

# Groundwater protection through Decentralized Sanitation Solutions

8<sup>th</sup> June 2015  
Eng. Mohammad Noor M.Sc

Implemented by  
تطبیق  
کننده:

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

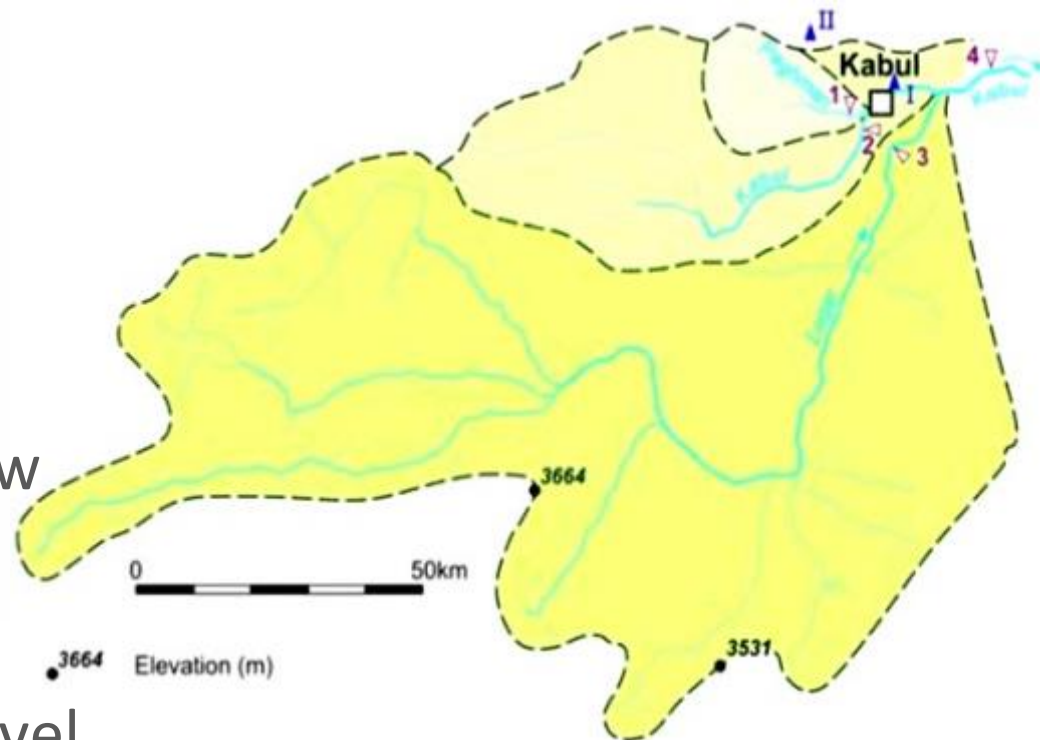
**BORDA** 

# Overview

1. Introduction to Kabul basin
2. Current scenario
3. Progressive approach
4. Decentralized sanitation solutions
5. Way forward

# Kabul basin

- Area -1200  $km^2$
- Fed by Logar, Kabul and Paghman rivers
- Recharged mostly by snow melts
- Dropping groundwater level





# Linkages between sanitation and groundwater protection

## Causes of water contamination



Source: Dirk Walther, GIZ India

Implemented by  
تطبیق  
کننده:

