INDONESIAN NATIONAL POLICY & STRATEGY ON ENVIRONMENTAL SANITATION MANAGEMENT

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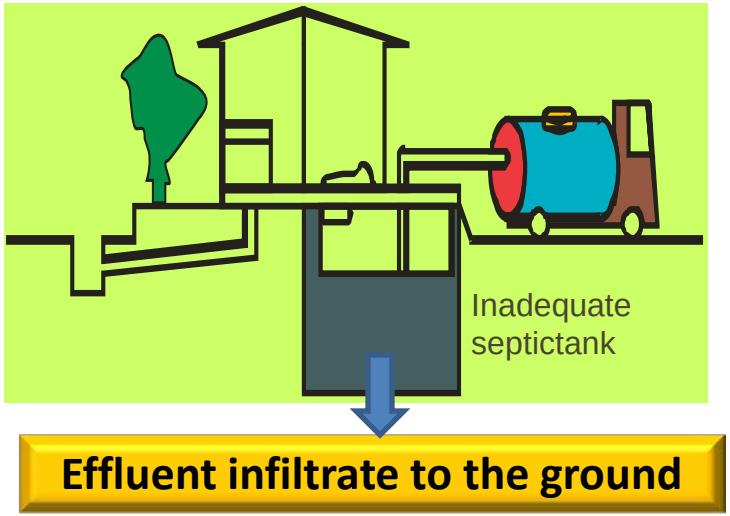
Impact of Inadequate Sanitation Facilites & Improper Sanitation Behaviour in Indonesia

- Around 5,6 Million ton/day untreated wastewater, infiltrate and polutted the water resources.

- 75% Rivers & 80% of groundwater already polluted.
- Community pays 25% higher price for water supply.

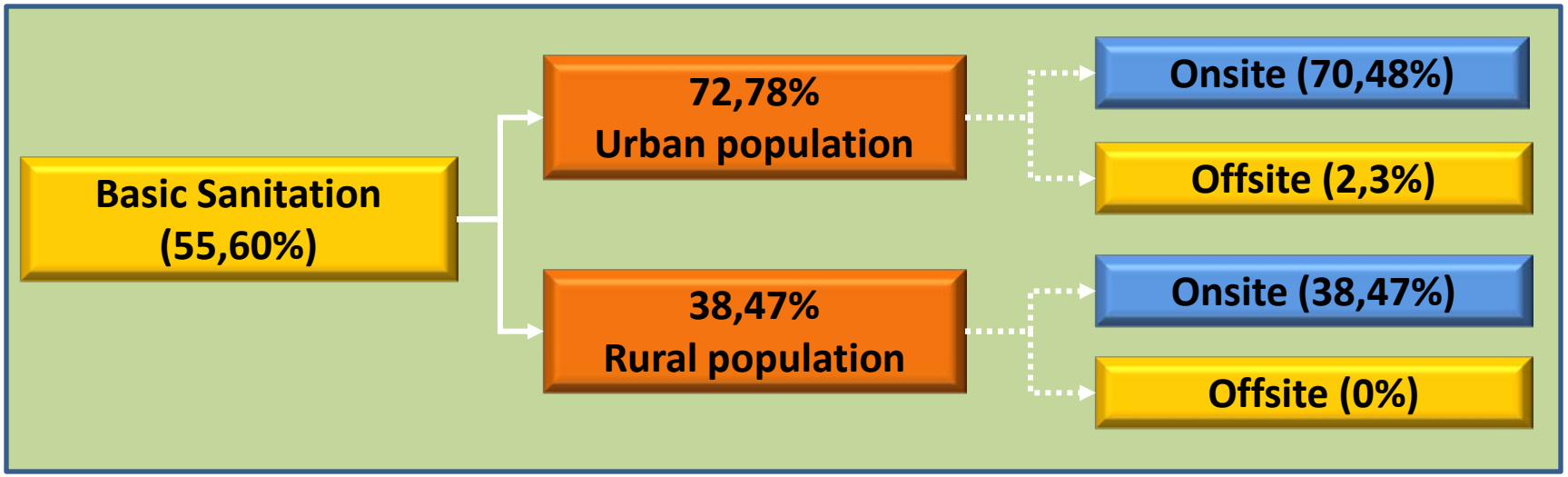
- Economical loss caused by inadequate sanitation is around US $ 6,3 billion ~ 2,3% GDP Indonesia.

