

CHALLENGES AND GOOD PRACTICE OF DECENTRALIZED WASTEWATER TREATMENT IN INDONESIA

Ir. Rudy Azrul Arifin, MSc.
Head of Subdirector of Specific Environment Sanitation
Directorate of Environmental Development Sanitation



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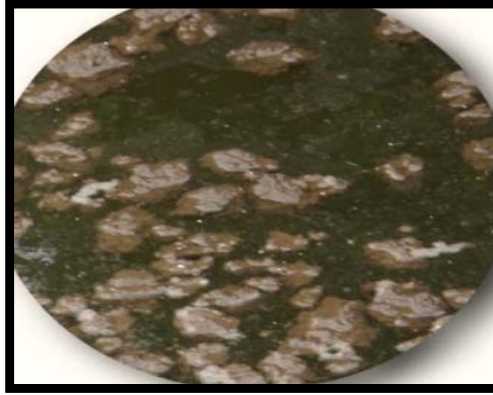
**MINISTRY OF PUBLIC WORKS AND
HOUSING
DIRECTORATE GENERAL OF HUMAN
SETTLEMENTS**



The Scale of The Challenge



**50 of 1000 babies died
of diarrhea**



**140.000 tons of feces
per day is polluting
waterbody**



**75 % of the rivers are
heavily polluted**



**1 mg/L BOD5 increases
water production cost of
IDR 9.17/m³**

**The potential economic loss reaches
USD 6.3 billion per annum (2,3% of
GDP)**

2019 Universal Access

WASTEWATER SERVICE

100%

**Urban
100%**

Off-site System:

15%

On-Site System:

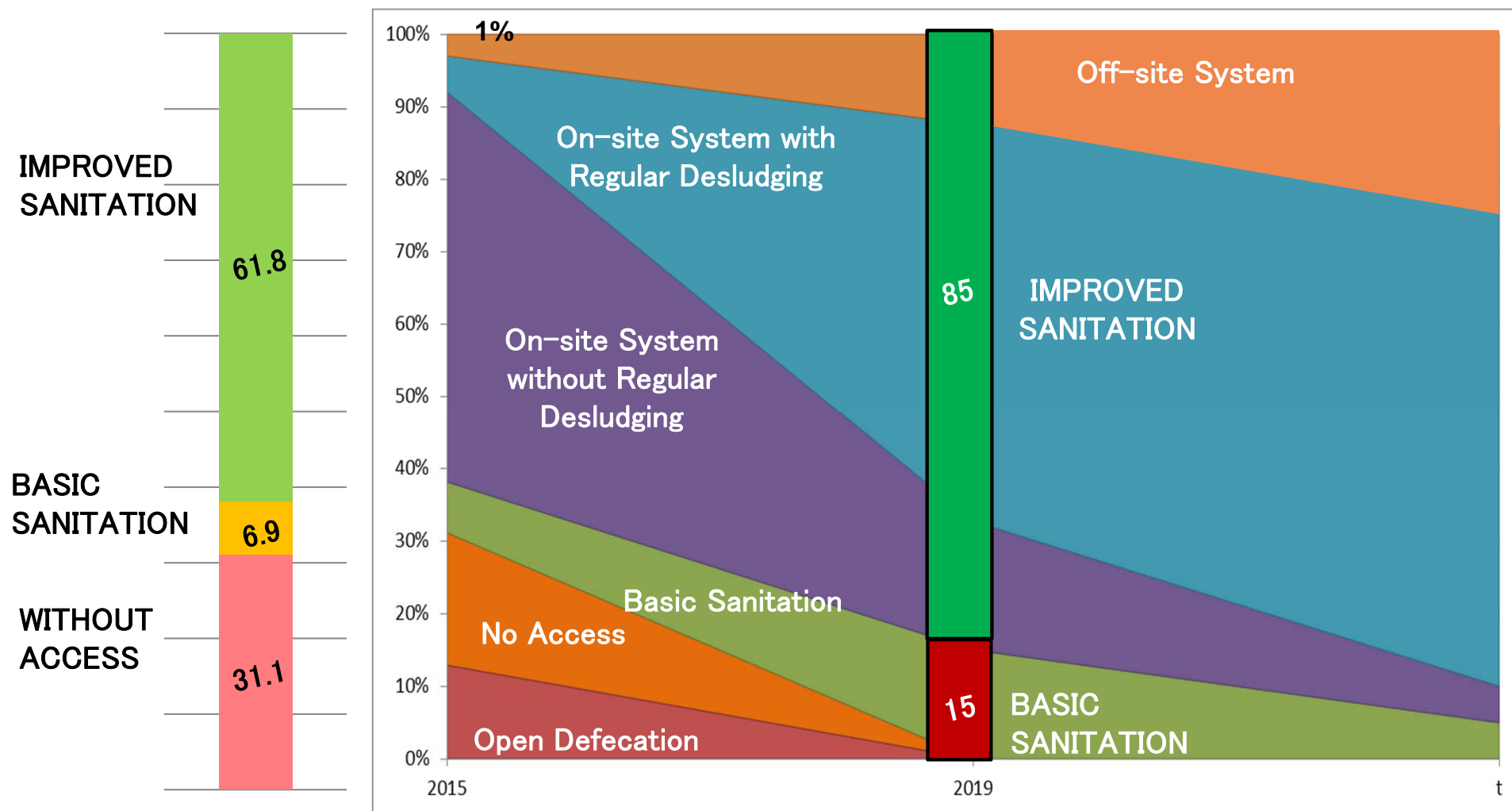
85%

**Rural
100%**

On-Site System:

100%

CURRENT CONDITIONS AND FUTURE TARGETS



SANITATION DEVELOPMENT SCHEME

URBAN/RURAL - DENSITY

WASTEWATER SYSTEM

URBAN

LOW DENSITY