**giz**

Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

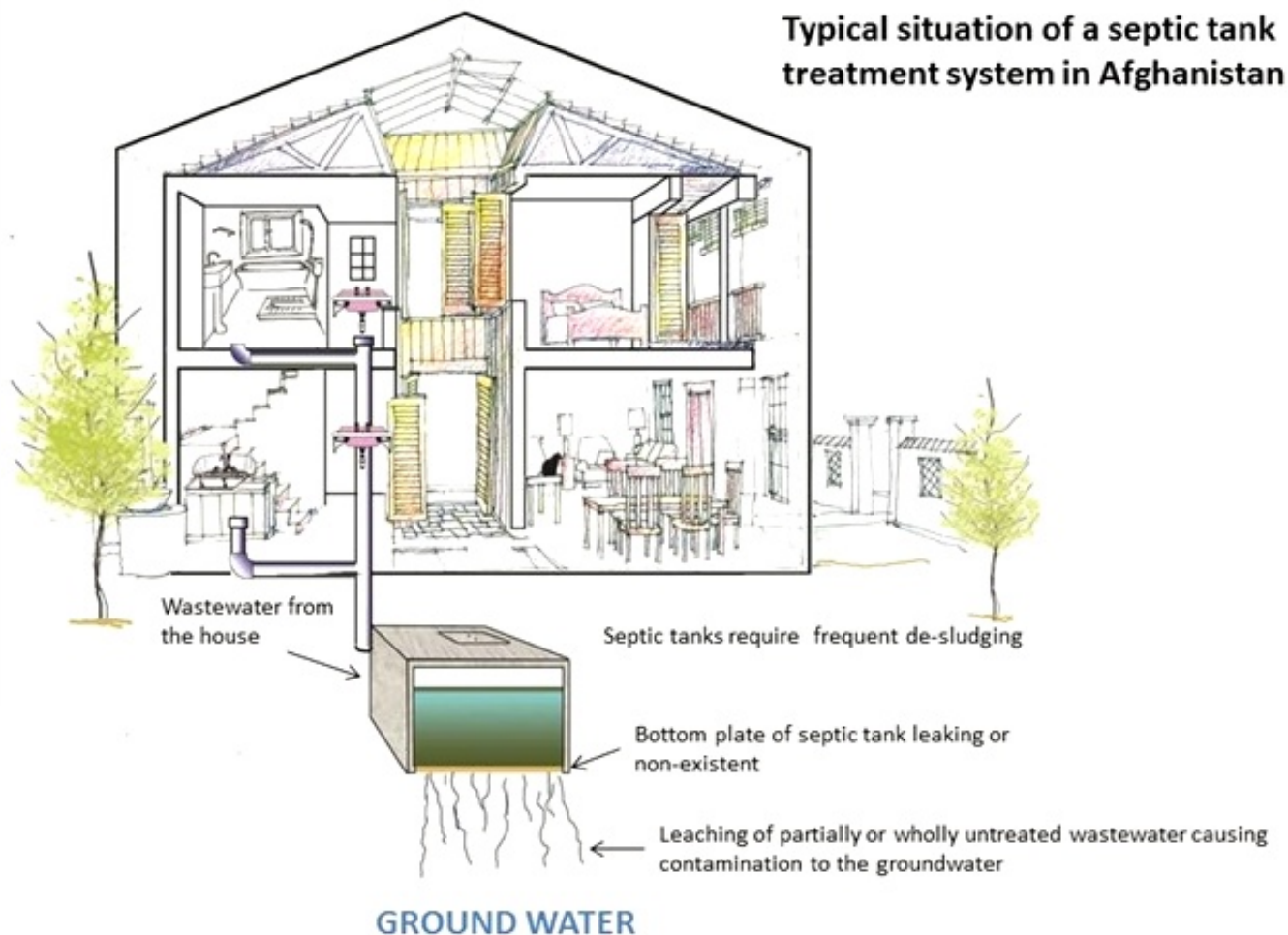
**BORDA**

# Current scenario