- Most of the septictank used by the households did not fulfill the safety standard.



Current Sanitation Status in Indonesia

(taken from the Indonesian MDGs Roadmap, 2011)



Public access to adequate sanitation services remains challenging

A breaktrough and efficient solution needs to be impemented to accelerate the development

MDG's Target Accomplishment Status

TARGET 7C:
To decrease the number of population without sustainable access to basic sanitation

Indicator (Target 7C)		Baselines (1993)	Former data (2009)	Latest data (2010)	MDG's target (2015)	Gap to be fulfilled within 3 years
7.9	Proportion of households with sustainability access to basic sanitation (in total urban + non urban)	24,81%	51,19%	55,60%	62,41%	6,88%
7.9.a	Urban area	53,64%	69,51%	72,78%	76,82%	4,04%
7.9.b	Non urban area	11,10%	33,96%	38,47%	55,55%	17,08%

How to accomplished the target???

Indonesian National target for Wastewater Management

National Target of Medium Term Development Plan

Indonesia FREE from Open Defecation through development of :

- Off site sewerage system coverage 10% (5% centralized WWTP + 5% communal WWTP)
- On site system coverage 90%.

- Indonesia FREE from Open Defecation
- Centralized WW treatment in 16 City
- Communal WW treatment in 226 city

Cities Sanitation Development Acceleration Target

LESSONS LEARNED FROM THE EXPERIENCE WITH SANITATION SERVICES DEVELOPMENT

- Bottom up planning (for community and neigbourhood scale) and Top down planning (for city wide and regional scale) NEED TO BE COMBINED to accomplish significant number of public access to sanitation infrastructure.

- Providing only sanitation infrastructure WILL NOT SOLVE THE PROBLEM. **Public campaign** to raise public awareness about sanitation is an essential point too.

Change of the Wastewater Management Development Pattern

Old Pattern

TARGET ORIENTED

- Low Public Awareness
- The sanitation system are not sustainable

New Pattern

PUBLIC NEEDS ORIENTED

- Community participated directly as the building component
- The sanitation system become sustainable

PROGRAM DEVELOPMENT PRINCIPLES

- **Pro poor orientation in the environmental sanitation infrastructures development.**
- **Pro community health improvement and environment protection/ conservation.**
- **Community based development approaches for all of the step of environmental sanitation infrastructures development and management.**
- **Demand responsive approaches for city wide environmental sanitation infrastructures development.**

POLICY AND STRATEGY OF WASTEWATER SECTOR (Ministerial Regulation PU 16/PRT/M/2008)

1. ***INCREASE THE ACCESS***, accessibility to sanitation facilities both on-site and off-site systems in urban and rural areas have to be increased for community health improvement

2. ***COMMUNITY AND PRIVATE PARTICIPATION,*** improve the quality services with community and private active participation/involvement

3. ***LAW AND REGULATIONS***, strengthening of law enforcement and developing regulations of municipal wastewater management.

4. ***INSTITUTION***, strengthen the institution and capacity building of municipal waste water management

