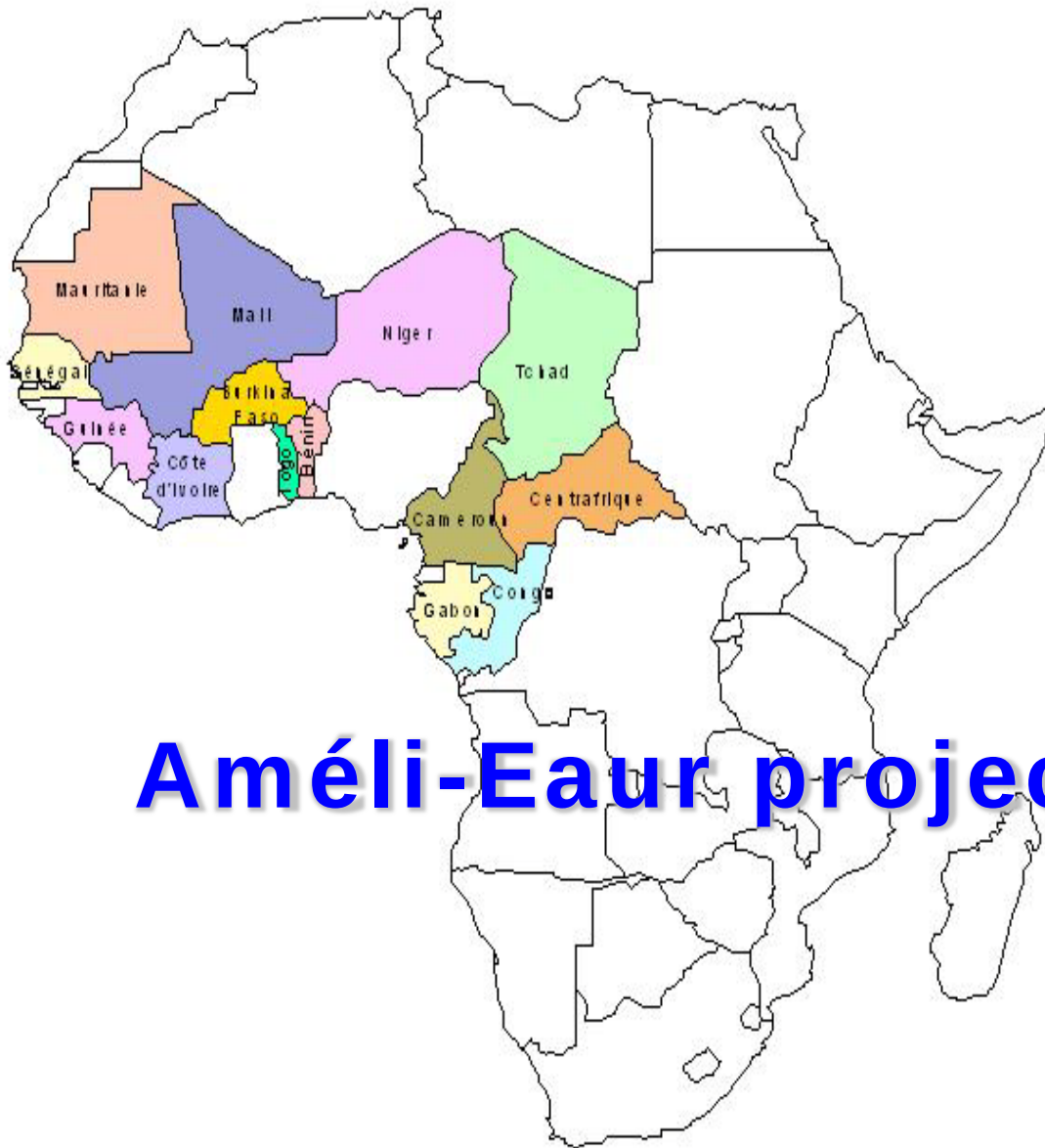




HOKKAIDO UNIVERSITY

Title	Japan's Role in International Development Cooperation for Water Management
Author(s)	Funamizu, Naoyuki
Relation	Sustainability Weeks 2009 Opening Symposium "International Symposium on Sustainable Development -Recommendations for Tackling the 5 Challenges of Global Sustainability-". Session 2, Toward the Expansion of an Integrated Water Management System. 2 November 2009. Sapporo, Japan.
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Améli-Eaur project

**JST-JICA Research Project
(2009-2014)**





DOM DE L'AMOUR
DES COMMERCE
MEL-LL-BOON
2021







Toward the Expansion of an Integrated Water Management System

Naoyuki Funamizu

HOKKAIDO UNIVERSITY

GRADUATE SCHOOL OF ENGINEERING

DEPARTMENT OF ENVIRONMENTAL ENGINEERING



My topic today is

Sewer

Well

Bangalore India



My topic today is



- Why do we have to develop a new idea for water and sanitation ?
- What is our role ?