in urban Kabul





# Current scenario in urban Kabul



Implemented by

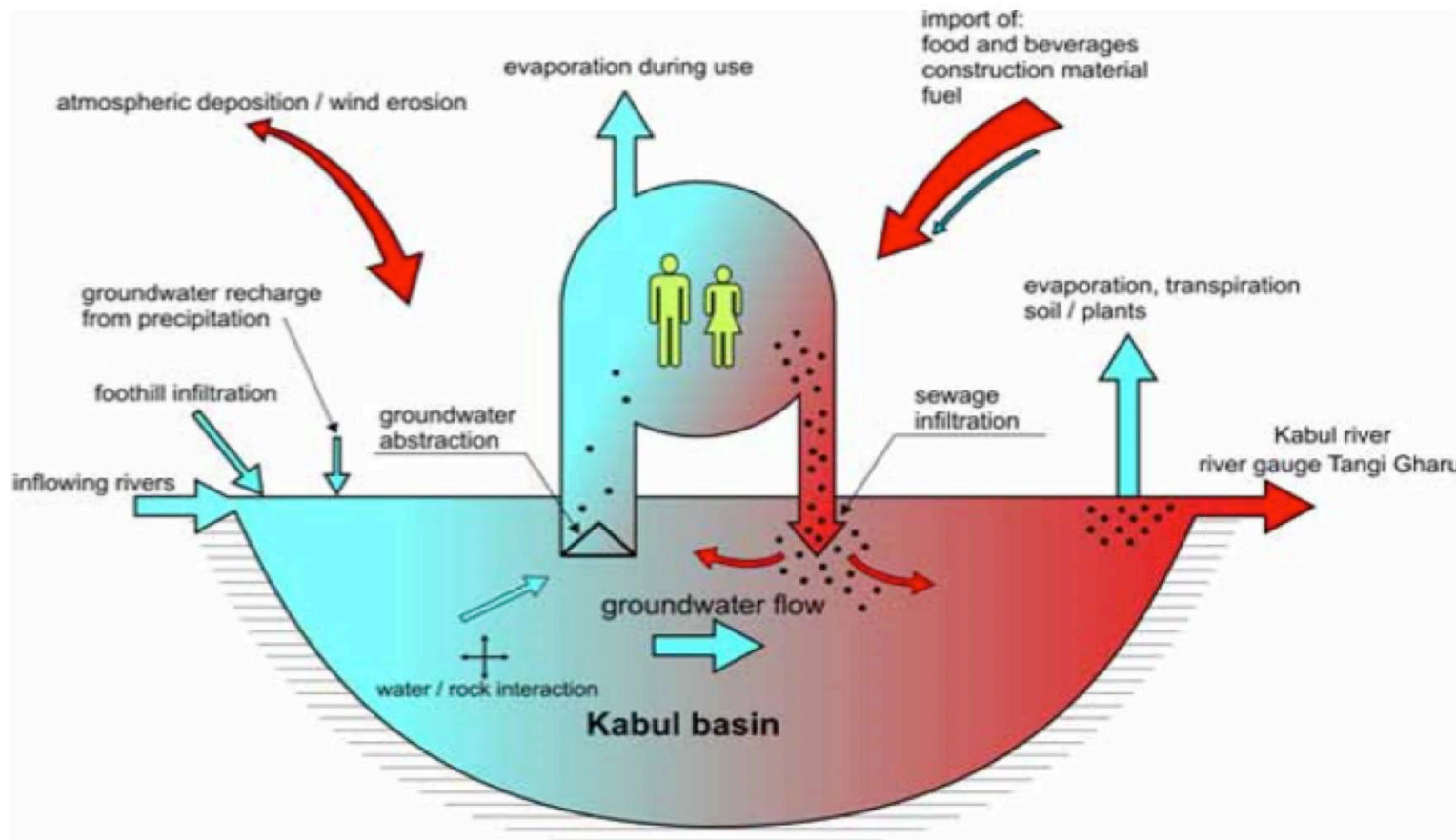
تطبیق  
کننده:

**giz**

Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**BORDA** 

# Ground water contamination



Source: BGR report 2004

Implemented by  
تطبیق  
کننده:

**giz**

Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**BORDA**



# Ground water contamination

## Water testing results in urban areas of Kabul:

- **59%** of the water samples are contaminated with **bacteria**
- **47%** of water samples exceeded the WHO limit for **nitrates**
- **66%** of water samples exceeded the WHO limit for **salinity**

Source: BGR report 2004

Implemented by  
تطبیق  
کننده:

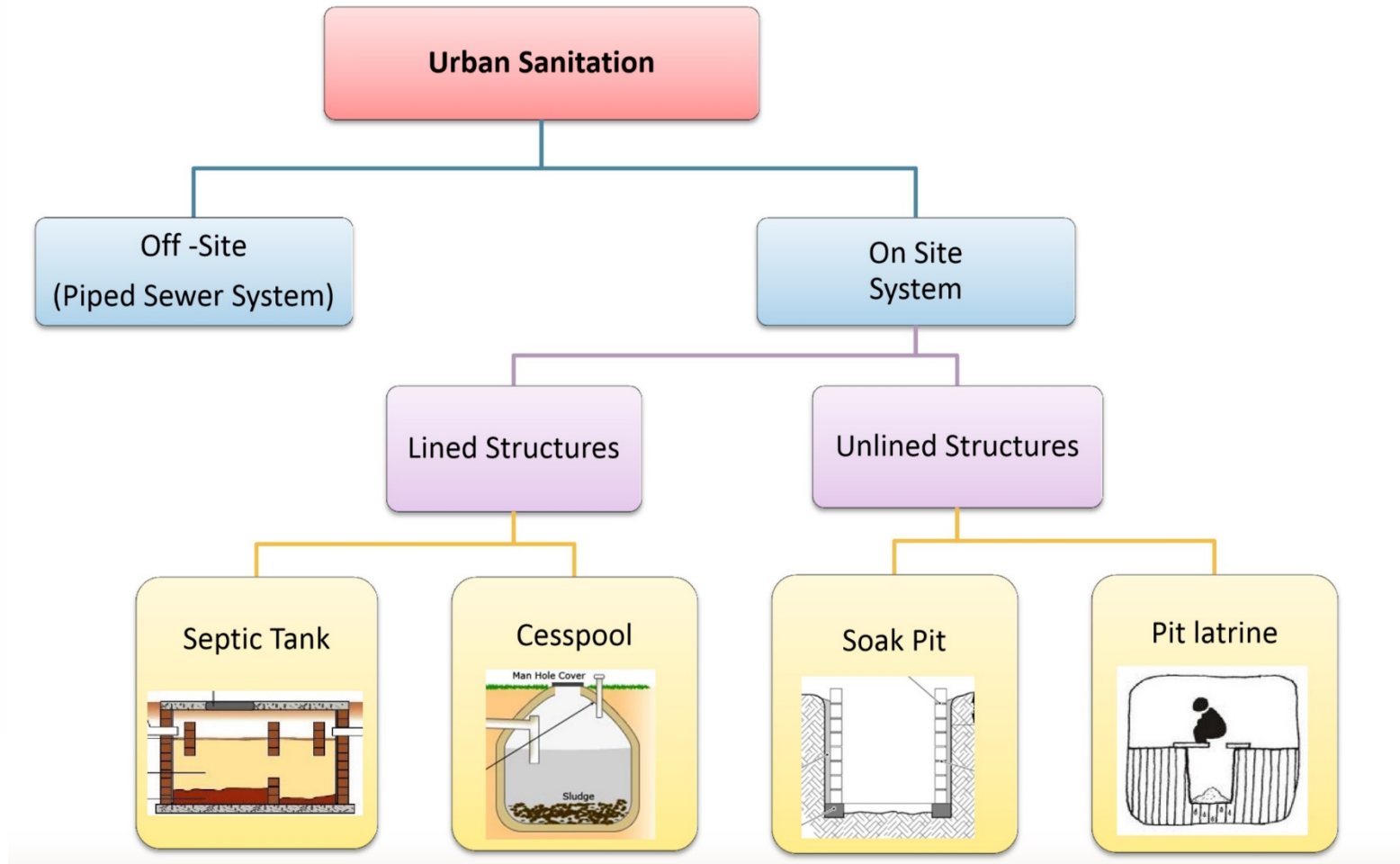
**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**BORDA** 



