

DEWATS and stakeholder involvement:

Lessons learnt from a national community based sanitation program



BORDAremen Overseas Research and Development Association

www.borda-net.org
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Content

DEWATS and stakeholder involvement

- BORDA
- DEWATS
- National CBS Program: Sanimas Indonesia
- Lessons Learnt
- Wanted!

BORDA

Mission



securing access to vital resources
fostering an intact environment
with renewable energy



BORDA

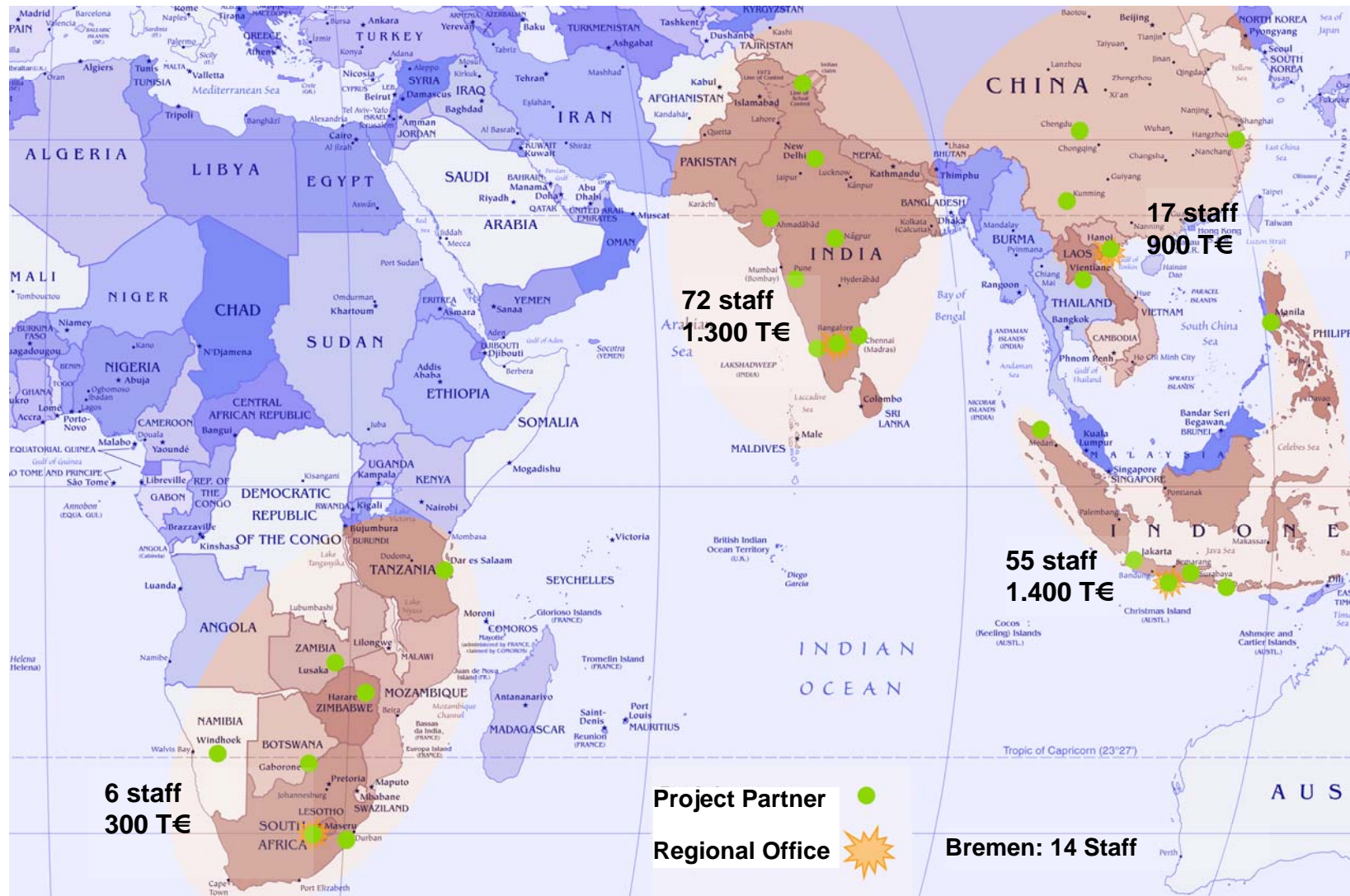
... when it all
started



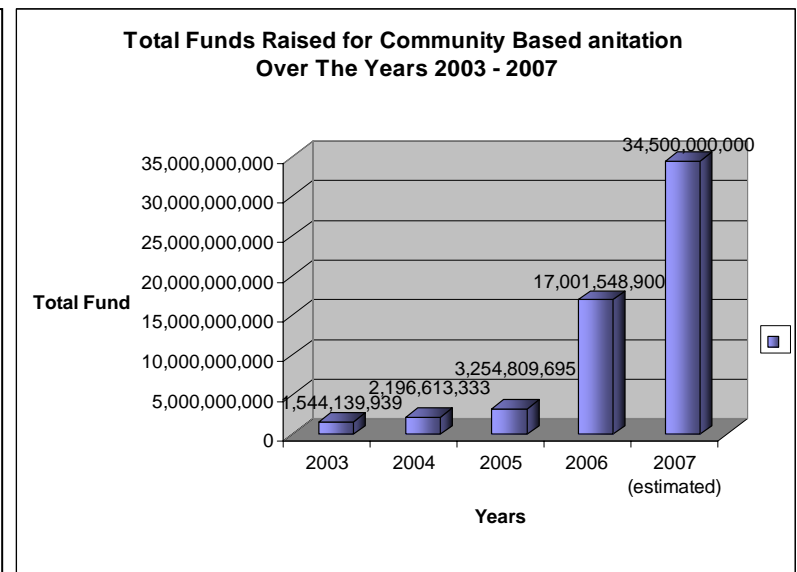
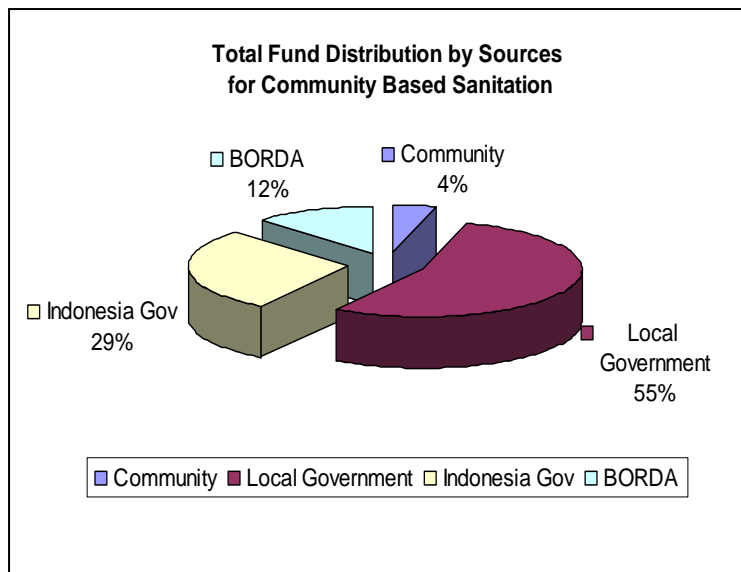
1977