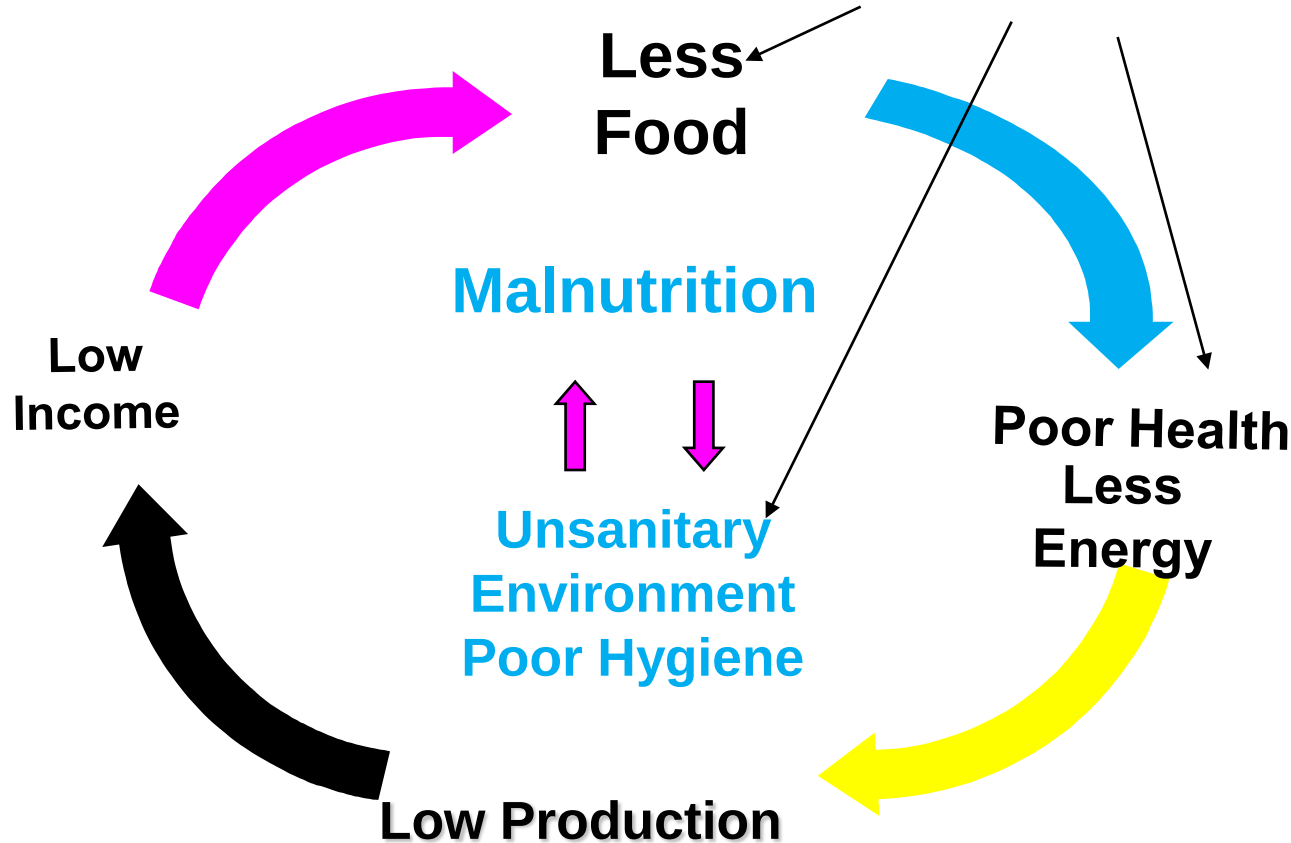
well

Bangalore India

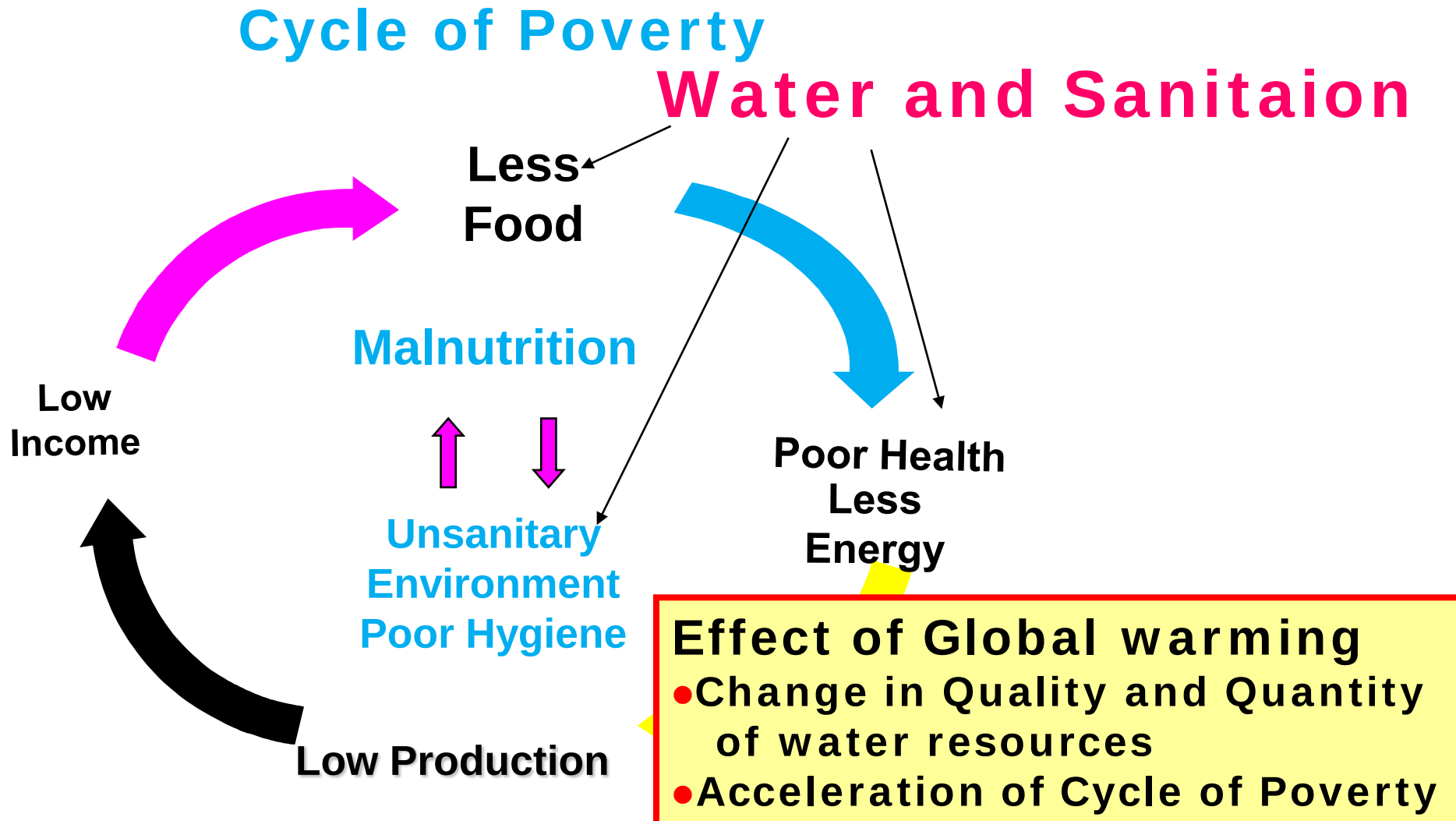
How to attack the Cycle of Poverty?

Cycle of Poverty

Water and Sanitation



How to attack the Cycle of Poverty?



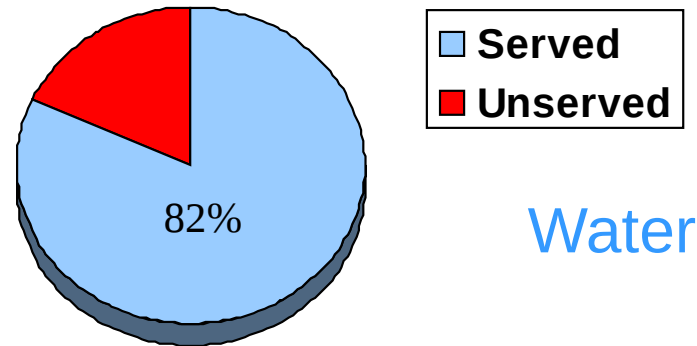


More than 1.2 million
tons of fresh excreta
deposited in the
environment and
water sources each
day

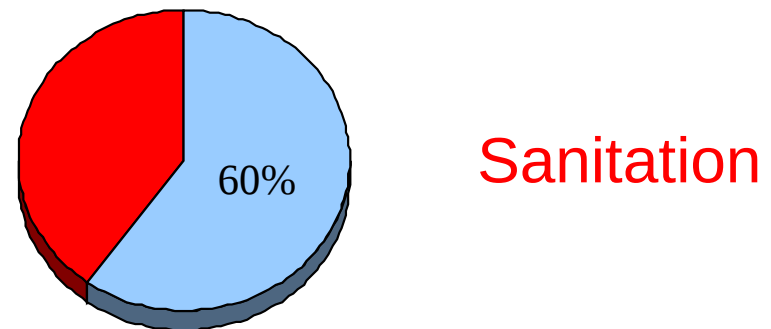
To achieve the Millennium Development Goals