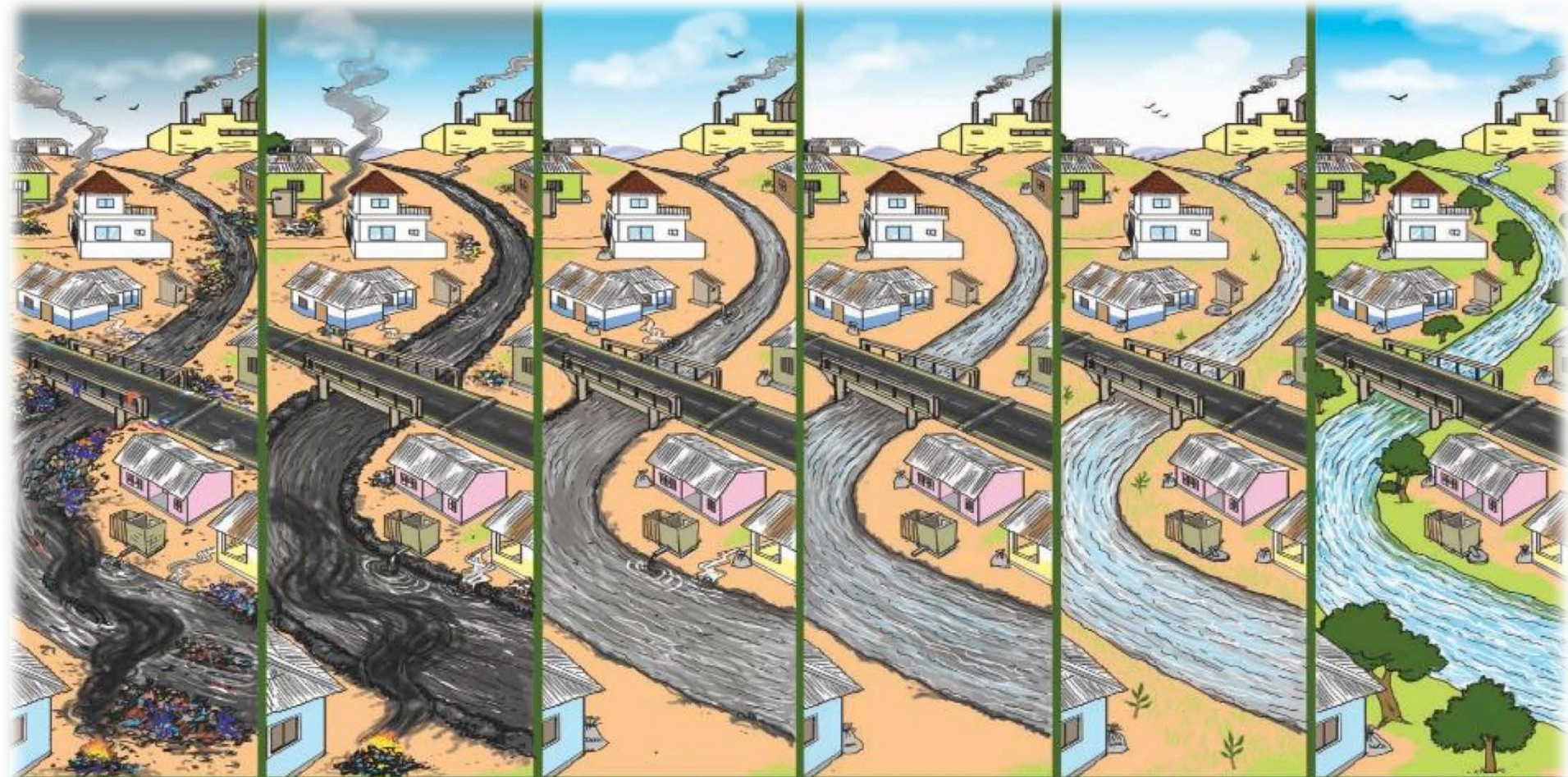
# Challenges

- Poor sanitation infrastructure
- Weak legislation and regulations for sanitation systems
- Lack of performance incentives to deliver sanitation services
- Weak integration of waste water needs in strategic planning and investment
- Lack of reliable data to support sector planning





# Progressive approach



UNSANITARY  
ENVIRONMENT

Solid waste removed  
from rivers

No more dumping or  
burning of solid waste.  
Waste contained in bags  
for collection

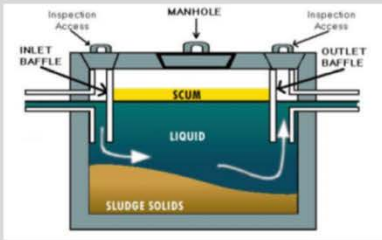
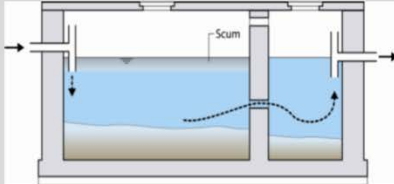
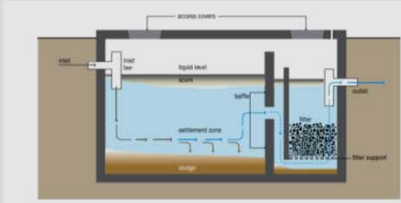
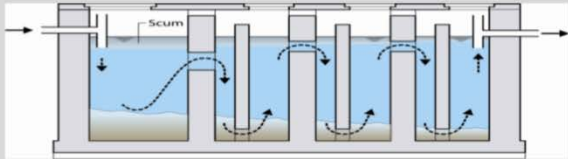
No more discharging of  
domestic wastewater into the  
river.

Toilets connected to on- and  
off-site sanitation solutions.  
Trees and grass can begin  
to grow.

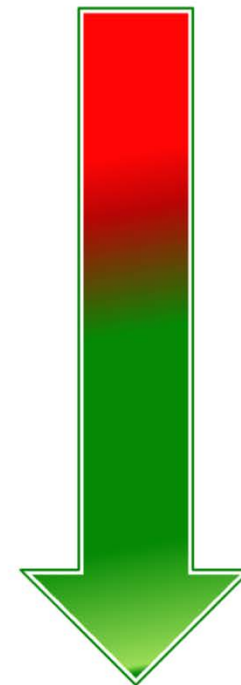
SANITARY ENVIRONMENT:  
Industrial wastewater is  
treated before being  
discharged into the river.  
Trees and grass can  
grow.