**Biogas Technology
Transfer
India-Ethiopia**

... and today



	Community		Local Government	Indonesian Government	BORDA		TOTAL
	In-kind	In-cash	In-cash	In-cash	In-cash	Community empowerment	
2003	39,519,047	41,140,608	986,044,611	448,362,659* *(AUSAID)	29,073,015	0	1,544,139,939
2004	51,862,138	32,930,750	1,008,879,459	552,825,658	350,115,329	200,000,000	2,196,613,333
2005	92,920,325	43,797,388	1,687,126,349	856,783,181	299,182,452	275,000,000	3,254,809,695
2006	502,912,023	292,912,881	8,330,124,000	4,900,000,000	1,175,000,000	1,800,600,000	17,001,548,900
TOTAL	687,213,533	410,781,627	12,012,174,420	6,757,971,498	1,853,370,796	2,275,600,000	23,997,111,870
2007	1,000,000,000	500,000,000	20,000,000,000	10,000,000,000	0	3,000,000,000	34,500,000,000



Goal



Facilitate

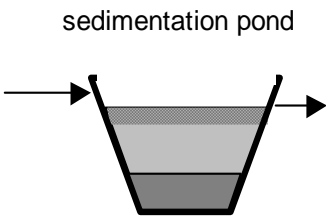
piloting & dissemination of
basic needs services
water, sanitation & energy
to people in poor
rural and urban areas that
can be self-sustained

DEWATS

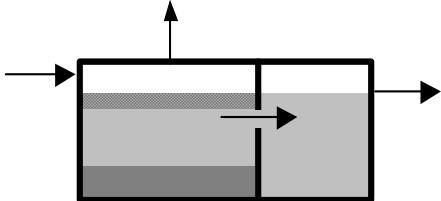
Decentralised Wastewater Treatment Systems