Water Supply and Sanitation 2000

**> 1 billion lack
access to safe
water**



**2.5 billion lack
sanitary
means for
excreta
disposal**

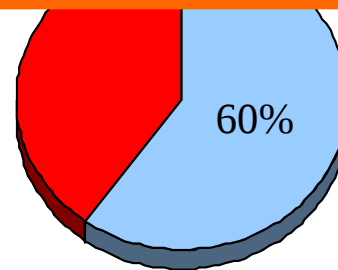


To achieve the Millennium Development Goals

Water Supply and Sanitation 2000

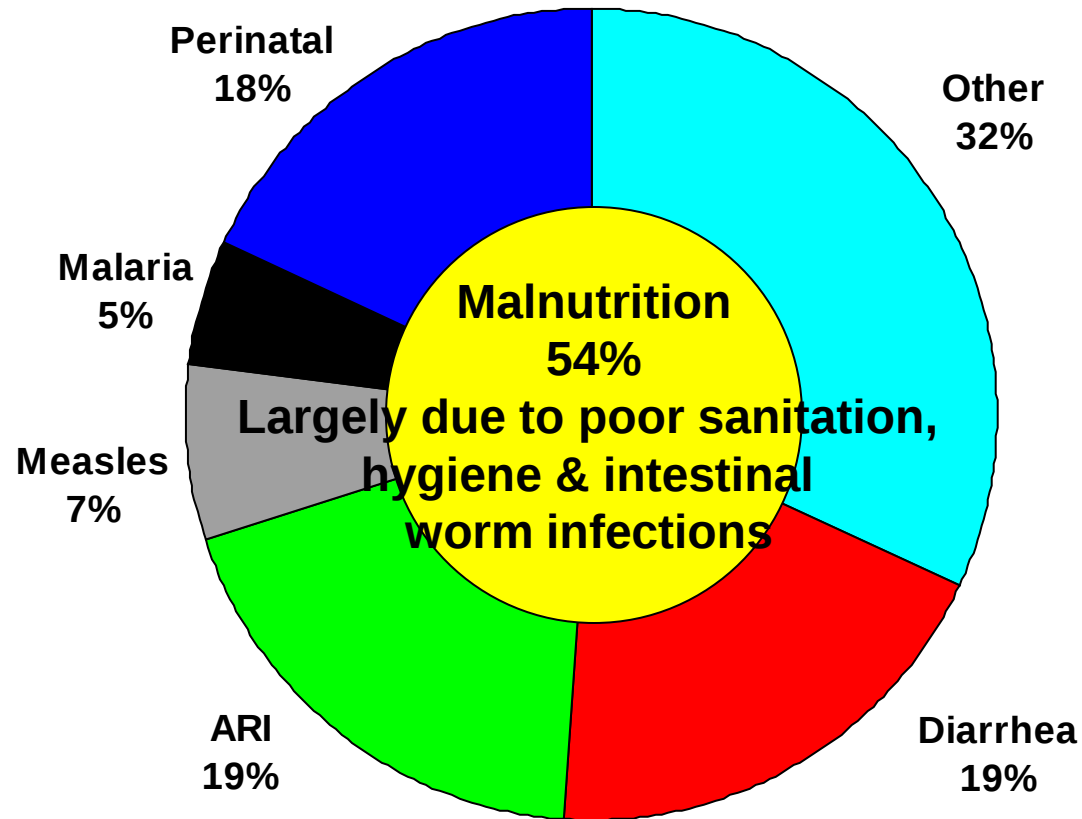
Up to 5.5 billion people will be without sanitation by the year 2035, if sanitation provisions continue to be installed based on the current standards.

