# *Results and impacts*
## *BORDA experiences in Indonesia*

### Direct Impacts

- Since 1999 30 Sanitation Centres have been build in migrant settlements in Jakarta
- Sanitation facilities cover the needs of more than 7500 people
- 750 $m^3$ of domestic wastewater treated daily
- 50 households use biogas for cooking
- Permanent/part-time employment created for 75 staff and many craftsmen

**BORDA Partner**

Commission of the European Union (CEU)

Federal Ministry for Economic Cooperation and Development of Germany (BMZ)

German Federal Ministry for economic cooperation and development

Free Hanseatic city of Bremen (LafEz)

Freie Hansestadt Bremen


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# CSC *Community Sanitation Centre*

**CSC in Migrant Worker Settlements**
**Jakarta, Indonesia**

BORDA

Bremen Overseas Research and Development Association

# Overview

### The Community Sanitation Centre

***CSC*** provides basic sanitation facilities such as toilets, bathrooms, laundry area and a community "water point" to low-income communities which lack basic sanitation services on household level.

The participatory dissemination approach involves local NGOs as well as communities in planning, implementation and management of ***CSC*** and provides a realistic basis for setting up community organizations and self-help activities.

***CSC*** are built by trained local craftsmen supported by community volunteers. Only locally available materials are used.

Integration of a simple underground wastewater treatment plant eliminates surface water pollution, and public health hazards are effectively eliminated. In addition, biogas is provided as renewable energy source for cooking needs.

Costs for maintenance of CSS are covered by user fees and voluntary community work.

# Operation & Maintenance

### Local organized maintenance

- Maintenance and operation carried out by CBO and supported by local NGO staff
- Community work/user-fees cover all operation activities and expenses for maintenance
- On-site staff responsible for cleanliness of facilities

### Calculation for investment and operational costs in Jakarta:

Primary Investment: $ 15.000

Annual turnover (user fees): $ 2.500

Annual operation costs: $ 1.500

*Salary for cleaning staff: $ 500*
*Electricity: $ 250*
*Cleaning materials: $ 100*
*Social contribution: $ 150*
*Maintenance/Repairs: $ 500*

Costs can be reduced significantly through voluntary community work.

### Efficiency of Wastewater Treatment Component:

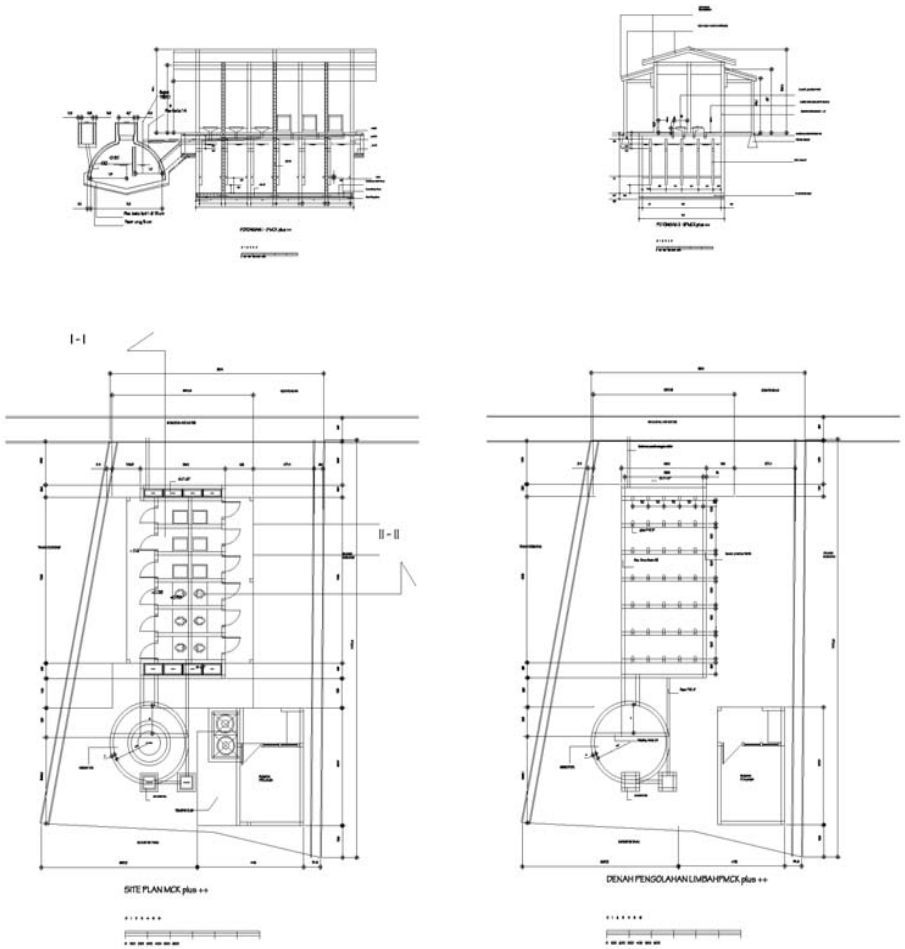
**Wastewater Laboratory Analysis**

| Location | Month | PARAMETER | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | pH | BOD5 | | | COD | | | TSS |
| | | | Influent mg/l | Effluent mg/l | % reduction | Influent mg/l | Effluent mg/l | % reduction | mg/l |
| Alam Jaya | 09-02-2001 | 7.28 | 310.00 | 49.52 | 84.03% | 730.00 | 116.53 | 84.04% | 48 |
| | 07-02-2001 | 6.35 | | 45.60 | 85.29% | | 107.30 | 85.30% | 28 |
| | 20-04-2001 | 6.78 | | 32.90 | 89.39% | | 77.60 | 89.37% | 36 |
| National Water Discharge Standards (mg/l) | | | | | | | | | |
| Class B | | 50 | | | | 100 | | | 200 |
| Class C | | 150 | | | | 300 | | | 400 |

*Note: BOD = Biological Oxygen Demand (5day) COD = Chemical Oxygen Demand*
*TSS = Total Suspended Solids*

# Construction Design

**Construction design of the CSC in Tangerang, Indonesia**




# Demand

**Common sanitation problems of low-income settlements**

Absence or lack of basic sanitation infrastructure endangers public health especially of women and children.

Human excrements are directly discharged into environment and unregulated wastewater flows often accumulate within settlements and provide breeding ground for a variety of water borne diseases.

As provision of clean water within low-income settlements is generally limited, expensive and time consuming, the work load for women is increased and already low household incomes are further decreased.

# Demand based solution

**Demand responsive approach secures program sustainability**

Participatory program implementation within communities includes activities such as:

- Participatory community appraisals
- Analysis of hygiene attitudes / behaviour
- Informed Choice of Sanitation Infrastructure
- Preparing Community Action Plan
- Setting up ***CSC*** Committees
- Developing transparent maintenance guidelines
- Cost calculation & contributions
- Socialization Design

# Construction of CSC

**Biogas digister**

- Fully air & water proof brick construction
- Settler for “black water”
- Biogas provision for cooking needs

**Baffled septic tank**

- Connected to Biogas Digester
- Underground construction below bathrooms
- Anaerobic treatment unit for “grey water”
- BOD reduction up to 90 %

**Bathrooms and toilets**

- Features long lasting components
- Service efficient , modular design
- High construction quality

**Community Sanitation Center**

- Innovative sanitation concept integrates basic sanitation facilities with an underground ***dewats*** system
- All ***CSC***s are landscaped and located strategically within communities