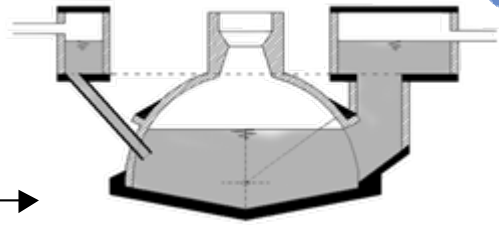
Sedimentation



septic tank

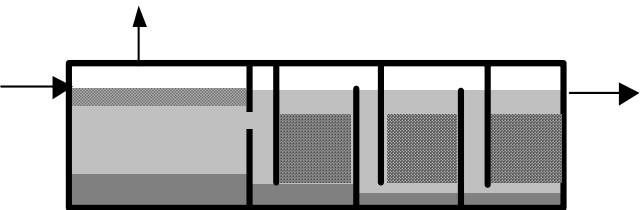


fixed dome biogas digester

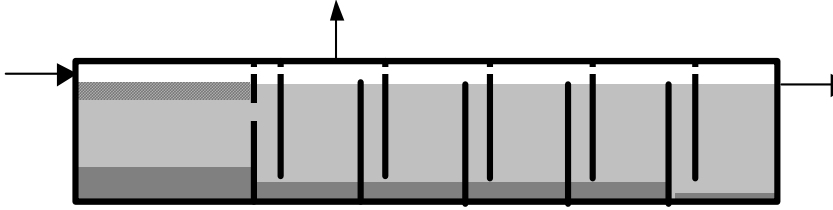


Anaerobic digestion

anaerobic filter

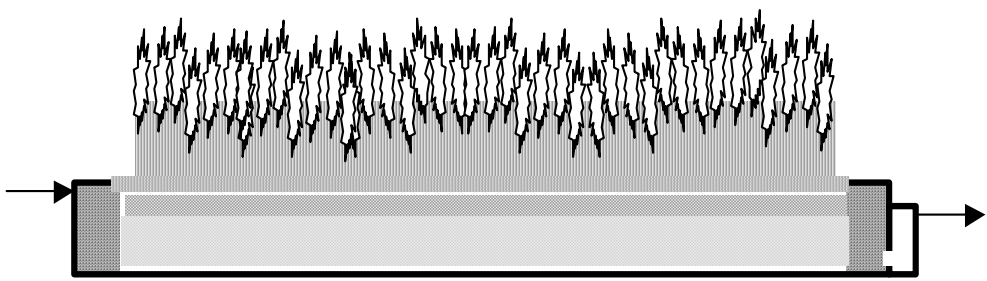


anaerobic baffled reactor



Aerobic and facultative decomposition

planted gravel filter



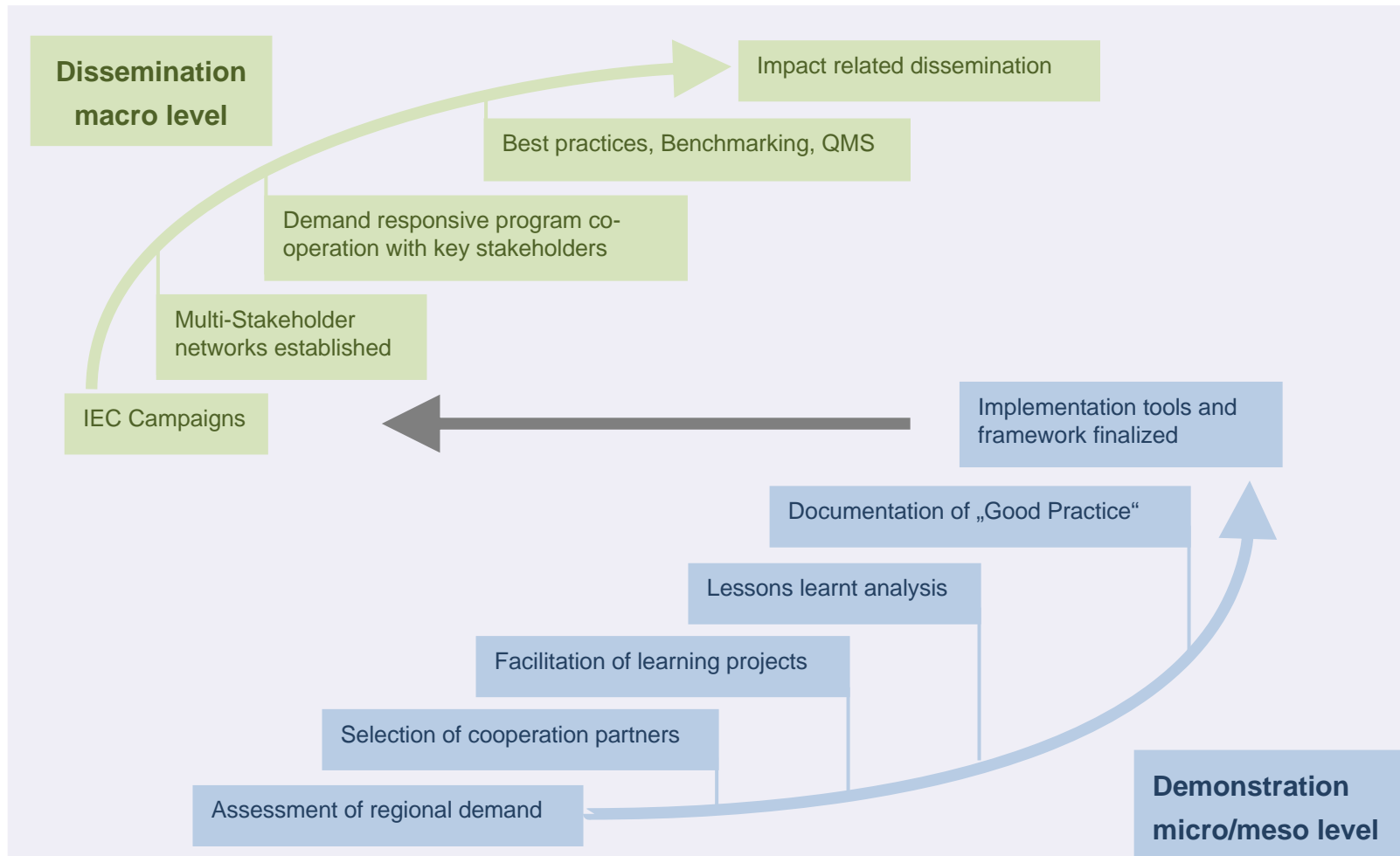
Modular and partly standardized

Post treatment