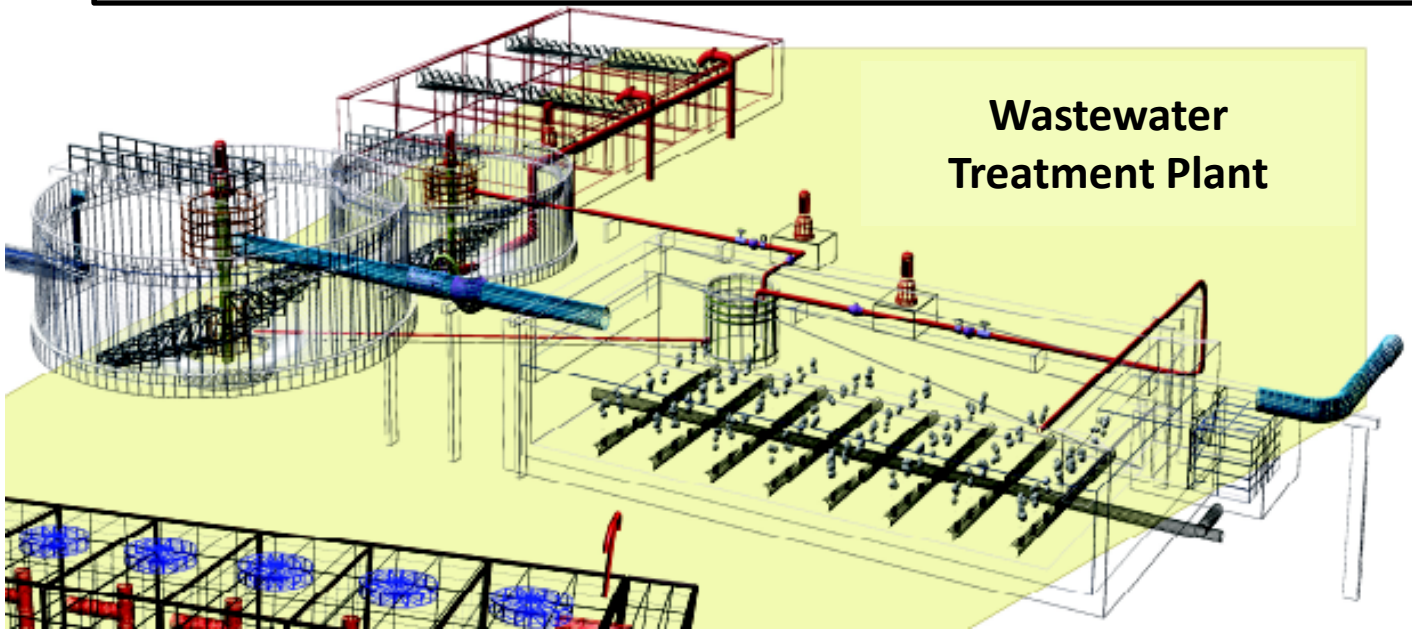
5. ***FUNDING***, enhance the financial capacity and alternative source for wastewater infrastructures development

