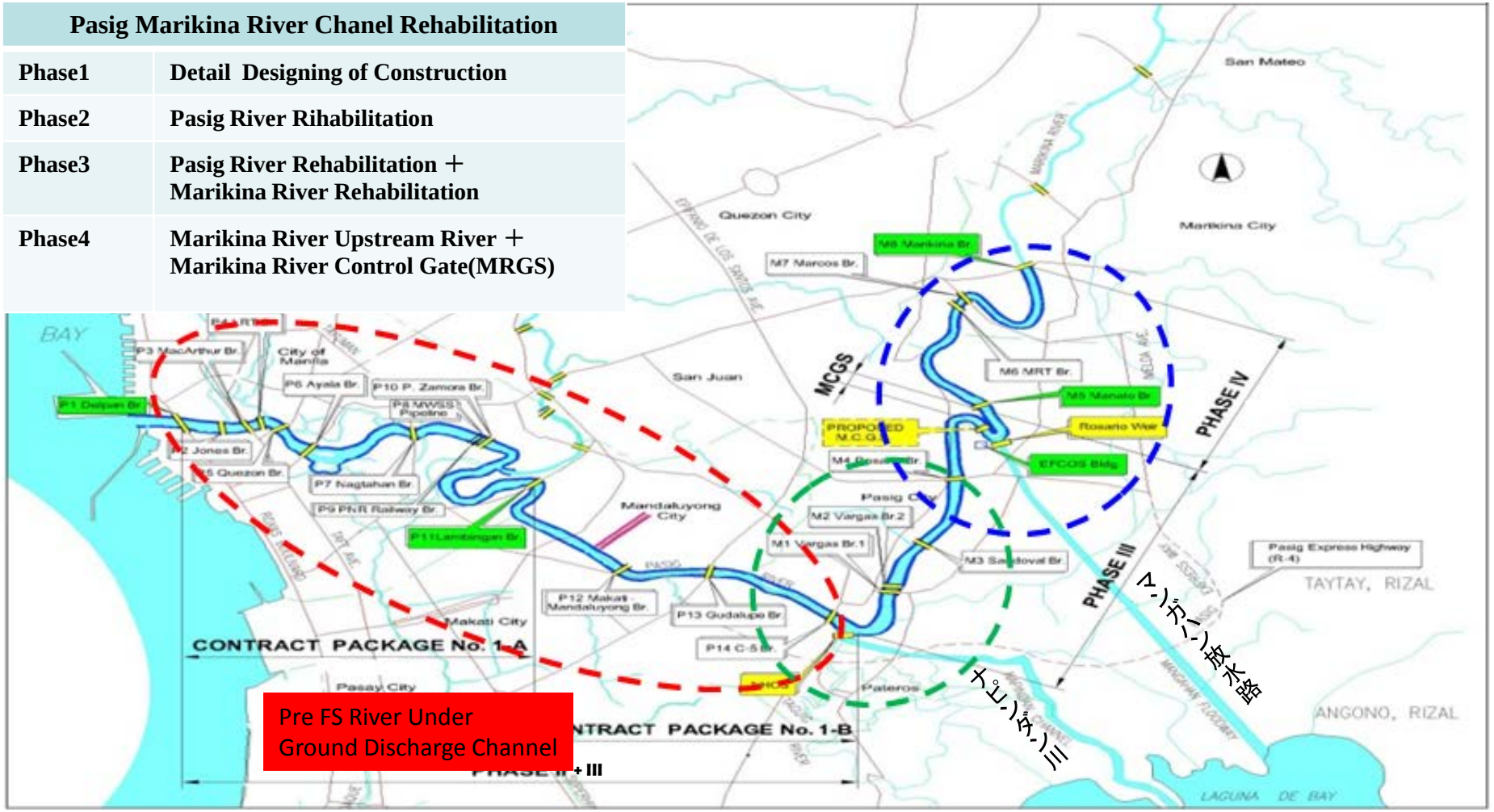
Construction underground water channel for reduction flooding condition of Chiliun River (50million USD, National Project)