aerobic-facultative ponds and aerobic polishing ponds



DEWATS implementation stages



Sanimas Indonesia

A National Program for Community Based Sanitation (CBS)

Since 2003



Sanitasi oleh Masyarakat
SANIMAS
Sanitatin by Communities



BALIFOKUS



BORDA Indonesia Partner Network

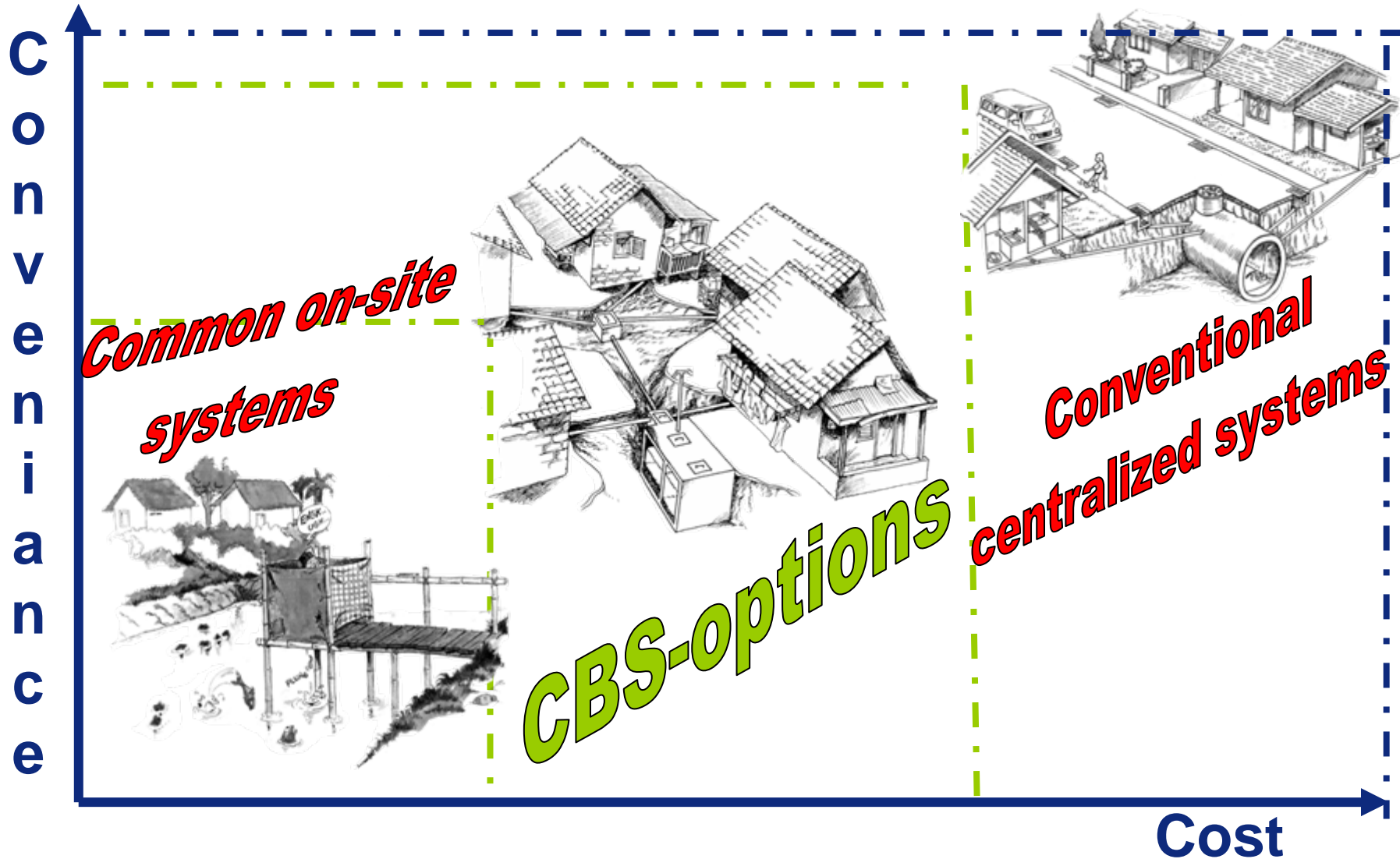
Together with a network of qualified local NGO-partner organizations, BORDA facilitates activities in the fields of:

- Decentralised wastewater treatment for SME
- Community-Based Sanitation:
 - Community Sanitation Center (CSC)
 - Simple Sewerage System (SSS)
- Decentralised solid waste management
- Sanitation mapping

Waste Water-Facts for Indonesia

- The archipelago: 225 Mio people live on 17.000 islands
- 2005: 150 Mio people live on main island Java
- Average population density 800 cap/km²;
by 2005 about 60 % of population live in urban areas
- Centralized sewerage system in 7 cities for 1 Mio capita
- Main “treatment” of domestic wastewater:
absorption pits
- Well water in all cities contaminated with E. coli
- 12.000.000 m³ domestic ww/ day in Java
- Approximately 75% of existing municipal sludge
treatment plants don't function
- More than 100.000 Wastewater producing SME

CBS fills the gap



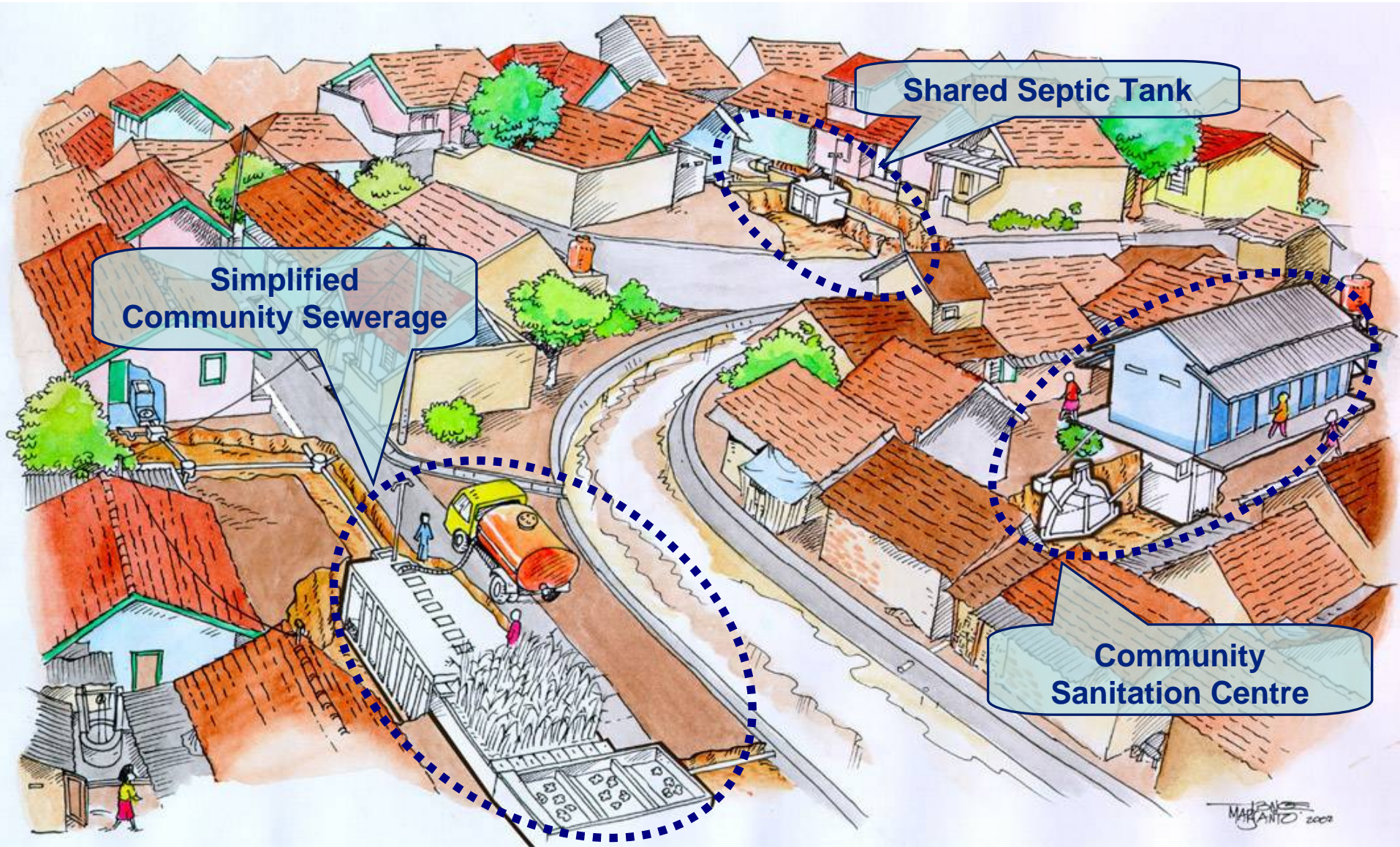
Application of DEWATS within Community Based Sanitation (CBS)

Main CBS principles:



- Multi-source financing of primary infrastructure
- O & M fully financed by users
- Demand-responsive approach (DRA)
- Informed Choice
- Participatory Planning
- Professional Design & Workmanship
- O & M managed by users or local service providers