# Septic Tank – Technical options

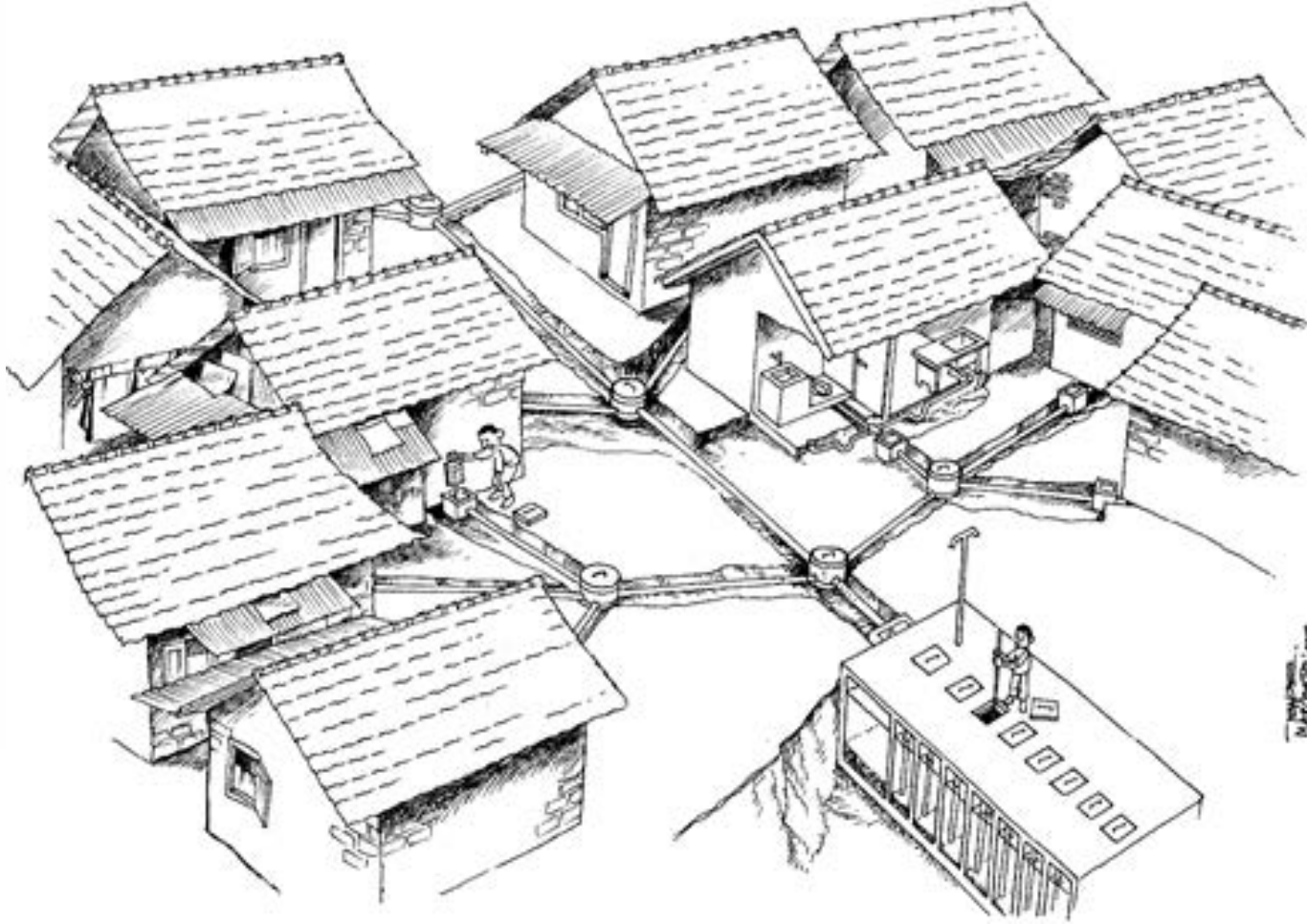
Conventional Systems	Single chambered Septic Tank	
	Two chambered Septic Tank	
Improved Systems	Two chambered Septic Tank with filter	
	Anaerobic Baffled Reactor with Filter	