Sanitary
means for
excreta
disposal



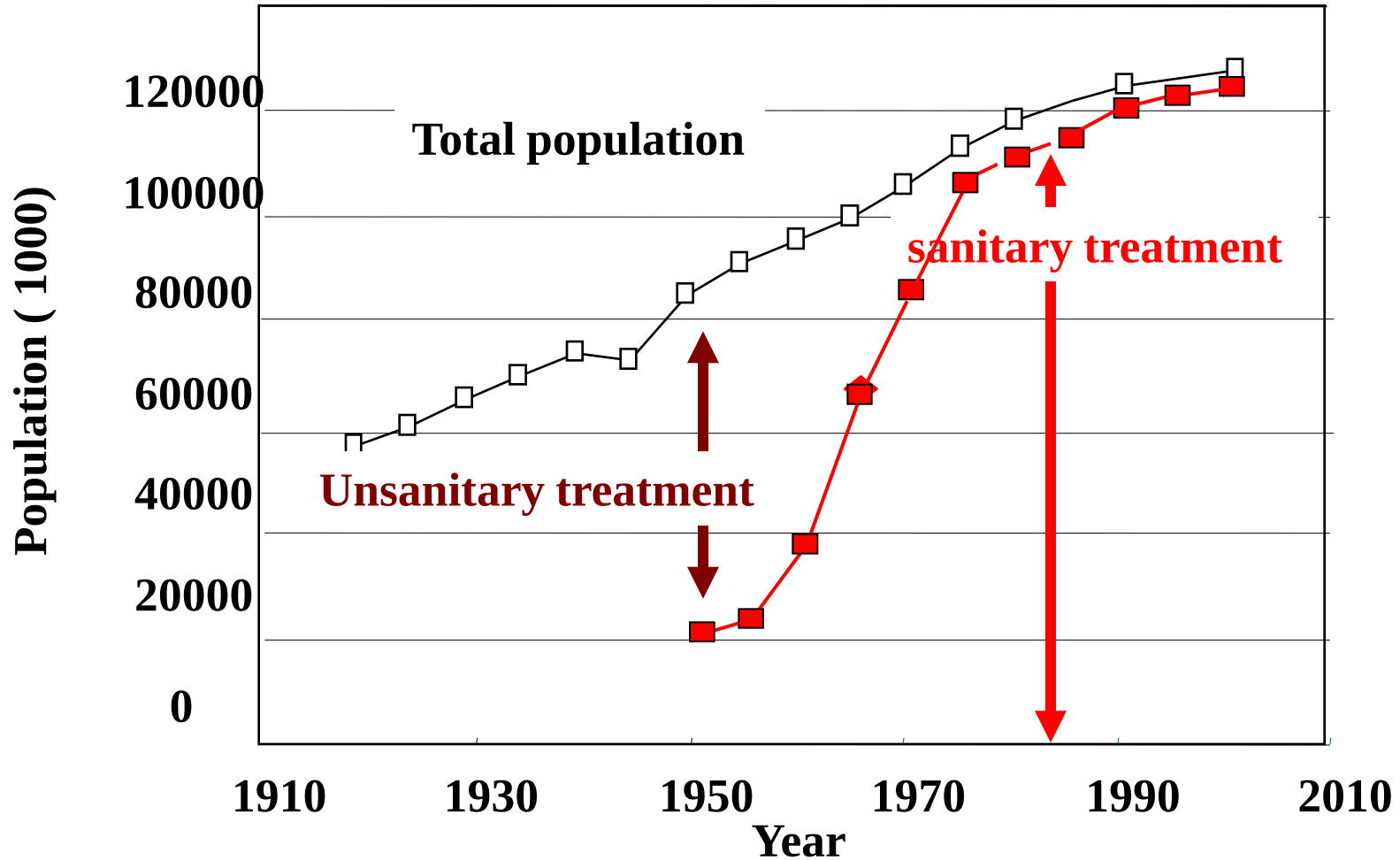
Sanitation

Major Causes of Under-Five Mortality



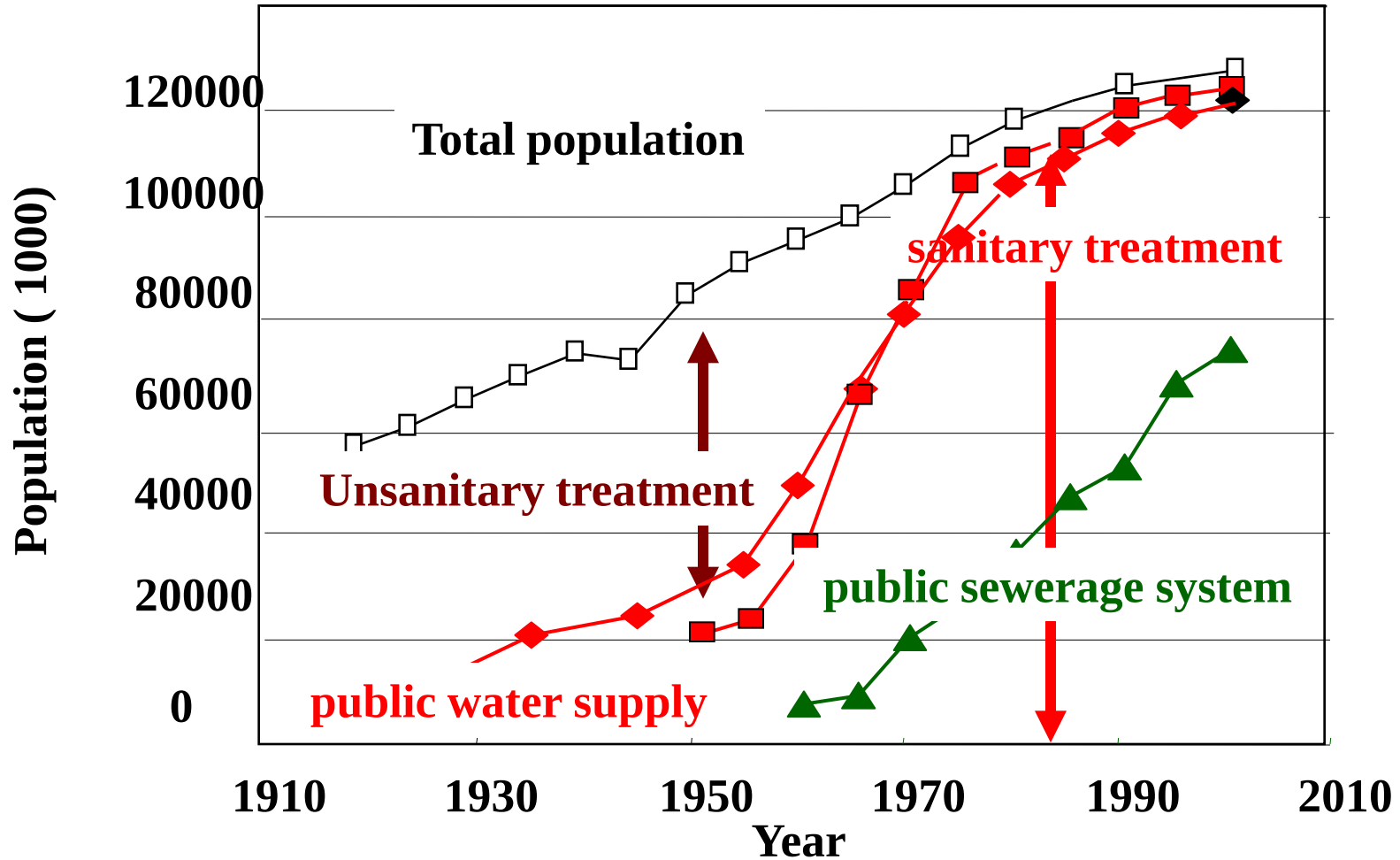
Source: WHO 1995

How Japan has overcome the water-borne disease ?