JV of Japanese Engineering Company and Indonesian National Own Company

3.5m width 1.3 km length tunnel ×2 under 15m

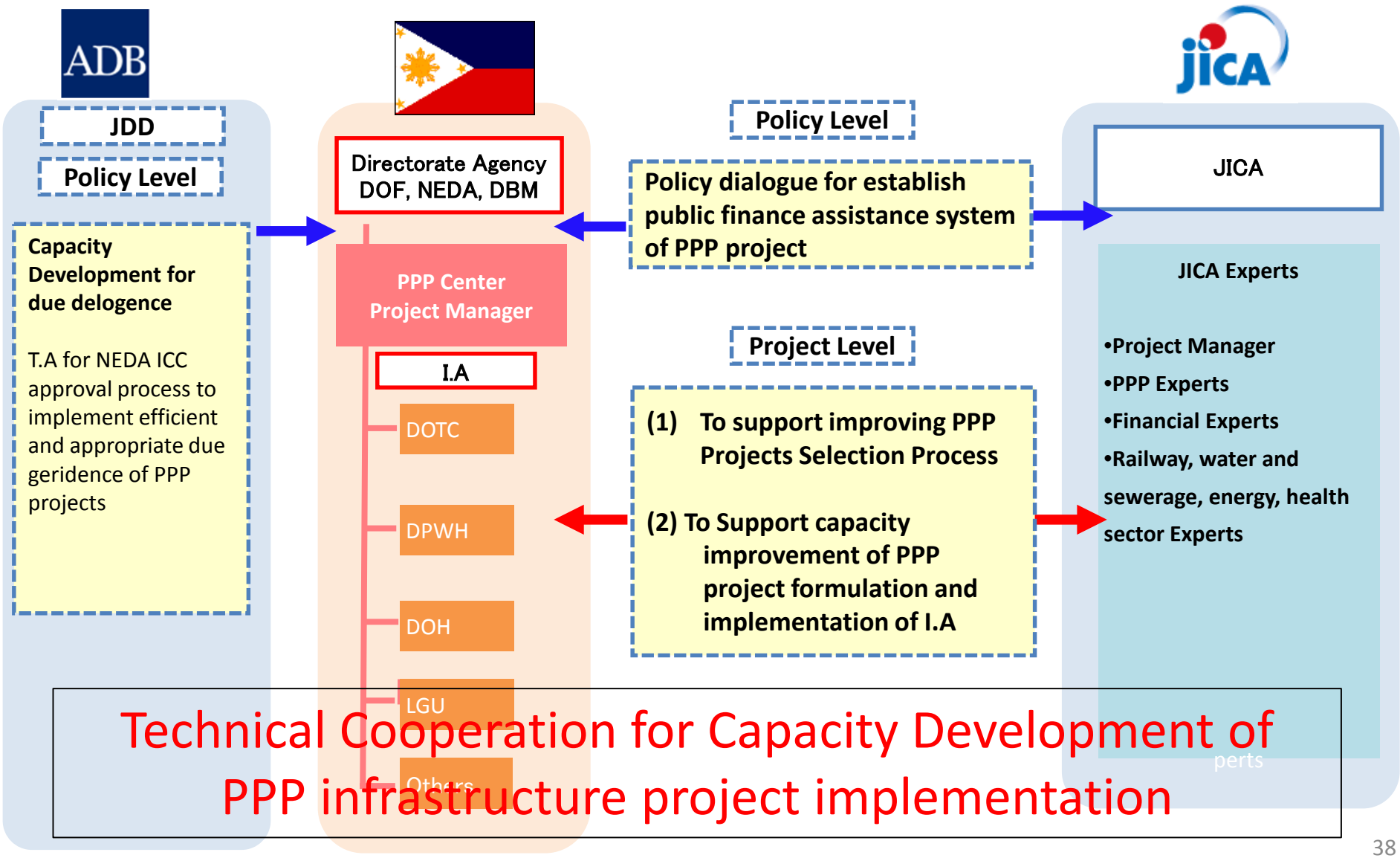
JICA assistance for Pasig-Marikina River Channel Improvement Project

Pasig Marikina River Chanel Rehabilitation	
Phase1	**Detail Designing of Construction**
Phase2	**Pasig River Rihabilitation**
Phase3	**Pasig River Rehabilitation ＋ Marikina River Rehabilitation**
Phase4	**Marikina River Upstream River ＋ Marikina River Control Gate(MRGS)**