HIGH DENSITY

On-site system

Off-site system
(communal, decentralized,
city scale)

URBAN-CLTS

RURAL

LOW DENSITY

HIGH DENSITY

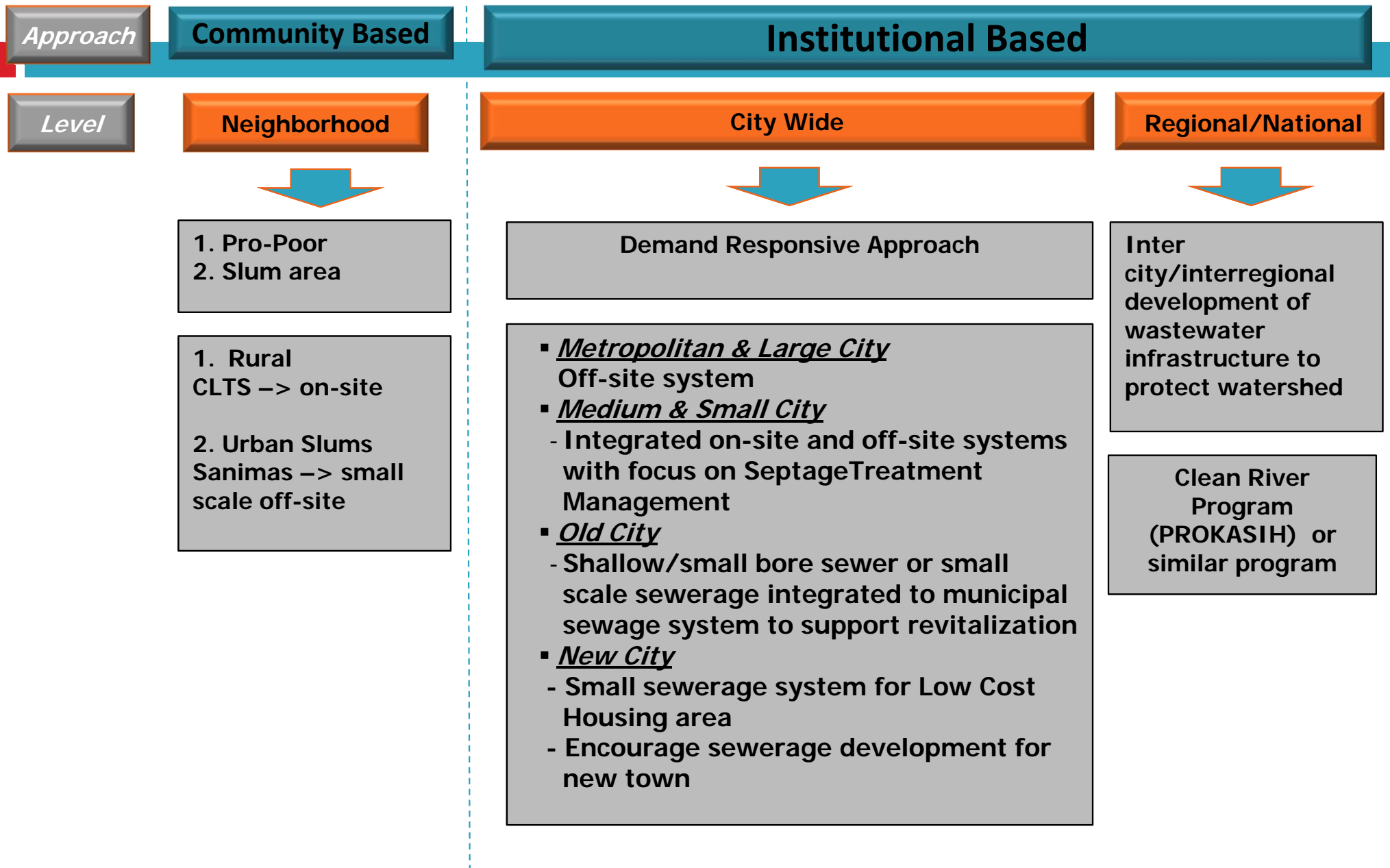
Latrines
Septic tanks
(basic Sanitation)