Main CBS options



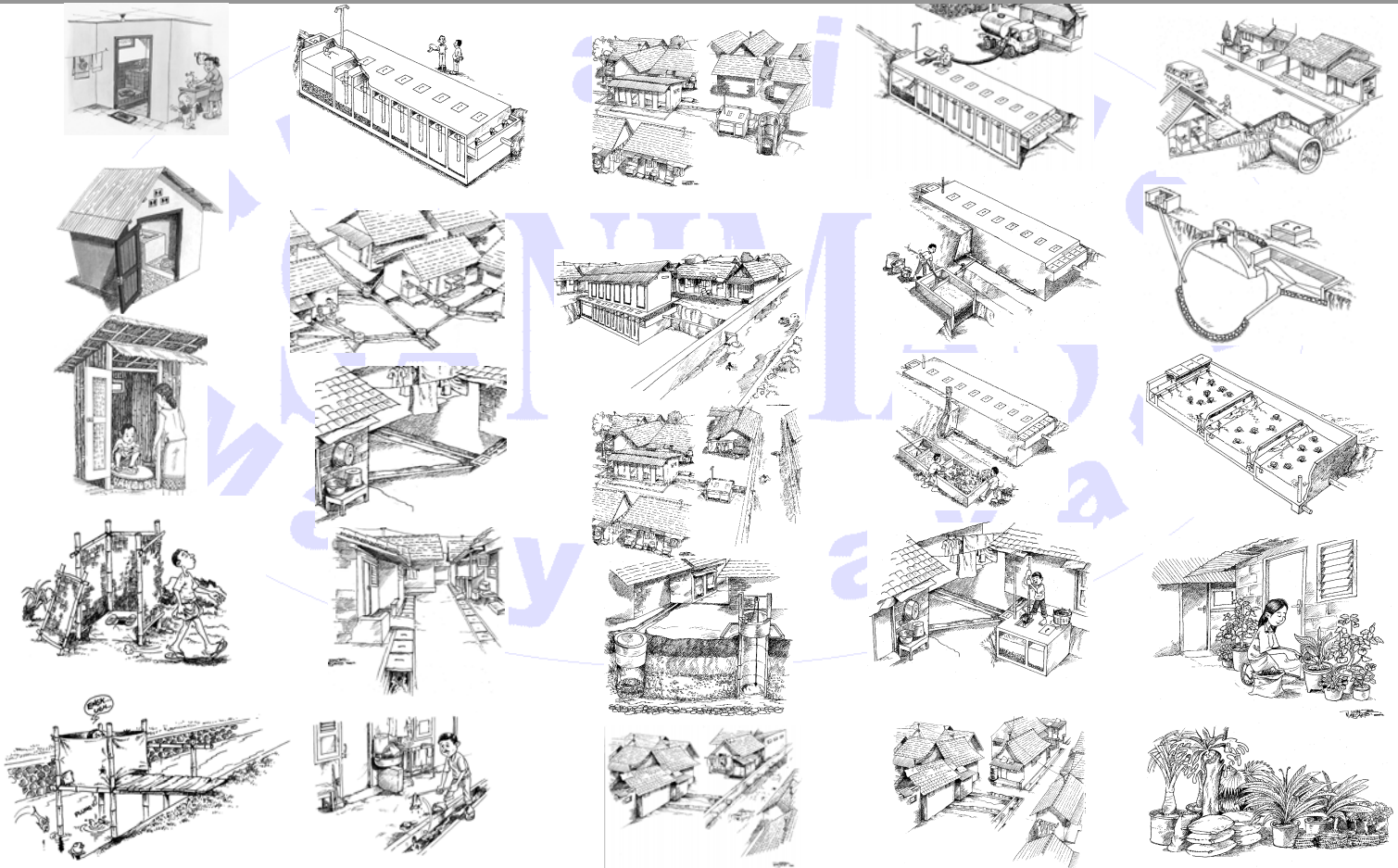
Participatory Planning

Some practical tools & outputs

- Participatory Community Appraisal
- Participatory Community Mapping
- Wealth Mapping (Equity !)
- Informed Choice Catalogue (ICC)
- Community Action Plan: Contribution
- Community Action Plan: Training
- Community Action Plan: Construction
- Community Action Plan : O & M



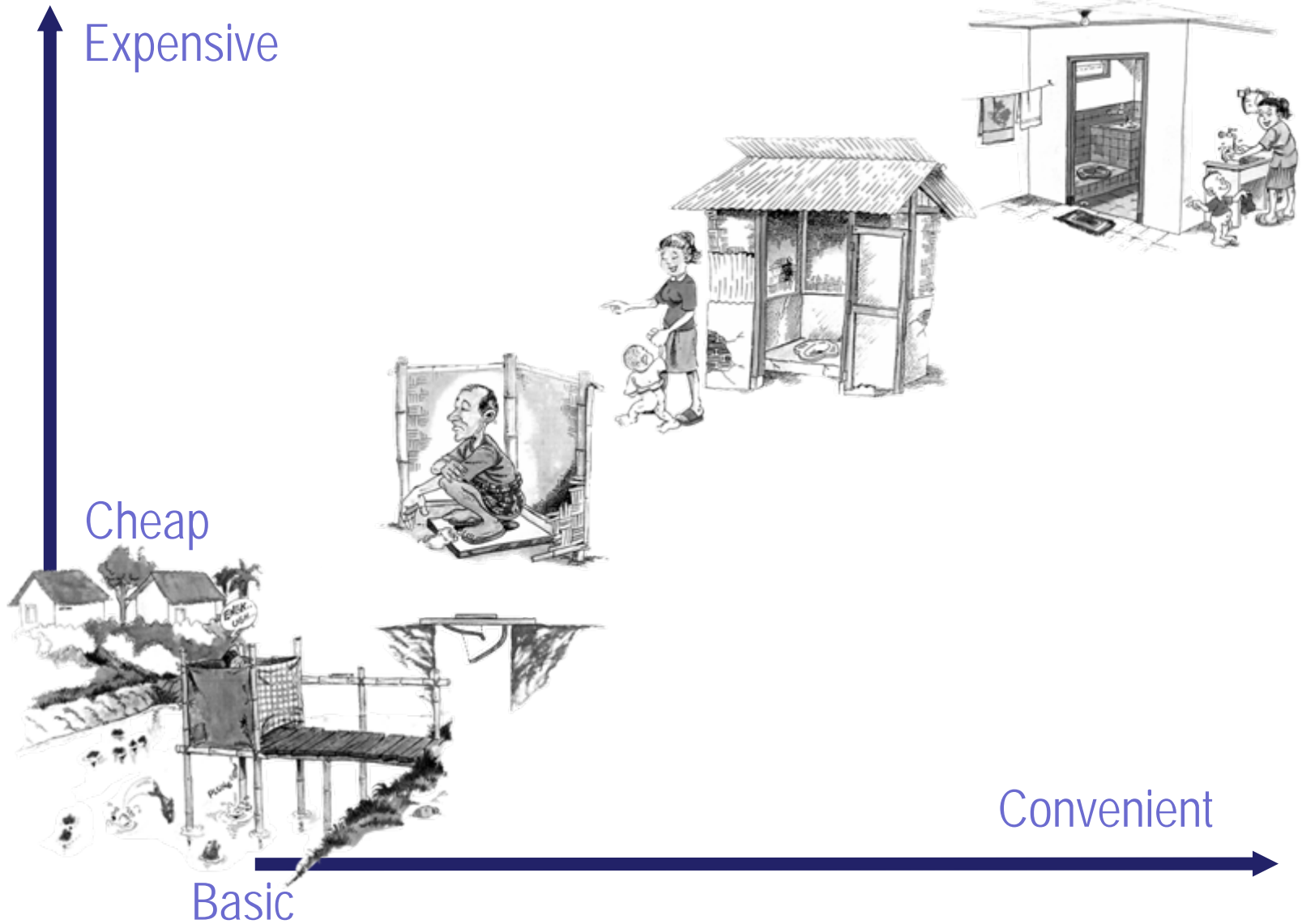
Technical CBS-Options - Informed Choice for Communities