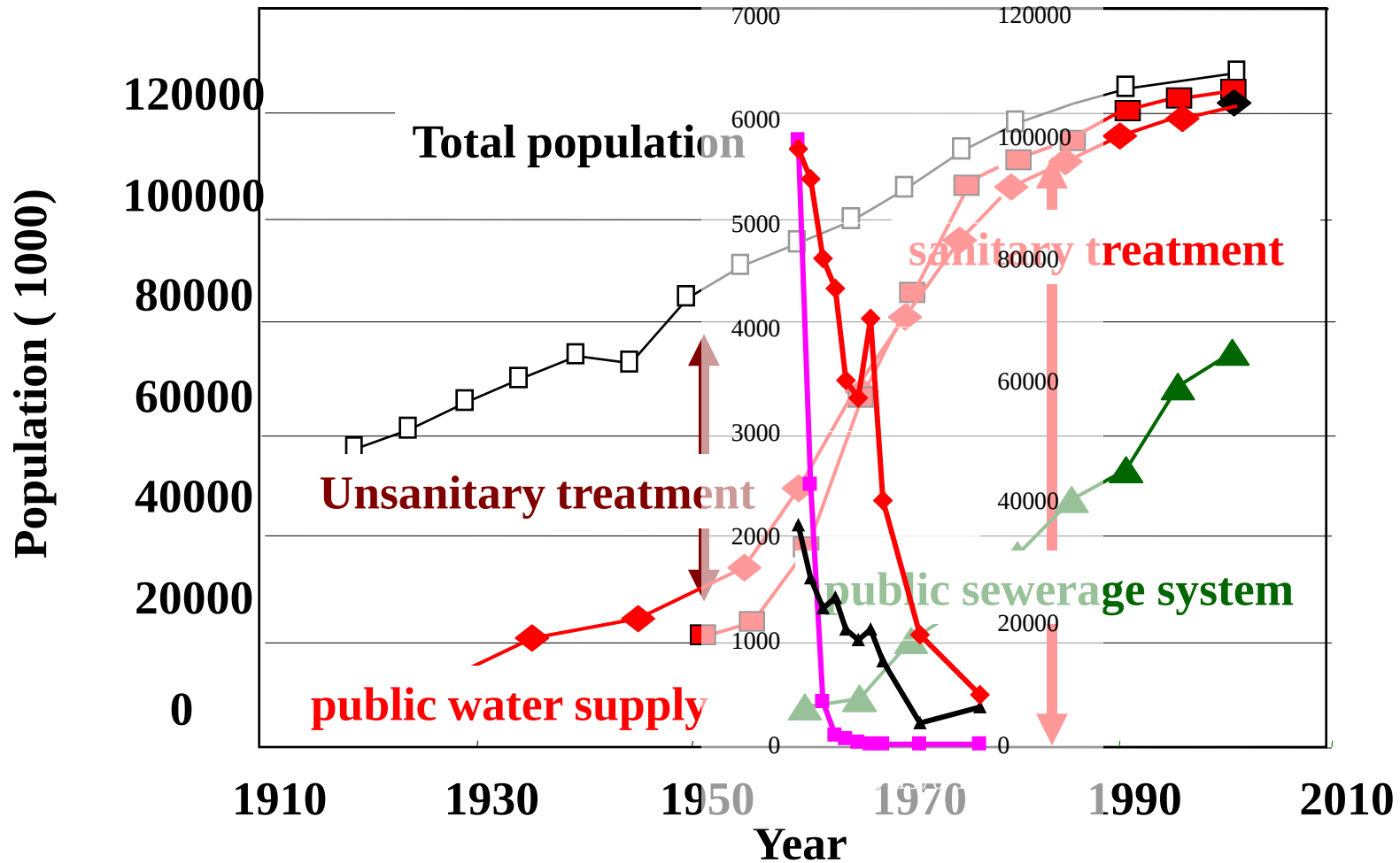
By Prof. Magara

How Japan has overcome the water-borne disease ?



By Prof. Magara

How Japan has overcome the water-borne disease ?



By Prof. Magara

Economical Issues

(Peter Wildere, 2002).

- It becomes evident that the capacity of the global money market would not be sufficient to cover the need for investment capital for centralized system
- The **rehabilitation** cost for the **pip**ing **system** in Germany is estimated to be in the range of **100 billion** euros
- The cost of the installation of **the pipe system** is almost one order of magnitude higher than the cost of building the treatment facilities

Economical Issues

(Peter Wildere, 2002).

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- The rehabilitation cost for the piping system in Germany is estimated to be in the range of 100 billion euros
- The cost of the installation of the pipe system is almost one order of magnitude higher than the cost of building the treatment facilities



Water Resource

Don't collect

- **A significant amount of the drinking water is used as a means to transport the pollutants**
- **Reuse wastewater by retaining water near the point of origin**



Resources in wastewater

Annual discharge from one person

- Nitrogen (N) 4.5 kg
- Phosphorus (P) 0.6 kg
- Potassium (K) 1.0 kg
- Organic matter (BOD) 35 kg

By Prof. Jensen

Managing raw wastewater quality to recycle nutrients and to use simple treatment process

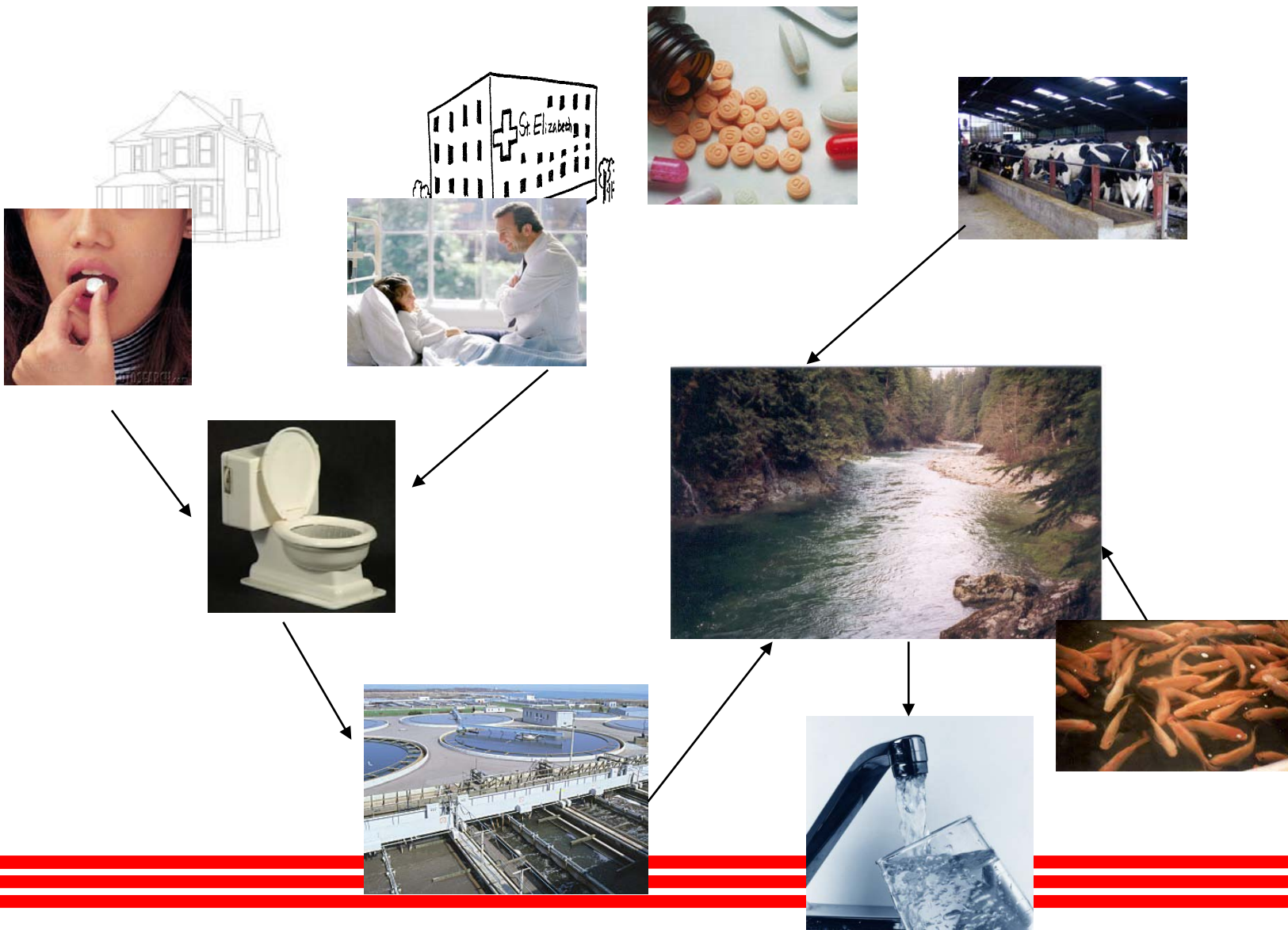
Appliance	Volume	COD	NH ₄ -N	NO ₃ -N	PO ₄ -P	TSS
WC	31 %	44 %	97 %	3.8 %	80 %	77 %
Kitchen sink	13 %	23 %	0.3 %	38 %	9.4 %	10 %
Wash Basin	13 %	1.7 %	0.1 %	11 %	1.3 %	2.1 %
Bath	16 %	2.5 %	0.6 %	15 %	1.1 %	1.3 %
Shower	12 %	6.4 %	0.7 %	25 %	4.1 %	5.1 %
Washing machine	16 %	22 %	1.2 %	7.6 %	4.3 %	4.0 %