On-site

Communal Off site

Community
Lead to
Total
Sanitation
(CLTS)

MANAGEMENT APPROACH



WHAT DO WE DO?

Develop:

■ On-site System

- Individual Septic Tank
- Communal Septic Tank
- Septage Transport Vehicle
- Septage Treatment Plant

■ Off-site System

- City Scale
- Small Scale
- Specific Area

Encourage:

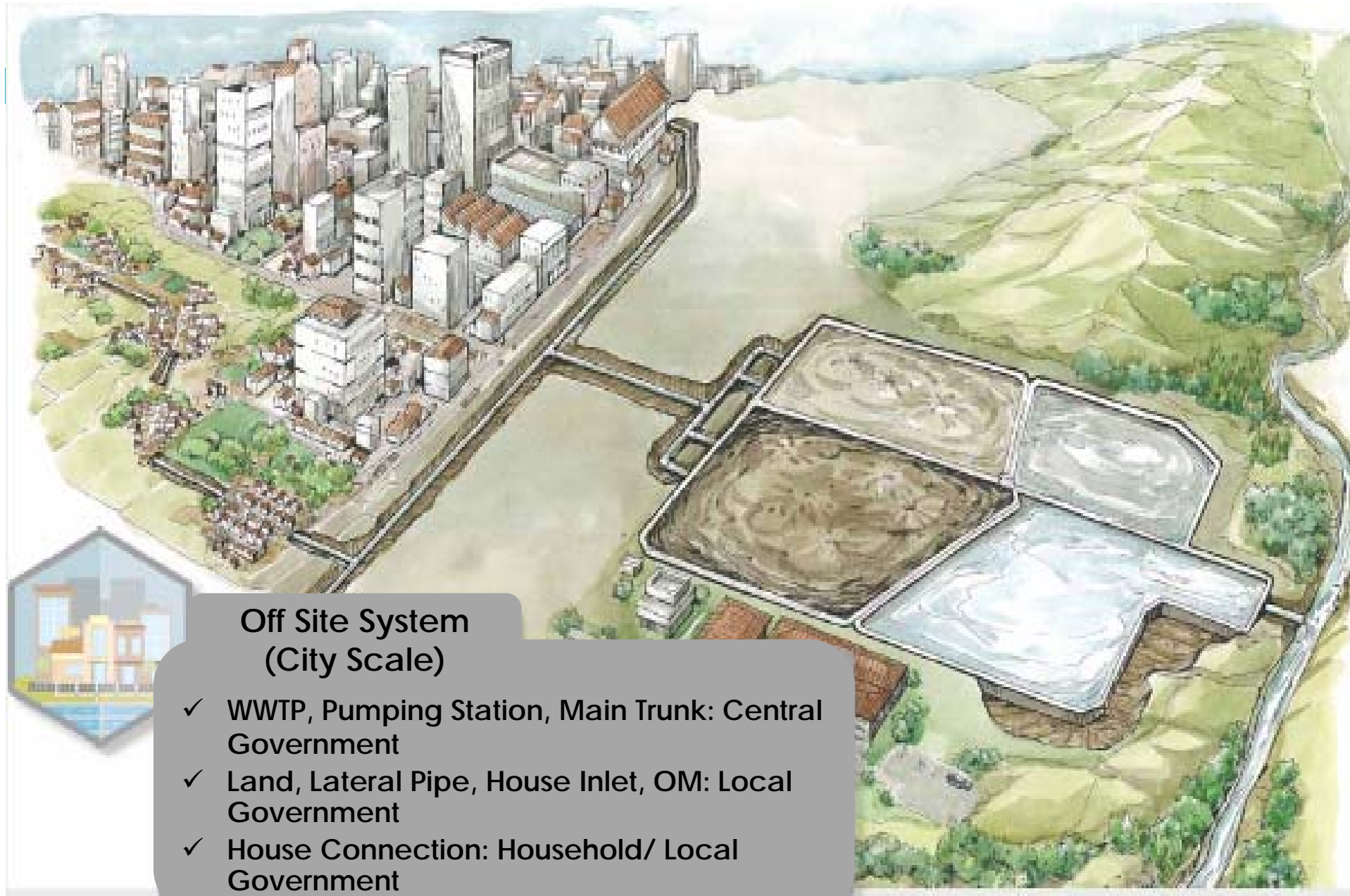
1. Campaign, Education, and Promotion
2. Advocacy to Local Governments
3. Management Technical Assistance
4. Updating City Sanitation Strategies
5. Cross Sectoral Synchronization
6. Human Resources Development