Wastewater Management Approach

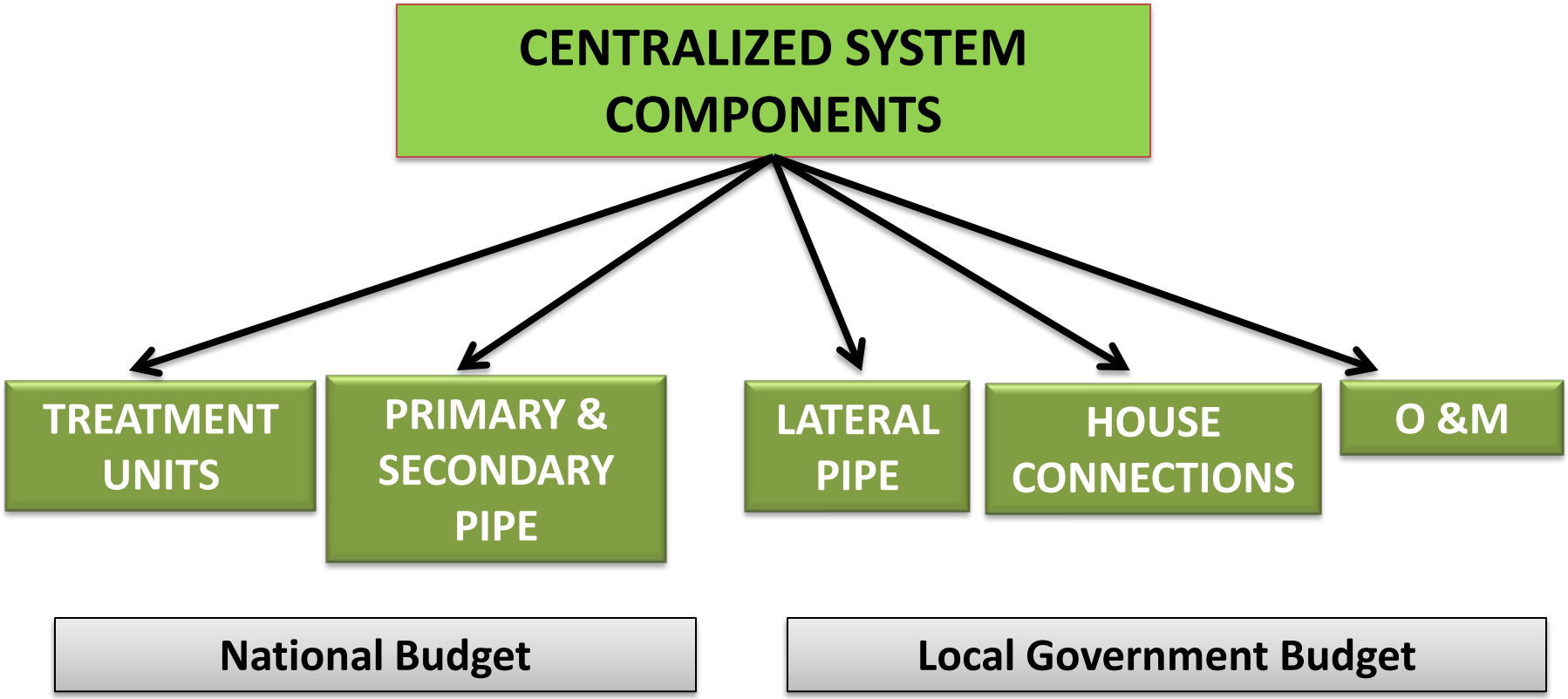
Approach	Community Based	Institutional Based	
Level	Neighborhood	City Wide	Regional / National
	Adequate Sanitation: 1. Rural 2. Slum area	Wastewater infrastructure services based on demand responsive approach	Wastewater infrastructures development support inter cities / region coordination to protect watershed from human waste pollution
	On- Site sanitation and Small Scale Community Sewerage System (SANIMAS)	▪ *Metropolitan & Large Cities* Off site / sewerage system ▪ *Medium & Small Cities* - Integrated system of existing on-site and new off-site sanitation - Improved Septage Treatment Plant (IPLT) and sludge services - Shallow / small bore sewer or small scale sewerage integrated to municipal sewage system to support revitalization program for old cities. ▪ *New Town* - Develop small sewage system for Low Cost Housing area - Encourage sewerage development for new town	Clean River Program (PROKASIH) or similar program

INSTITUTIONAL BASED SANITATION APPROACH

- ***Metropolitan & Big City*: off site /sewerage system**
- ***Medium & Small Scale City:* integrated off site system – focusing on septage treatment services (development of on site management)**
- ***City/Old Quarter Area:* Shallow/small bore sewer or community scale WWTP, integrated with other city infrastructure to support Old City revitalization**
- ***New city/ area:***
  - **Development of sewerage system for Low Cost Housing Area**
  - **Encouraging development of sewerage system for the new city or area**