Managing raw wastewater quality to recycle nutrients and to use simple treatment process

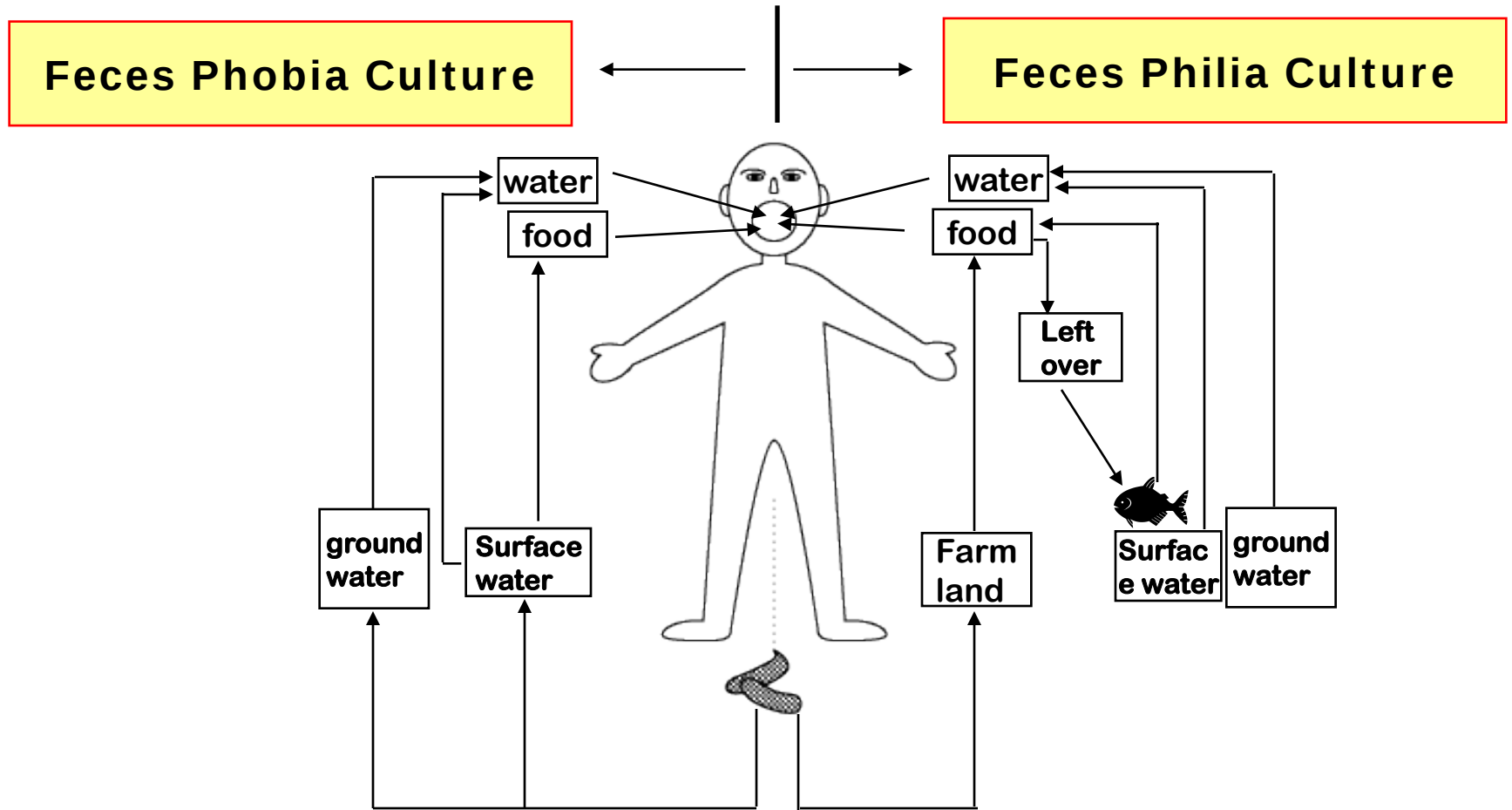
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Don't Mix

Controlling micro-pollutants



Feces Philia Culture vs Feces Phobia Culture



This figure is modified from Professor Kada's original by Funamizu





Technology should adapt to the social conditions and culture.

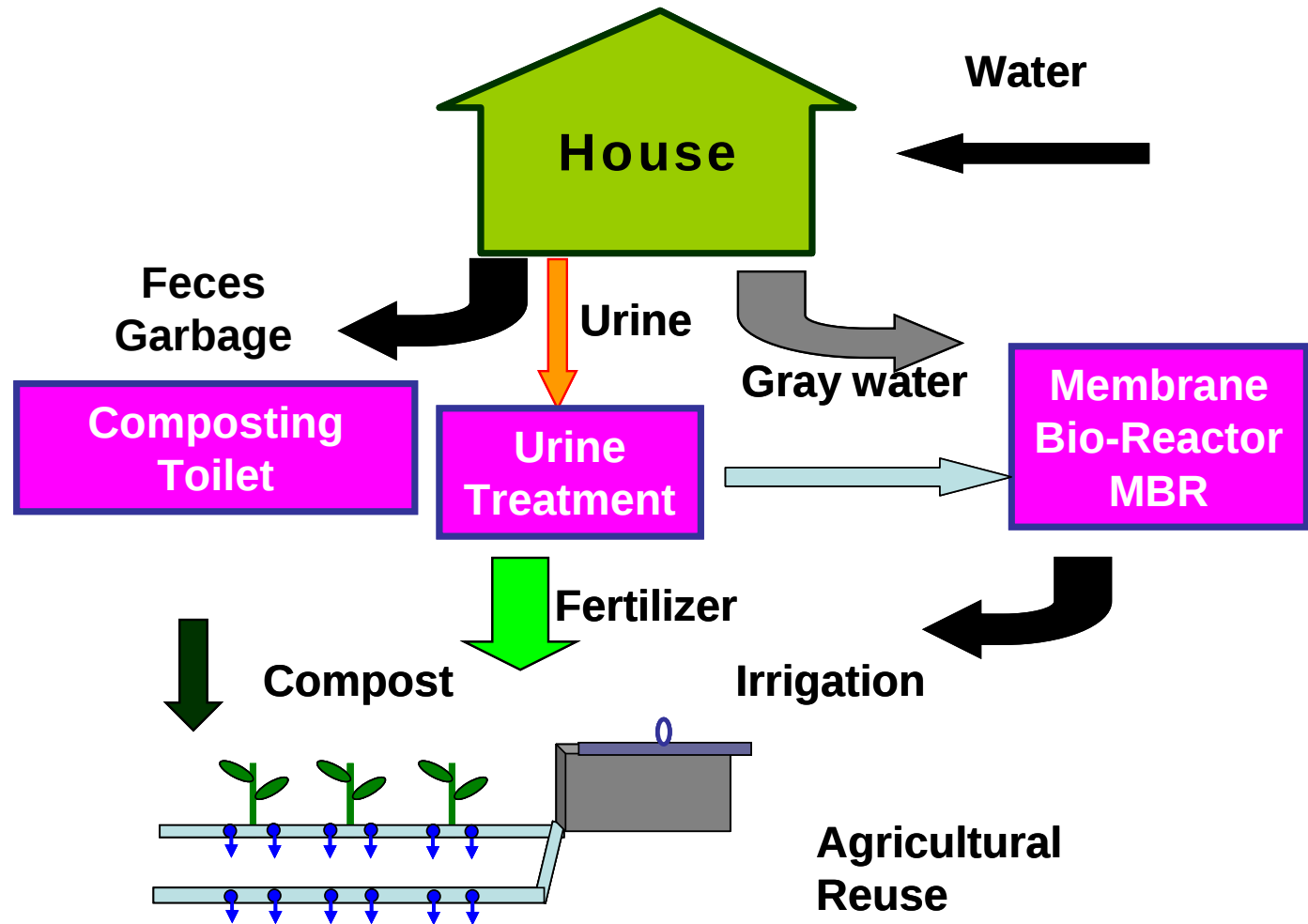
What kinds of systems we should consider for the different situations ?