ESTIMATION OF INFRASTRUCTURES NEEDED FOR UNIVERSAL ACCESS

OFF SITE SYSTEM	ON SITE SYSTEM
Target by 2019: 2 million Household	Target by 2019: 20 million Household
<ul style="list-style-type: none"> - House Connection Construction in 13 existing city scale WWTP (exclude MSMHP and MSMIP): 150.000 HC - House Connection Construction in City Scale WWTP (Jambi, Pekanbaru, Makassar, DKI Jakarta, Medan, Yogyakarta): 150.000 HC - Small Scale WWTP Construction: 2.400 unit (@200 – 1000 HC): 1,2 million HC - Community based WWTP Construction: 5.000 unit (@100 HC): 500 ribu HC 	<ul style="list-style-type: none"> - Septage Treatment Plant Construction: 337 kab./kota - Septage transport vehicle supporting: 337 unit - Septic tank construction: 10 juta HH - Public Toilet Construction (Communal septic tank): 50.000 unit (@50 KK): 2,5 million HH - Latrine (Basic Sanitation): 7,5 million HH

OFF SITE SYSTEM



Off Site System (City Scale)

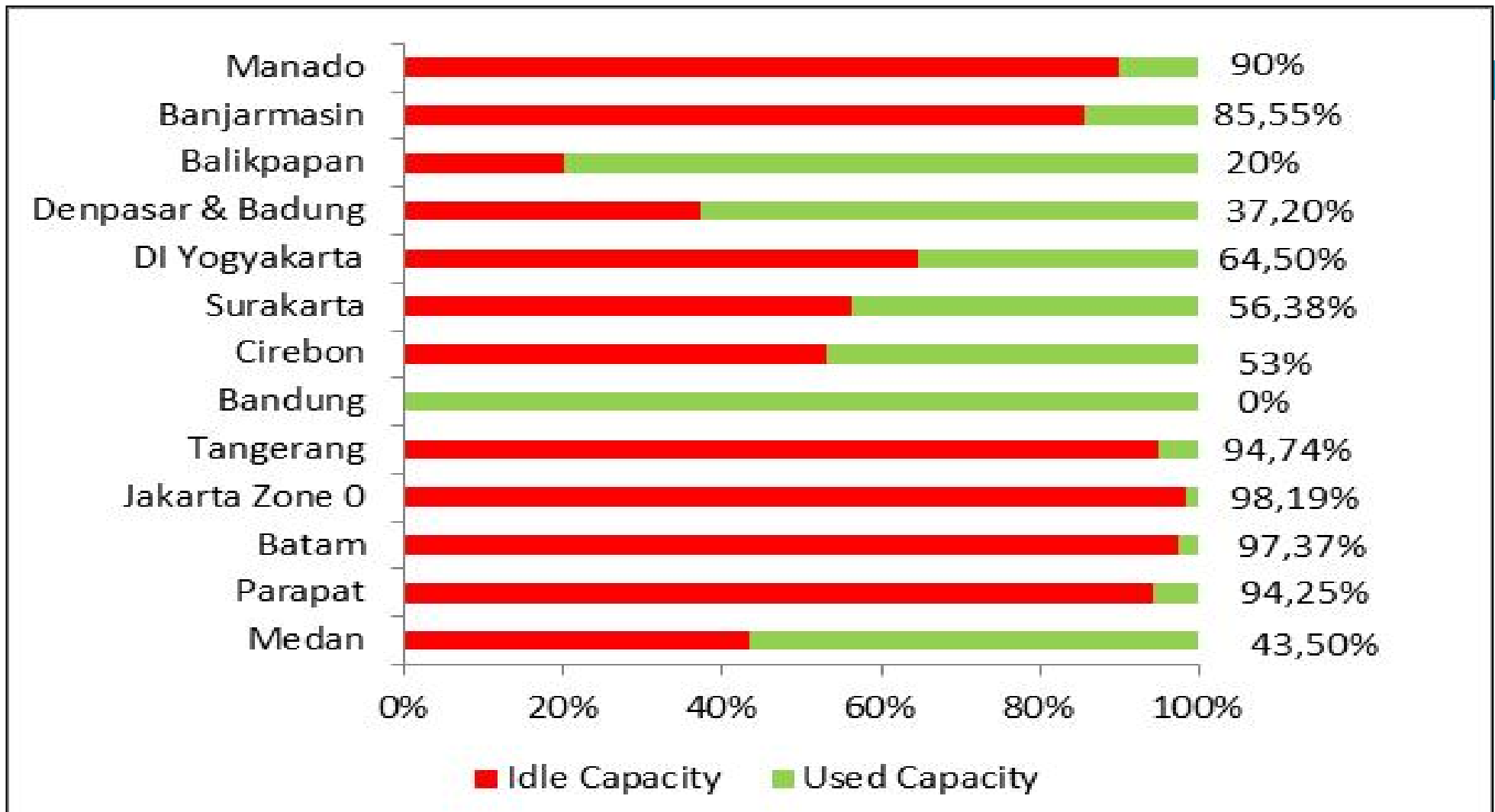
- ✓ WWTP, Pumping Station, Main Trunk: Central Government
- ✓ Land, Lateral Pipe, House Inlet, OM: Local Government
- ✓ House Connection: Household/ Local Government