Less Efficient

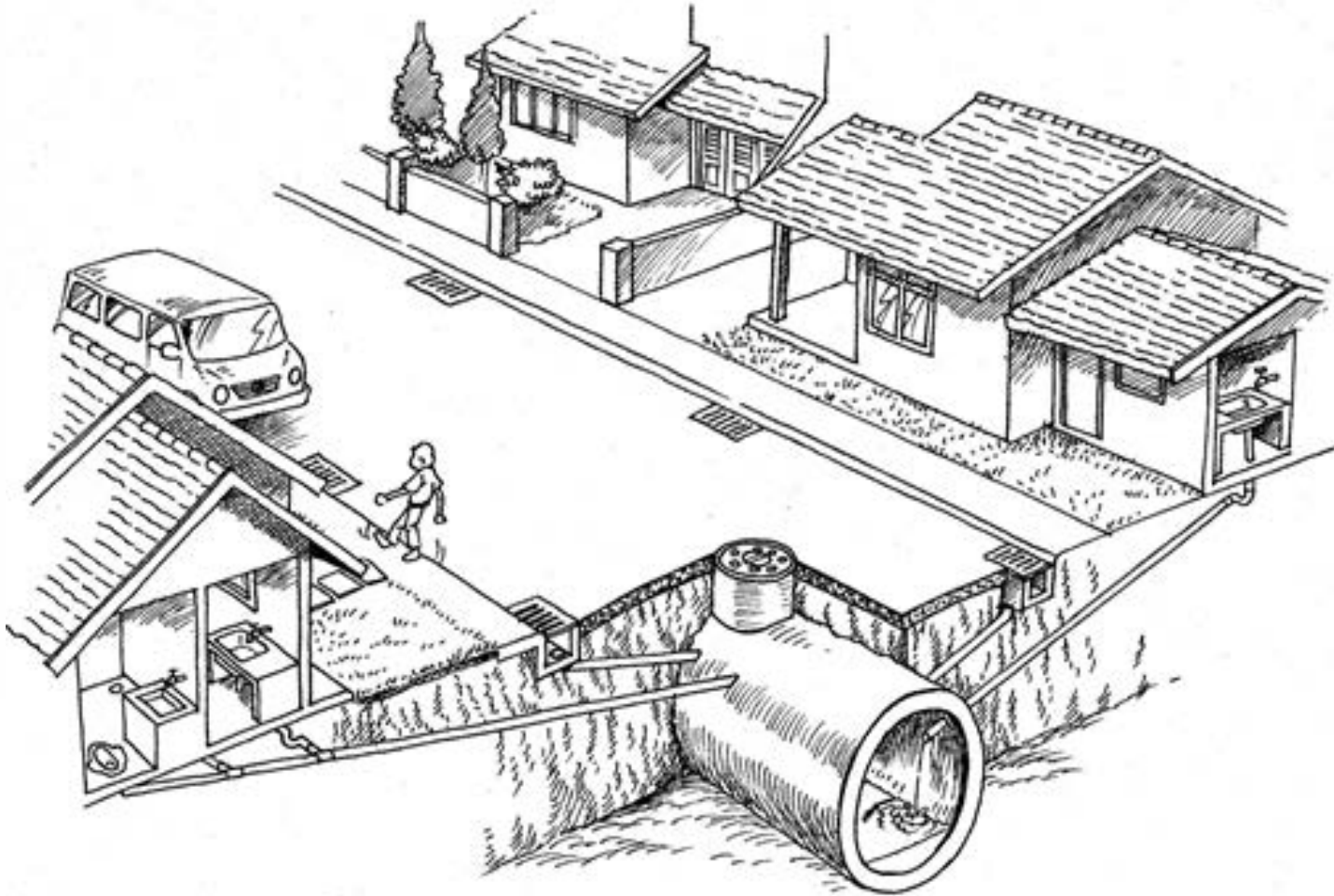


More Efficient

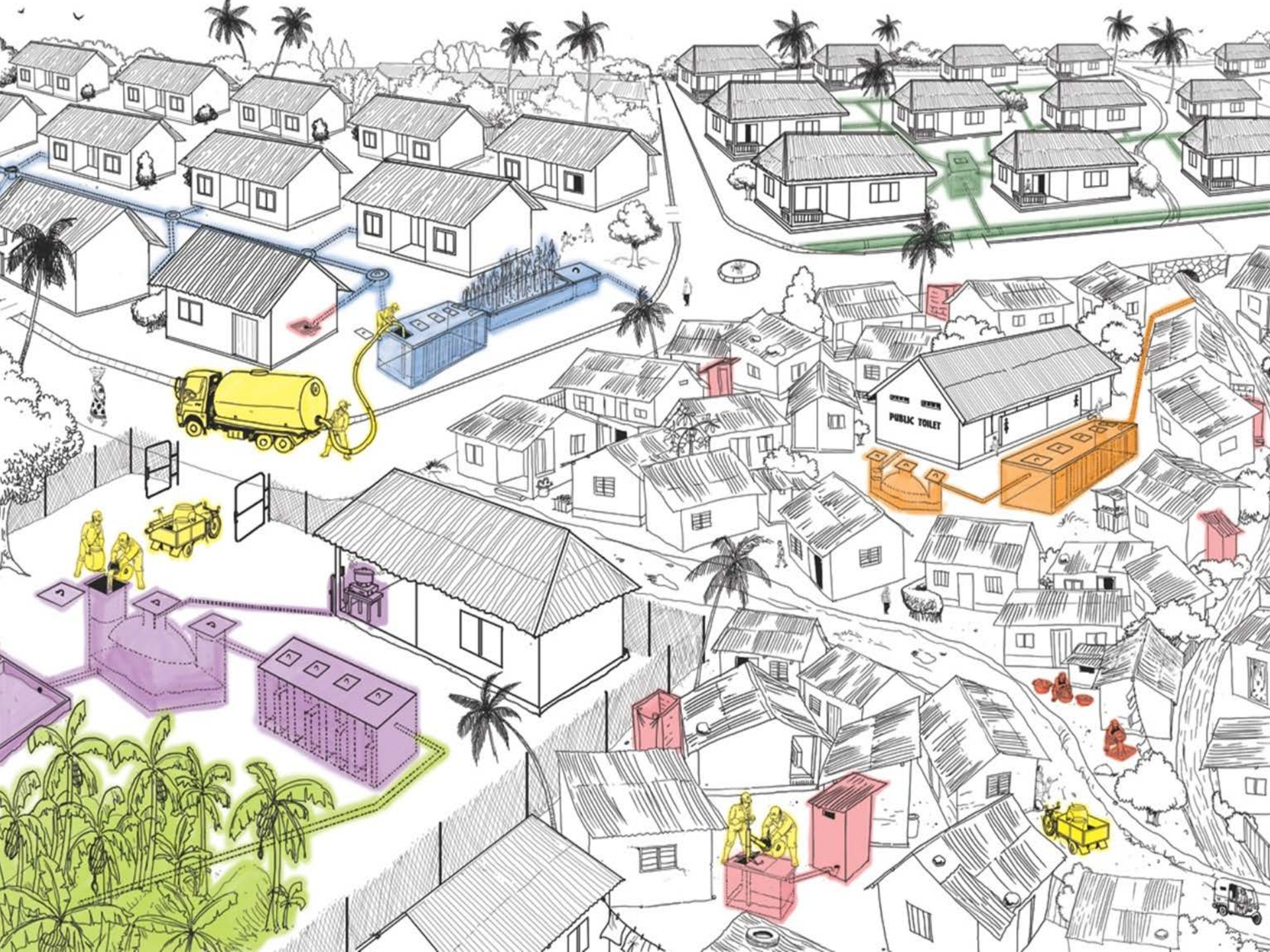
# On-site sanitation (decentralized)