INVESTMENT PROPORTION FOR THE CENTRALIZED WASTEWATER SYSTEM



SEWERAGE SYSTEM ON 13 METOPOLITAN/ BIG SCALE CITY IN INDONESIA

Bandung: WWTP Bojongsoang

Cirebon: WWTP Ade Irma, Kesenden, Perumnas Utara

Yogyakarta: WWTP Sewon

Surakarta: WWTP Mojosongo & Semanggi

Bali: WWTP Suwung

Medan: WWTP Pulo Brayan

Prapat: WWTP Aji Bata

Balikpapan: WWTP Margasari

Banjarmasin: WWTP HKSN, Lambung Mangkurat, Pekapuran Raya, Basiri

Jakarta: WWTP Setiabudi & Malaka Sari

Tangerang: WWTP Sukasari

Manado: WWTP Boulevard

Batam: WWTP Batam Center

WWTP Suwung, Bali

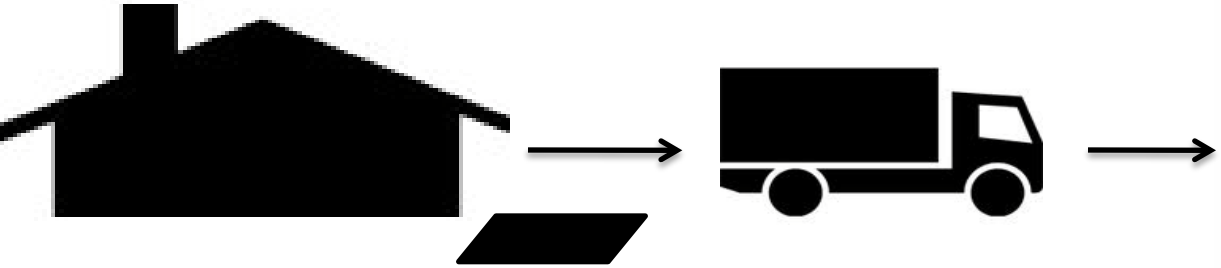
WWTP Sewon, Yogyakarta

WWTP on Cirebon

SEWERAGE IN INDONESIA (2011)

City	System	Total Capacity (m3/day)	Used Capacity (m3/day)	House Connections
Medan	UASB	60.000	5.650	12.370
Prapat	Aerated Lagoon	2.000	115	253
DKI Jakarta	Aerated Lagoon	38.880	704	1.407
Bandung	Anaerobic, Facultative, & Maturation Pond	243.000, installed 80.835	49.769	99.538
Cirebon	Anaerobic, Facultative, & Maturation Pond	24.566 , installed 20.547	9.667	13.165, waiting list 14.585 SR
Yogya	Aerated Lagoon	15.500	7.314	11.000
Surakarta	Aerob Facultative & Biofilter	9.504	6.325	11.978
Bali	Aerated Lagoon	51.000	31.185	8.647, on DSDP 2 target 15.000
Banjarmasin	RBC	10.000	2.568	8.968
Balikpapan	Extended Aeration	800	800	1.452
Tangerang	Oxidation Ditch	2.700	600	1.200
Batam	Oxidation DItch	2.852	150	300

SEPTAGE TREATMENT IN INDONESIA



On site treatment

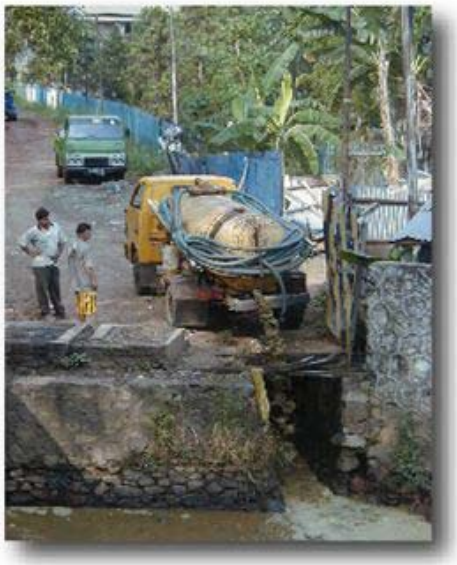
- Septicktank (commonly used)
- Biofilter

Collecting Transport

- Desludging Truck
- Desludging Motorbike

Septage treatment plant

- 1st treatment
- 2nd Treatment:
- Sludge drying bed



Indonesia have 150 septage treatment plants but 90% of the unit are not working optimal because of:

- Institutional problem
- Most of the treatment are not in adequate condition
- Low loading input to the treatment system because of:
  - Bad quality of septicktank (not waterproof) resulting of no sludge to be desluge by the transporting unit.
  - Ilegal direct desludging to the water body

WWTP DEVELOPMENT ON LOW INCOME HOUSING (RSH)

Year	Location	Provinces
2006	15	8
2008	21	15
2009	32	22
2010	22	17
2011	38	19
2012	22	15
2012 (Plan)	15	8