- **1 US\$ / day / capita society**
- **10 US\$ / day / capita society**
- **100 US\$ / day / capita society**

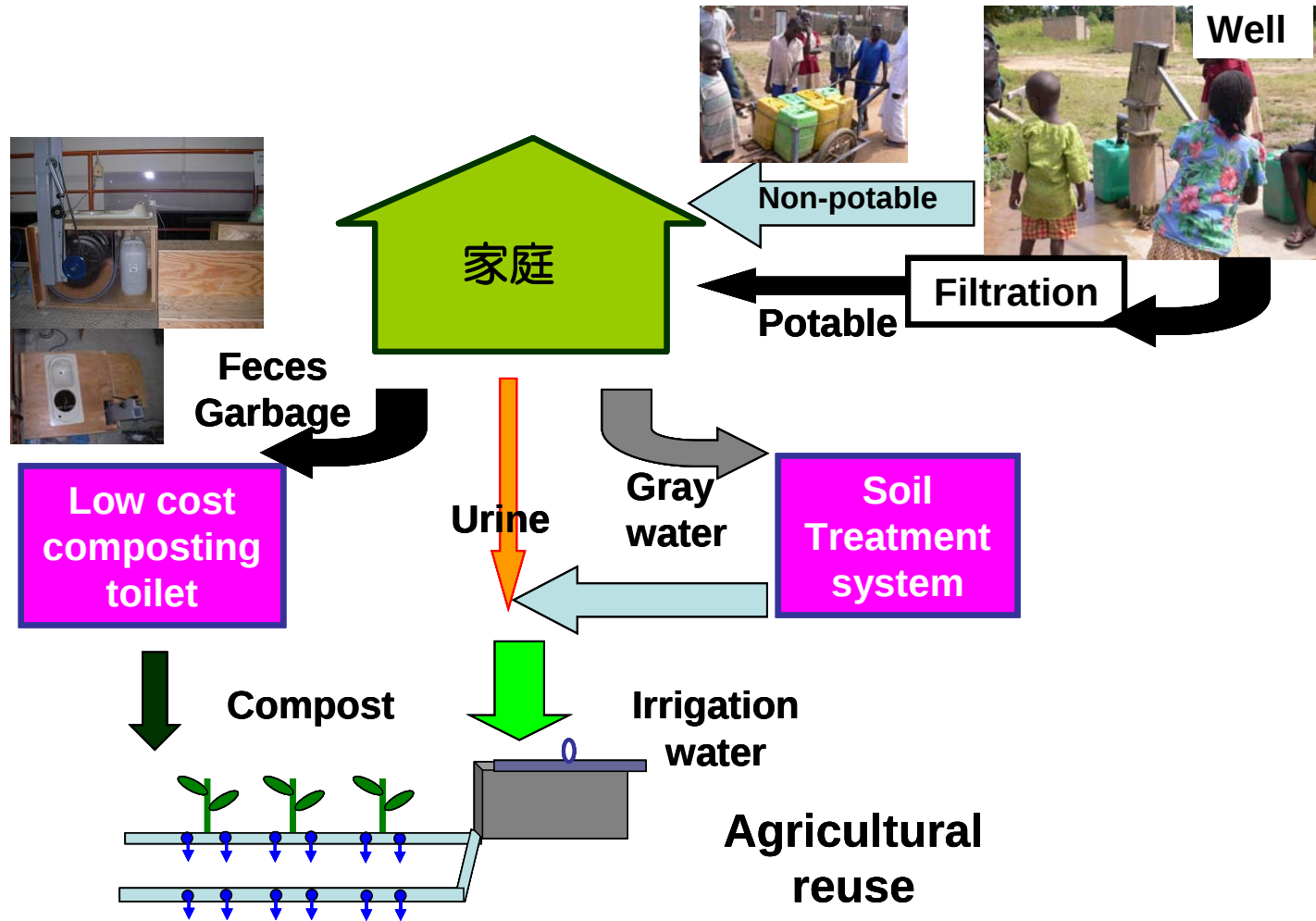
- **Rural, urban, slum areas**



Model for rural area in Japan



Model for rural area in developing countries

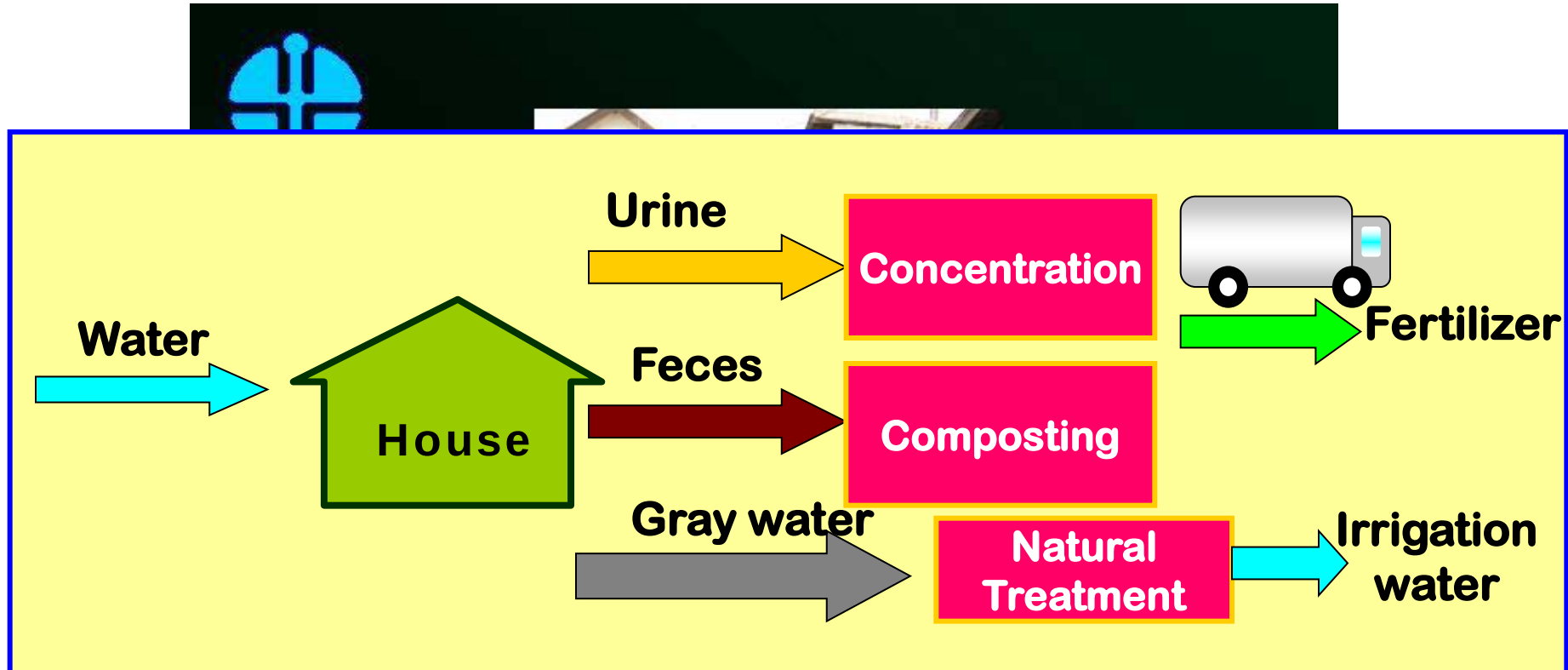


Model for Urban Slum area in developing countries



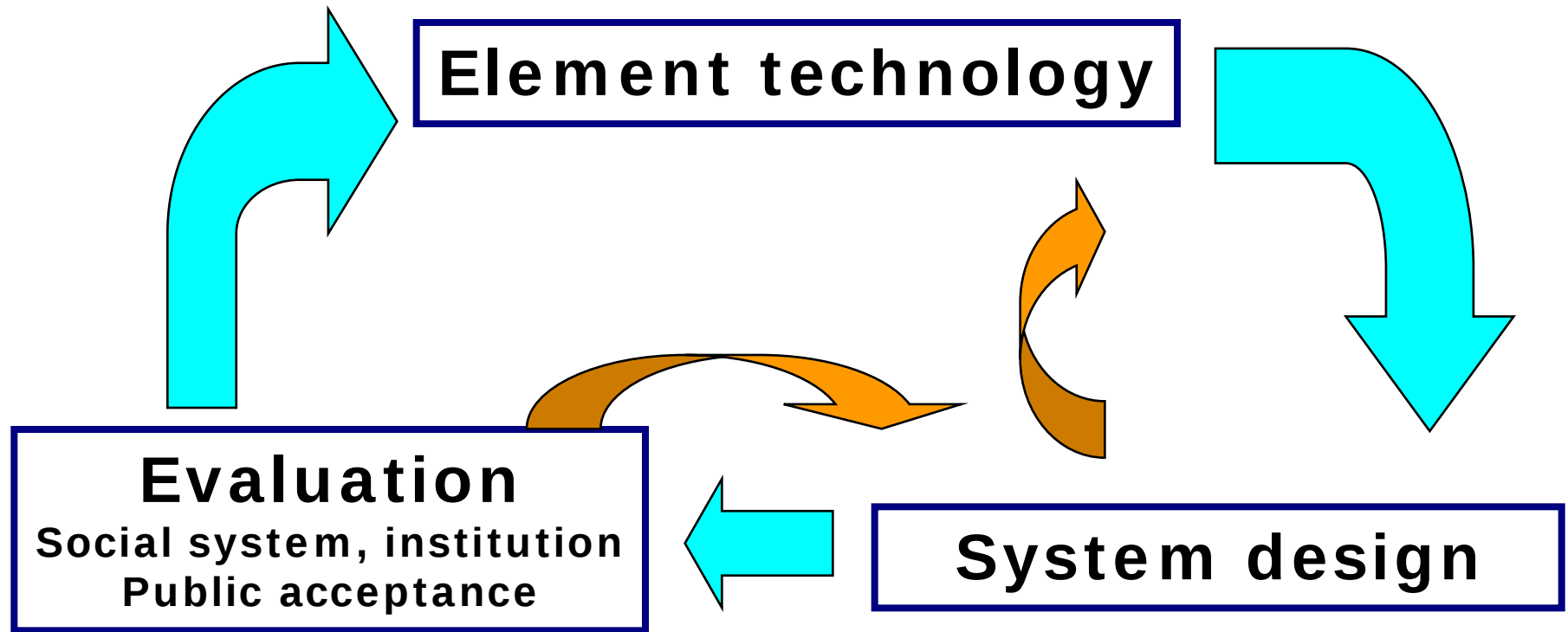
Dr.Neni:7th Conference of the Asian Council of Science, Japan, 2007