# Off-site sanitation (centralized)









# DEWATS at AUWSSC



# Way Forward

*„Make cities and human settlements inclusive, safe, resilient and sustainable“*

*- Open Working Group of the General Assembly on Sustainable Development Goals (SDG)*



# Incentives

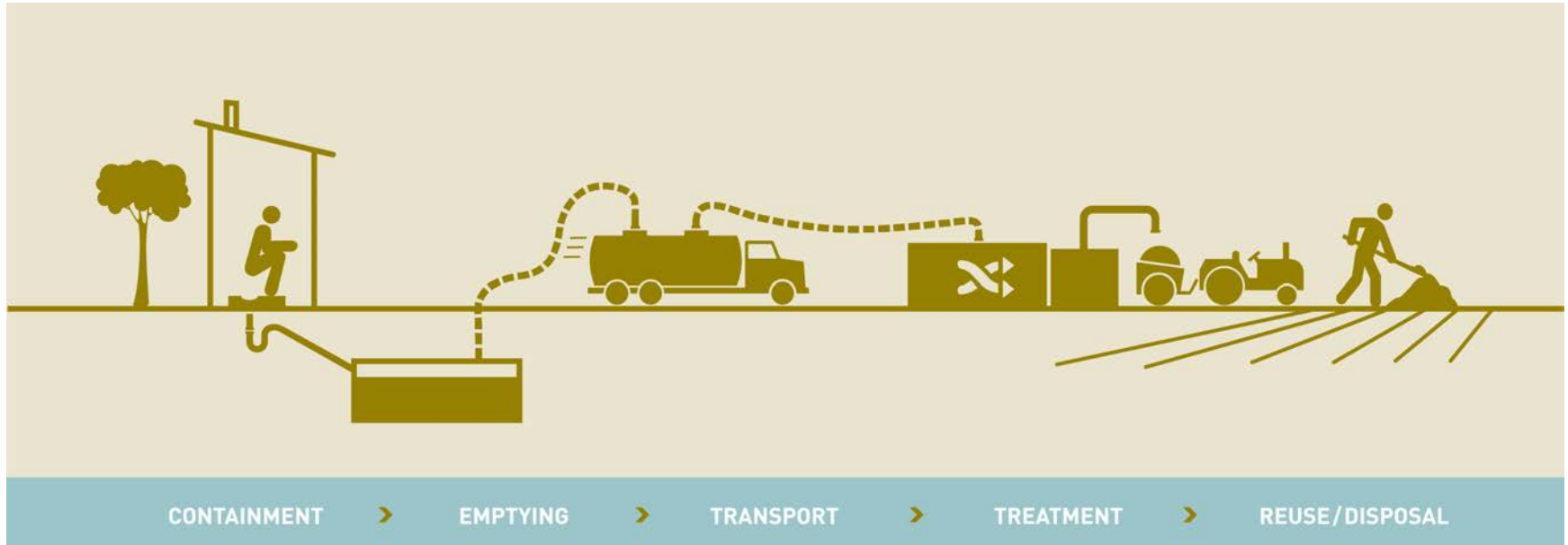
Explore financial instruments (subsidies, micro-finance, private sector partnership and tariff structures)

- Enable pro-poor targeting
- Support cost-effective service provision on **commercial principles**
- Encourage service uptake/demand creation for sanitary management of waste water.
- Support service providers to meet **licensing requirements** and sector criteria, guidelines and standards.
- **Reward good practices**, such as pollution minimization

# Processes

- Establish a contextualized national sector planning and **impact monitoring process**
- Develop „**City-Wide Integrated Waste Water Management Sector Plans**“
- Develop capacity of related institutions
- Establish an **Independent Regulatory Authority** and the regulatory tools and procedures, to undertake effective economic and quality regulation of the sanitation sector

# Thank you,



Eng. Mohammad Noor M.Sc  
Advisor, wastewater management  
CIM/WSIP-GIZ

[mohammad.noor@cimonline.de](mailto:mohammad.noor@cimonline.de)

Implemented by  
تطبیق  
کننده:

**giz**

Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**BORDA** 