CITY SCALE SEWERAGE IN INDONESIA

No	City	Units	System	Capacity (CMD)	Idle
1	Medan	1	UASB	10.000	43,5 %
2	Parapat	1	Aerated Ponds	2000	94,25 %
3	Batam	1	Oxidation Ditch	2.852	97,37 %
4	Jakarta Zone 0	1	MBBR	38.880	98,19 %
5	Tangerang	1	Aerated Ponds	2.800	94,74 %
6	Bandung	1	Lagoons	80.835	0%
7	Cirebon	4	Lagoons	20.500	53%
8	Surakarta	3	Biofilter & Lagoons	14.000	56,38 %
9	DI Yogyakarta	1	Aerated Ponds	15.500	64,5%
10	Denpasar & Badung	1	Aerated Ponds	51.000	37,2%

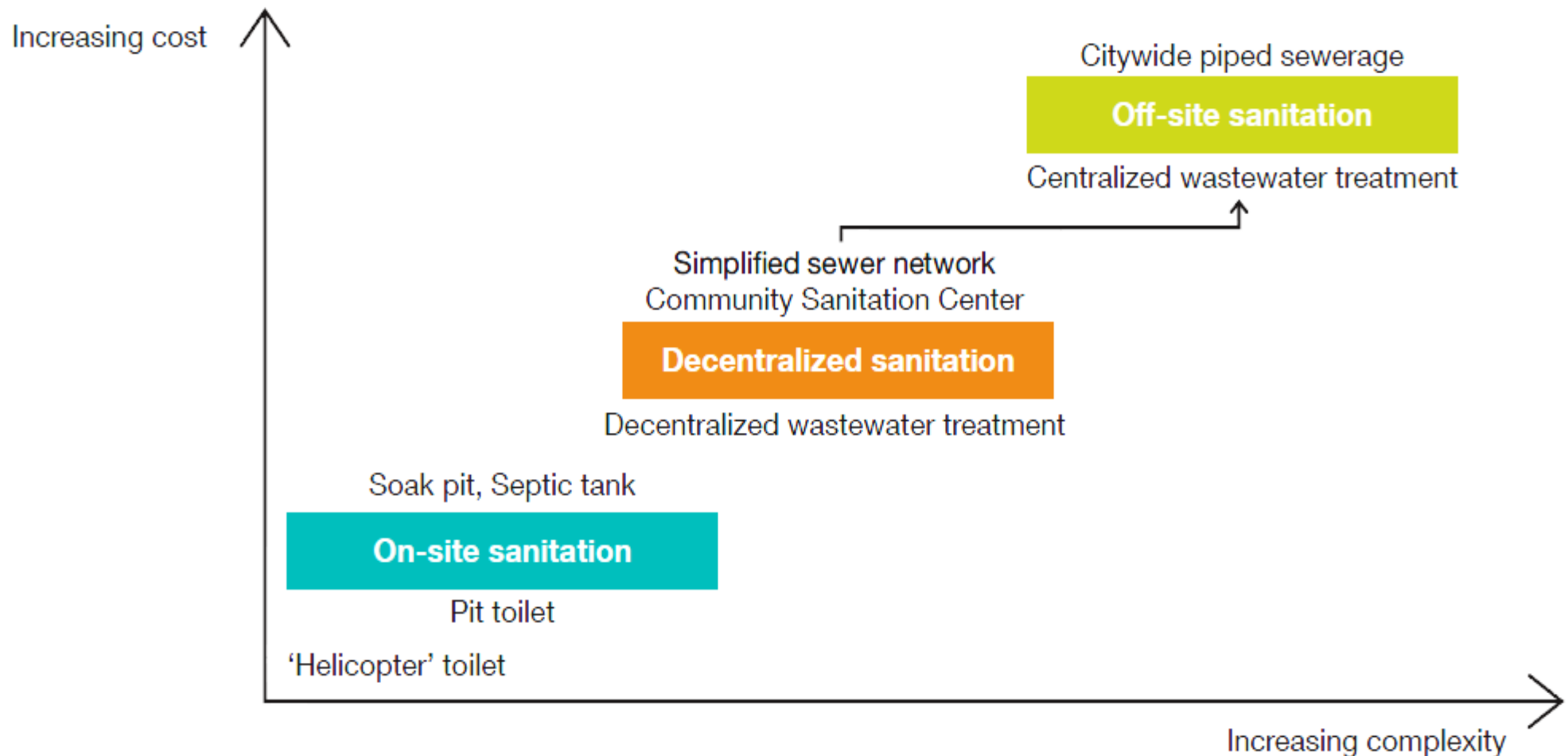


BIG QUESTIONS: HOW TO UTILIZE THE IDLE CAPACITY????



Problems: Low Awareness of the Households Owners, Low Budget for house connections from Local Government, No law enforcement

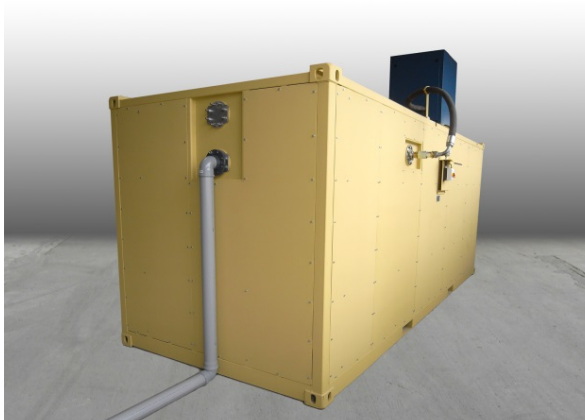
Decentralized Systems as an Intermediate Step and Bridge to Centralized Sewerage*



Decentralized System in Indonesia

- Communal Septic Tank – Septage Treatment Plant
- Communal Scale Off-site System
- Small Scale Off-site System

Ministry of Public Works and Housing through its **Research and Development Board** has also assessed and certified several decentralized treatments



Communal Septik Tank – Septage Treatment Plant

Since the 90s,

170

Septage
Treatment
Plants have
been
developed
throughout
Indonesia

- Communal Septic Tanks serve: < 10 HCs
- Managed by communities
- To be transported to Septage Treatment Plants

Communal Scale Off-site System

Since 2006,
out of the \pm
13000
community
based
sanitation
infrastructures
, **2700**
of them are
Communal
Scale Off Site
System

- ❑ Anaerobic Treatment
- ❑ Number of House Connections: 11–200 HCs
- ❑ Planned, Constructed, and Managed by communities with supervision from Local Governments