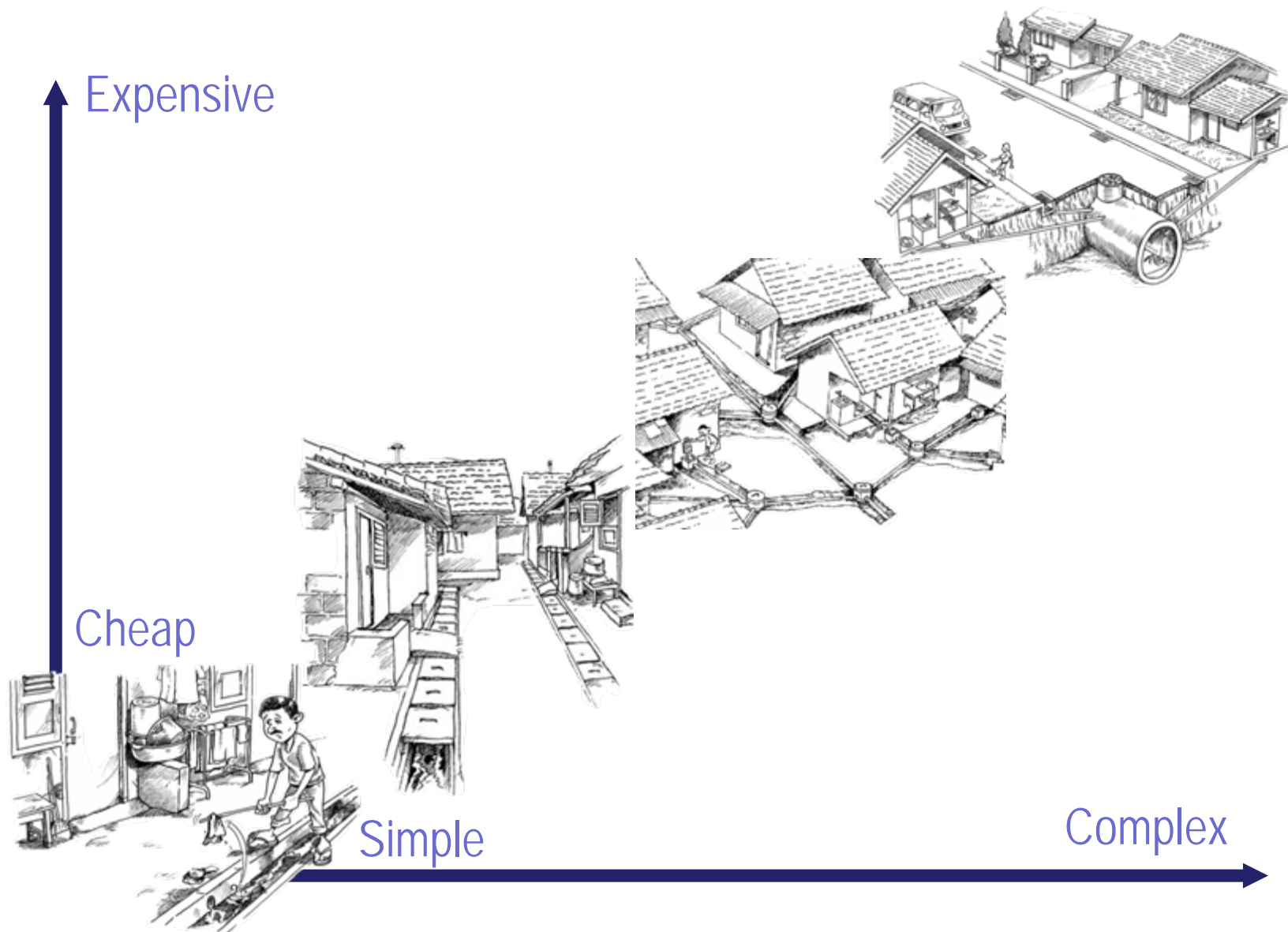
Informed Choice: Selection Tree



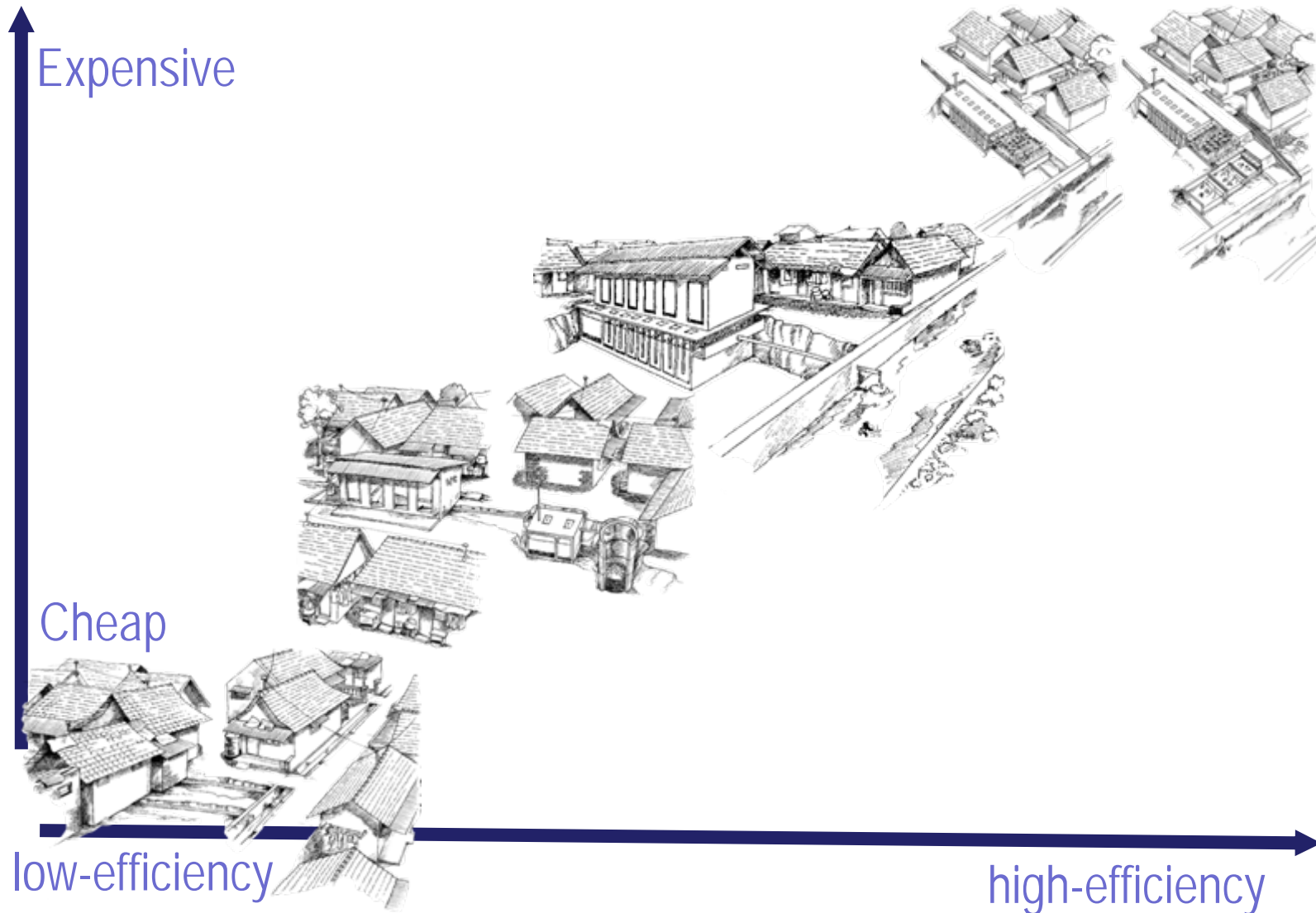
Component 1: Toilets



Component 2: Collection



Component 3: Treatment



Training and guidance for functioning O&M




Operational and Maintenance Guideline for Operator



DO it Once per Week


- 1**

✓ **CHECK** each control tank at the communal piping system.



5

✓ Ensure the passage, **OPEN** pipes, if they are clogged.



- 2**

✓ **REMOVE** solid waste and scum.



6

✓ Take a look that you can **OPEN** each cover of the control tank and man hole of the treatment plant.


- 3**

✓ If there is **no waterflow** to control tank, the pipe before control tank is clogged or broken.

⇒ **STOP** activity at the household,
⇒ **OPEN** the passage or ask the mason to **FIX** the leaks.



7

✓ Ask the mason for **FIXING** all leaks immediately and look for the reason.


- 4**

✓ If there is a **overflow** of control tank, the pipe after control tank is clogged.


⇒ **STOP** activity at the household,
⇒ **OPEN** the passage.



8

✓ If there are **WET FIELDS** above the pipelines on the ground, the pipe below is probably broken.


⇒ **STOP** activity at the household
⇒ **Check** it and ask the mason to **FIX** the leaks.



- 9**

✓ **REMOVE** solid waste and scum of the Inlet Tank of treatment plant with the shovel and the spatula.


- 10**

✓ **COLLECT** all removals,
✓ **PUT** solid waste and scum in plastic bags and
✓ **BRING** them to the garbage collection



CBS Operation & Maintenance costs covered fully by user fees

Cost factors

- Repairs/Renewal of CBS infrastructure
- Person in charge of routine maintenance
- Electricity
- Water
- Miscellaneous