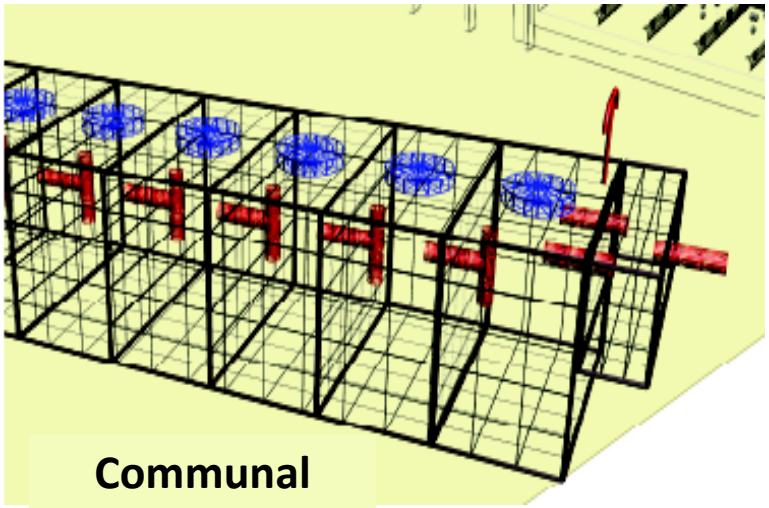
COMMUNITY BASED SANITATION APPROACH

For the slum urban area:

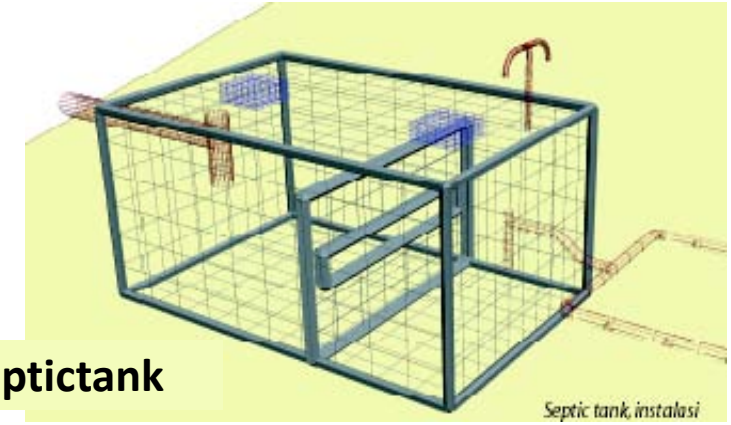
Community Based Sanitation

Focussed on **Community Empowerment**

- Applying Demand Responsive Approach
- Government Role: *provider* → *facilitator*
- Giving informed choices for all aspects includes: technological, financing, environment, social, and institutional aspects.



Communal WWTP



Septictank

For the non urban area:

Community-Led Total Sanitation

- on-site system

COMMUNITY BASED SANITATION PROGRAM (SANIMAS)