Small Scale Off-site System

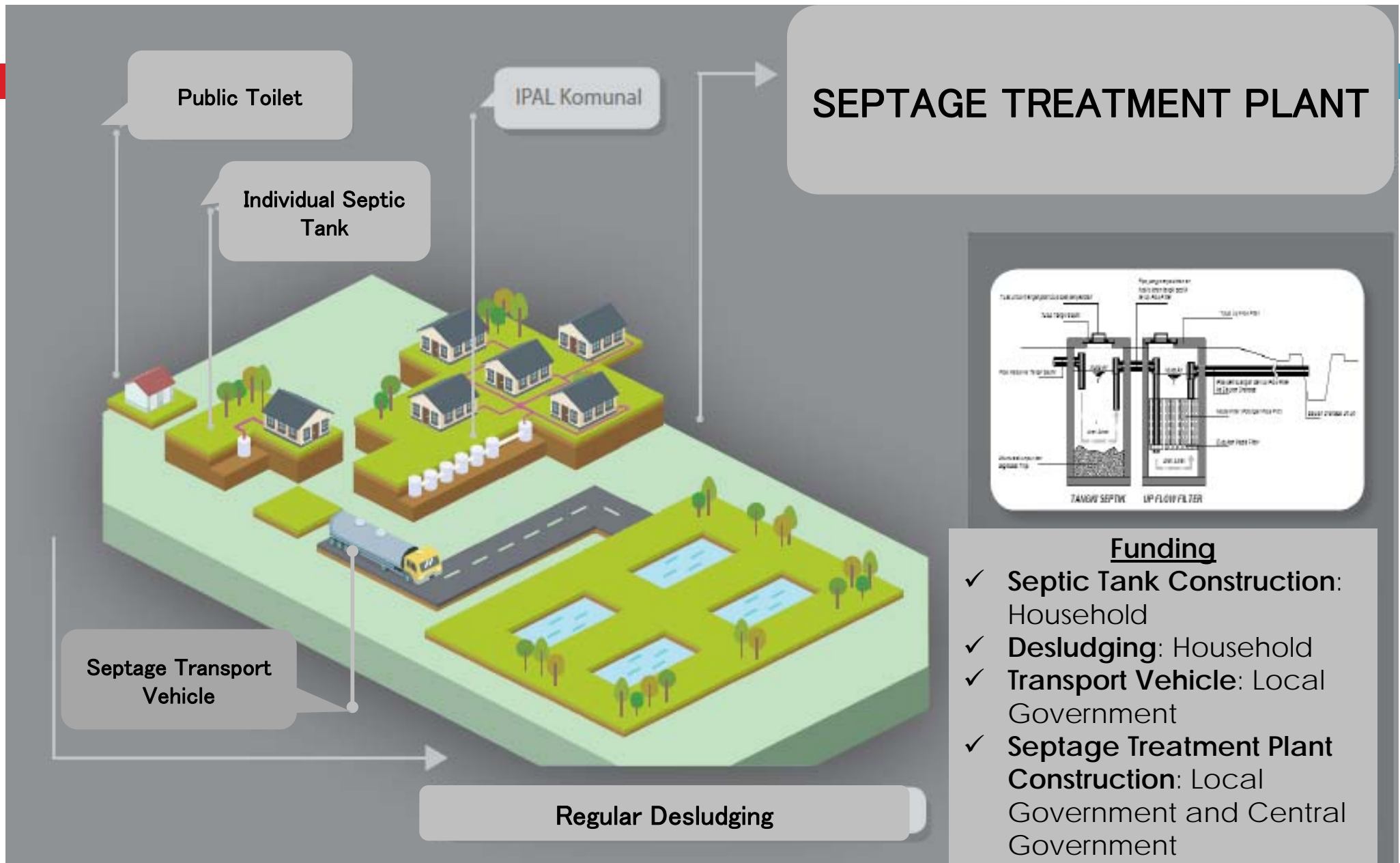
Since 2006,

197

Small Scale
Wastewater
Systems
have been
developed
throughout
Indonesia

- ❑ Anaerobic Treatment
- ❑ Number of House Connections: 201–4.000 HCs
- ❑ Managed by Institution under Local Governments (LGs)
- ❑ Additional: 34 Small Scale Off-site Systems funded through Hibah from Australia (managed by LGs)

ON SITE SYSTEM

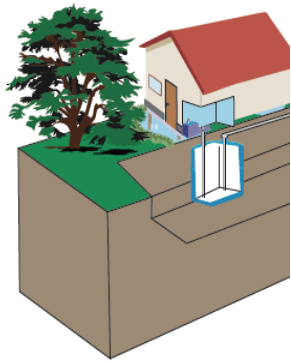


Funding

- ✓ **Septic Tank Construction:** Household
- ✓ **Desludging:** Household
- ✓ **Transport Vehicle:** Local Government
- ✓ **Septage Treatment Plant Construction:** Local Government and Central Government

SEPTAGE MANAGEMENT SYSTEM

For Onsite & Small scale sewerage, beside expanding the access we are now also focussing on **IMPROVING the QUALITY of SEPTAGE MANAGEMENT**



Wastewater Treatment:

- Individual Septic Tank
- Comunal Septic Tank
- Small Scale Sewerage

Septage
Transport
Vehicle

Septage Treatment Plant

Only 170 out of 517
cities/regencies owned STP

On Call Basis Desludging / Regular Desludging

Issues and Challenges

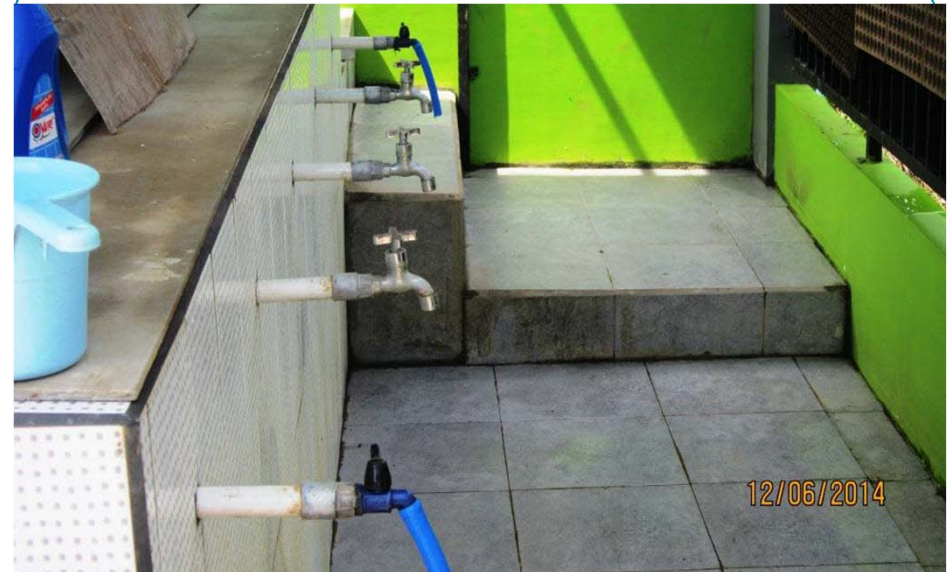


- ❑ Majority of Septic Tanks are in low quality → limited input to Septage Treatment Plant
- ❑ Limited **land availability** for Small Scale Off-site System in slum urban area
- ❑ Low priority on sanitation **investment** (both at government and community levels)
- ❑ Stronger **regulation** and **enforcement** are needed
- ❑ Many **community management structures** do not function as assumed

GOOD PRACTICE OF DECENTRALIZED WASTEWATER TREATMENT IN INDONESIA (Community Based Sanitation)

Location:

Jl. Kasturi RT 1, RW 1, Desa Benteng,
Kecamatan Pangaron, Kab. Banjar,
Provinsi Kalsel





Community Based Sanitation





**Combination System of Communal
Off Site System and MCK++
Di Kel. Pamoyanan, Kec. Bogor
Selatan
Built in 2012**



**Combination System of Communal
Off Site System and MCK++
di Kel. Katulampa, Kec. Bogor Timur
Built in 2012**

Community Based Sanitation “SANIMAS” Photographs



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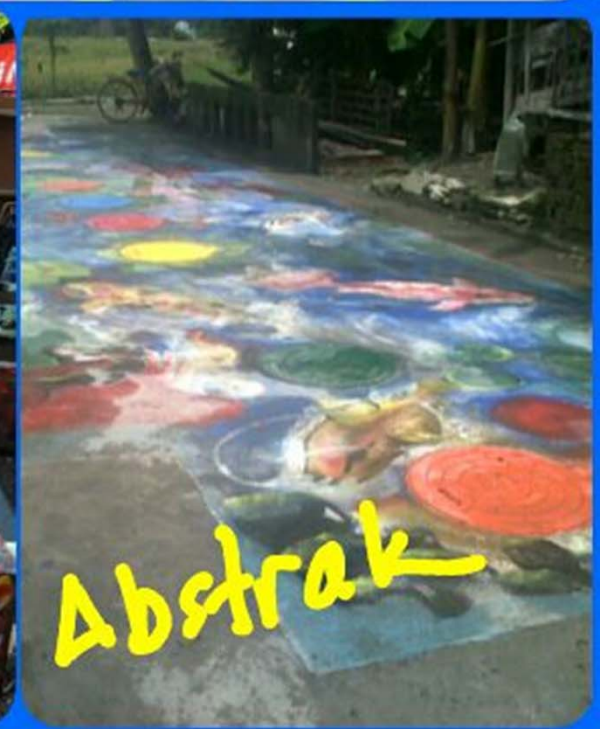
Gambar 1. Enjonya bergoyang di Atas IPAL



Community Based Sanitation “SANIMAS” Photographs



Inovative WWTP



Inovative WWTP



Inovative WWTP



Inovative WWTP





TERIMA KASIH

**Directorate of Environmental Sanitation Development
Ministry of Public Works and Housing
Email: abah_plp@yahoo.co.id
Phone: +62 21 72797181**