Fee payments

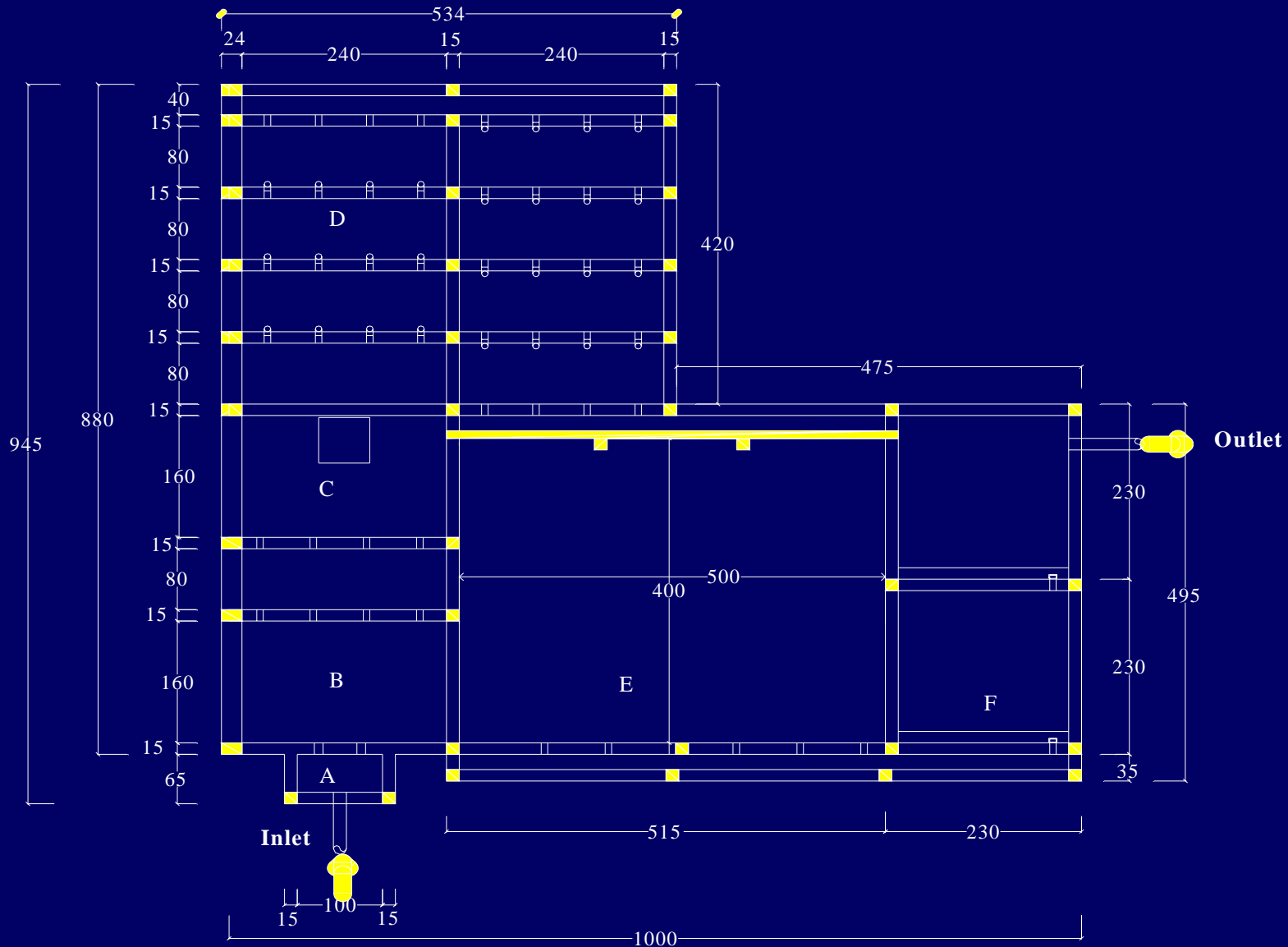
- Per use
- weekly fees
- monthly fees

Example

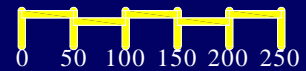
DEWATS at
SUKOHARJO Housing Area,
Central Java, Indonesia

SUKOHARJO Housing Area system profile

Households	: 102
Waste Water Source:	WC, bathing, washing, kitchen
WWTP	: Septic Tank, Baffled Reaktor, Anaerobic Filter, HGF, pond
capacity	: 50 m ³ /day
Space	: 140 m ²
Capital costs	: Rp 215,500,000 (~€ 20,000)
Operational costs	: Rp 500,000/month (~€ 45)
Start of operating	: 17 September 2002
Inflow BOD/COD	: 190/350 mg/l
Outlet BOD/COD	: 22/58 mg/l







DENAH IPAL



Construction Process





	2000	2001	2002	2003	2004	2005	2006	2007	2008
CBS 	4	4	8	29	10	19	61	94	97
SME 	1	9	17	6	8	13	4	20	19
DESWAM 							5		2
STP 							1	1	0

Key Achievements

Key Achievements

- ✓ 60% reduction of hygiene and sanitation related diseases in intervention areas
- ✓ Improved sanitation facilities provided for over 100.000 inhabitants of low-income areas in over 100 mostly small- and medium cities
- ✓ Over 1000 implementing agents trained
- ✓ 100 % “hardware” and 50% “software” costs financed out of national/local Indonesian Gov. budget
- ✓ Over 250 sanitation experts (community facilitators, craftsmen, engineers etc.) work for the program/year
- ✓ Transaction costs for improved sanitation reduced to 70-100 \$ per capita
- ✓ Professional implementation network established
- ✓ Quality Management System developed that allows for further up-scaling in SEA countries

Lessons Learnt

Lessons Learnt

1. Management of sanitation service providers
“Operationalize result & impact based growth strategy early”
2. Community Participation
“Effective community participation is no DIY approach”
3. Multi-Stakeholder framework
“Co-operation structure and regulations must be defined”
4. Quality Management System
“A practical QMS is basis for successful up-scaling”

Lessons Learnt

5. Cost-efficiency

“Cost-efficiency enhances chances for independent up-scaling”

6. Health Impact Assessment

“An efficient tool to verify baseline and impacts with communities”

7. Centralized vs. decentralized/on-site sanitation systems

“Community/on-site sanitation will dominate for years to come”

8. Regulations urgently required

“Lack of sector regulation enhances quick & dirty solutions”

Wanted!

A systematic & concerted demonstration of tested DEWATS options “on scale” in small & medium cities

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A systematic & concerted demonstration of tested DEWATS options “on scale” in small & medium cities

- Decentralized sanitation package:
SanMap, HIA, CBS, DEWATS-SME, QMS, IPLT
- Largest decentralized sanitation solution, but current coverage in target cities is less than 1% of households
- Integrated decentralized sanitation strategies of small/medium of towns await implementation
- Small/medium towns demand “open packages”: manageable, sustainable and up-gradable, main platform-modules to be implementable in a limited timeframe
- Multi-million \$ investments for centralized sewerage & WWT systems will be limited to major cities and are hardly realistic options for urban low-income areas and SMEs

Wanted!

A systematic & concerted demonstration of tested DEWATS options “on scale” in small & medium cities

- Majority of existing residential areas in non-industrialized countries and new real estate developments do and will depend on on-site and decentralized sanitation systems
- Hygienic and environmentally sound handling & management of feco-sludges increasingly required in small and medium towns to avoid public health hazards
- Only a concerted comprehensive “real-scale” approach that combines multiple options “on scale” has a realistic chance of donor buy-ins and future mass-replications

Thank you!

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