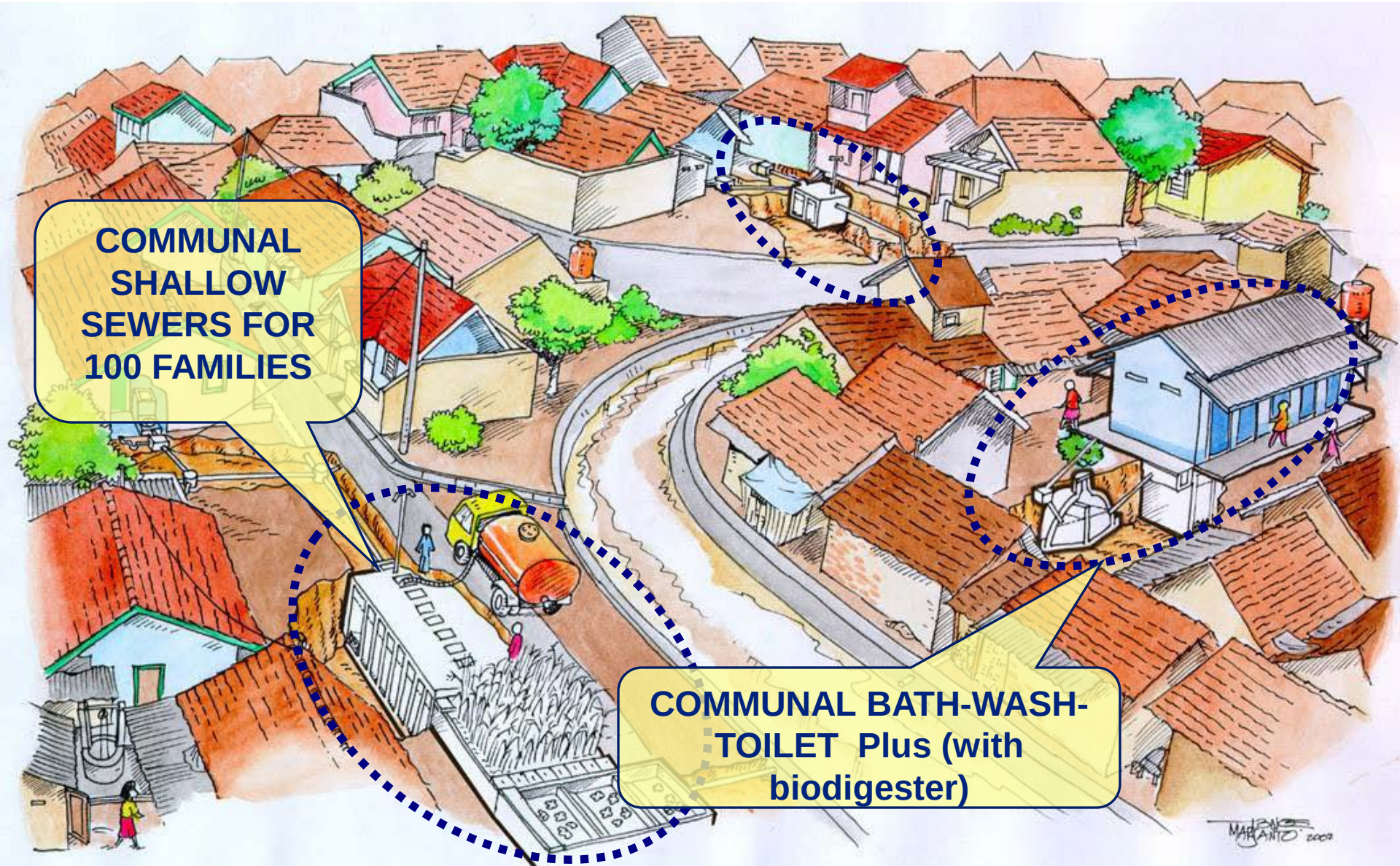
- OBJECTIVE: to improve sanitation condition for poor people based on comunity demand and choice.

- SANIMAS help community and local government on improving sanitation facilities with technology choices that can be managed by the community itself.

- Technology choice for SANIMAS based on:

  - low cost
  - efficiency
  - simple operation & maintanance
  - limit of energy
  - appropriate technology

2 models of URBAN COMMUNITY BASED SANITATION



SANIMAS IMPLEMENTATION IN INDONESIA

Year	Type of Funding	Location	Cities/Regencies	Provinces
2005	Regular	13	13	4
2006	Regular	66	51	20
2007	Regular	128	84	22
2008	Regular	110	70	16
2009	Regular	110	-	17
2011	Regular	67	38	17
2012	Regular	75	-	15

SOCIALIZATION AND COMMUNITY EMPOWERMENT PROCESS OF SANIMAS

BIODIGESTER ON SANIMAS

- The majority of technical options chose by the community is COMMUNAL TOILET with Biodigester Unit because majority of the community who received SANIMAS did not have toilet.
- Other reason is because the biodigester can provide gas which can be used for cooking, hot water, and lighting for the SANIMAS facilities area.

Potential Reduction of CO2 with Biodigester Unit

- **For every biodigester unit (100 households = 500 people)**

  With assumption:

  BOD: 40 gram/person/day

  CH_4: 0,024 kg/person/day = 8,76 kg/person/year

  CO_2: 184 kg/person/year

  Reduction of CO_2 per unit digester is: 62 ton $CO_{2\ equivalent}$/year

- **The potential reduction of CO_2 with Biodigester Unit is as follows:**

  Number of Sanimas built until 2014 (estimated): 5000 locations

  Percentage of Biodigester unit implemented (estimated): 80%

  CO_2 reduction until 2014: 0.000368 Gigatonnes CO_2 equivalent

THANK YOU FOR THE ATTENTION