4-4.JICA PPP Capacity Assessment and Capacity Development Program

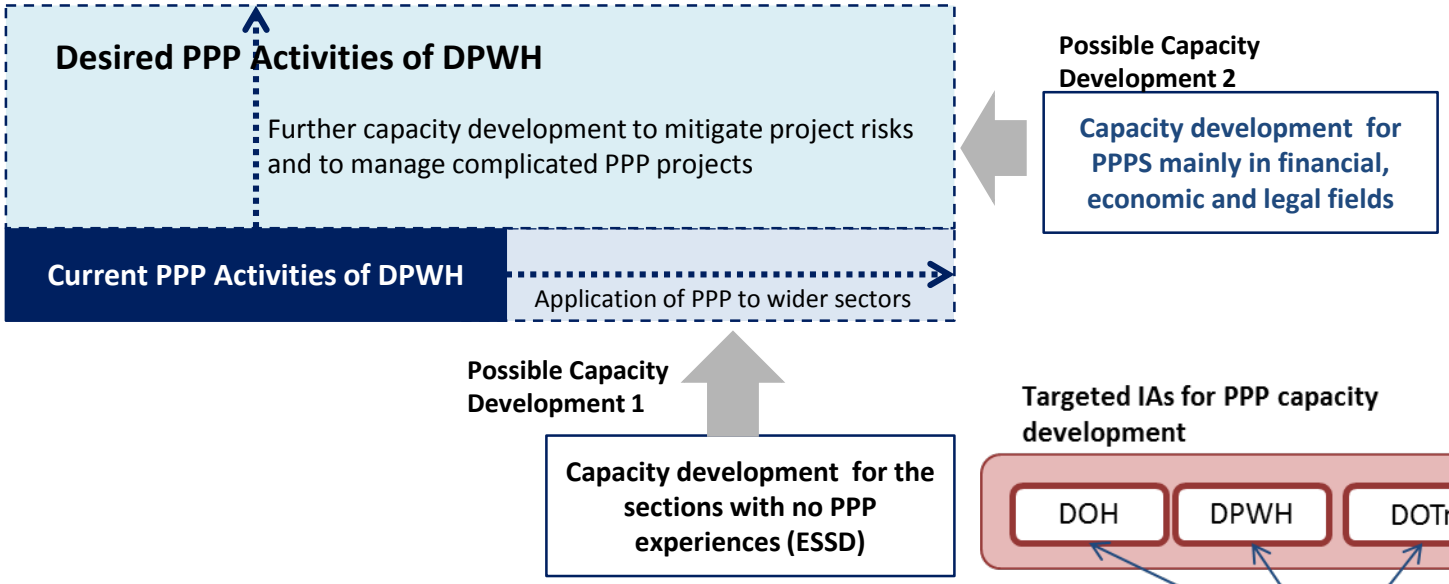
Project Period ：2014.11～2017.12月）

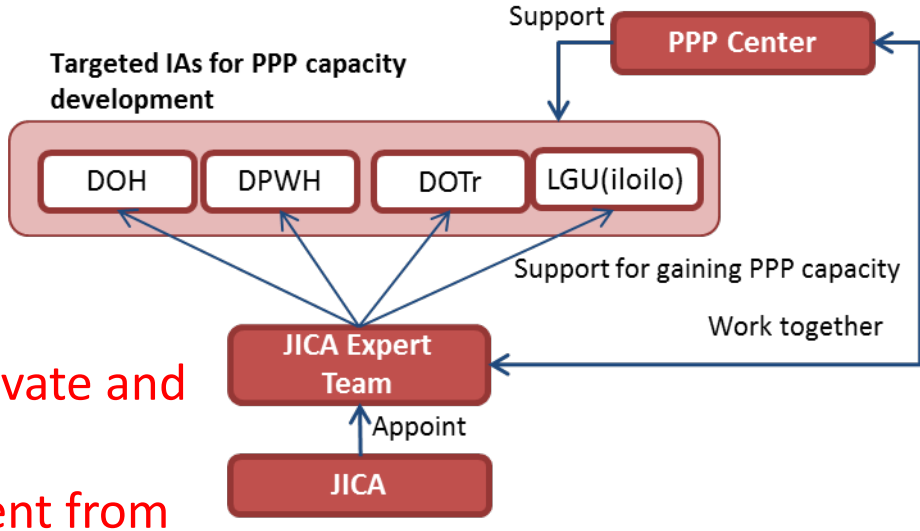


Technical Cooperation for Capacity Development of PPP infrastructure project implementation

Direction of the Capacity Development Programs for DPWH

Direction of the Capacity Development	• DPWH applies PPP schemes not only to toll road sector but also to new sectors. • Based on the accumulation of PPP experiences and the capacity development of PPPS, DPWH can mitigate PPP project risks and be engaged in advanced and complicated PPP projects for encouraging more private participations.





Establish “User to Pay” mechanism
Cooperation and responsibility of public, private and Peoples
LGUs/IA and central government commitment from project formulation to implementation”

5.Materialize element of Quality infrastructure

(1) Effective Finance Mobilize (PPP finance etc.)
(2) Certified comprehensive approach for development needs as well adjustment for economic/social development strategy of developing country
(3) High qualified standards of environmental / social consideration guideline
(4)Certify Quality Infrastructure
a. Economy of LCC reduction
b. Comprehensive
c. Safety/Resilience
d Sustainability
e Convenience ・Comfortable
(5) Contribution for social and economic on the site

Case study of Quality Infrastructure Investment : MOFA・MOF・METI・MILTT・MIAC・JICA

Salamat Kaa Ya So

Takayuki TOMIHARA
JICA Philippines
Project Formulation Adviser(Water and Environment)
tomihara.takayuki@jica.go.jp