Model for Urban Slum area in developing countries



Dr.Neni:7th Conference of the Asian Council of Science, Japan, 2007

Innovation cycle of technology



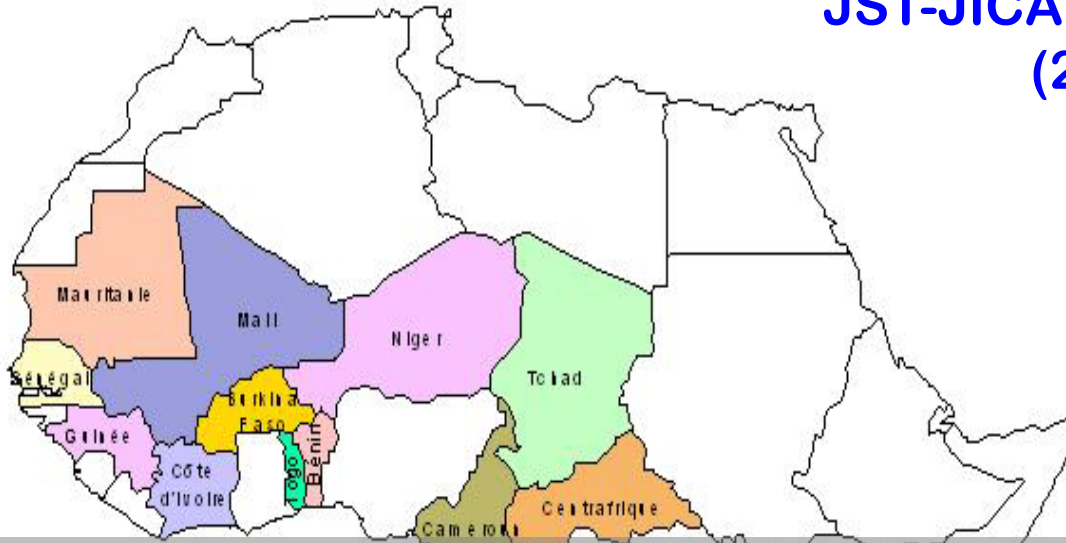
Role of policy



Discrimination by gender, social and cultural aspects, handicap needs to be overcome by participatory approach.



We should give access to adequate education, income and health care to all the people.

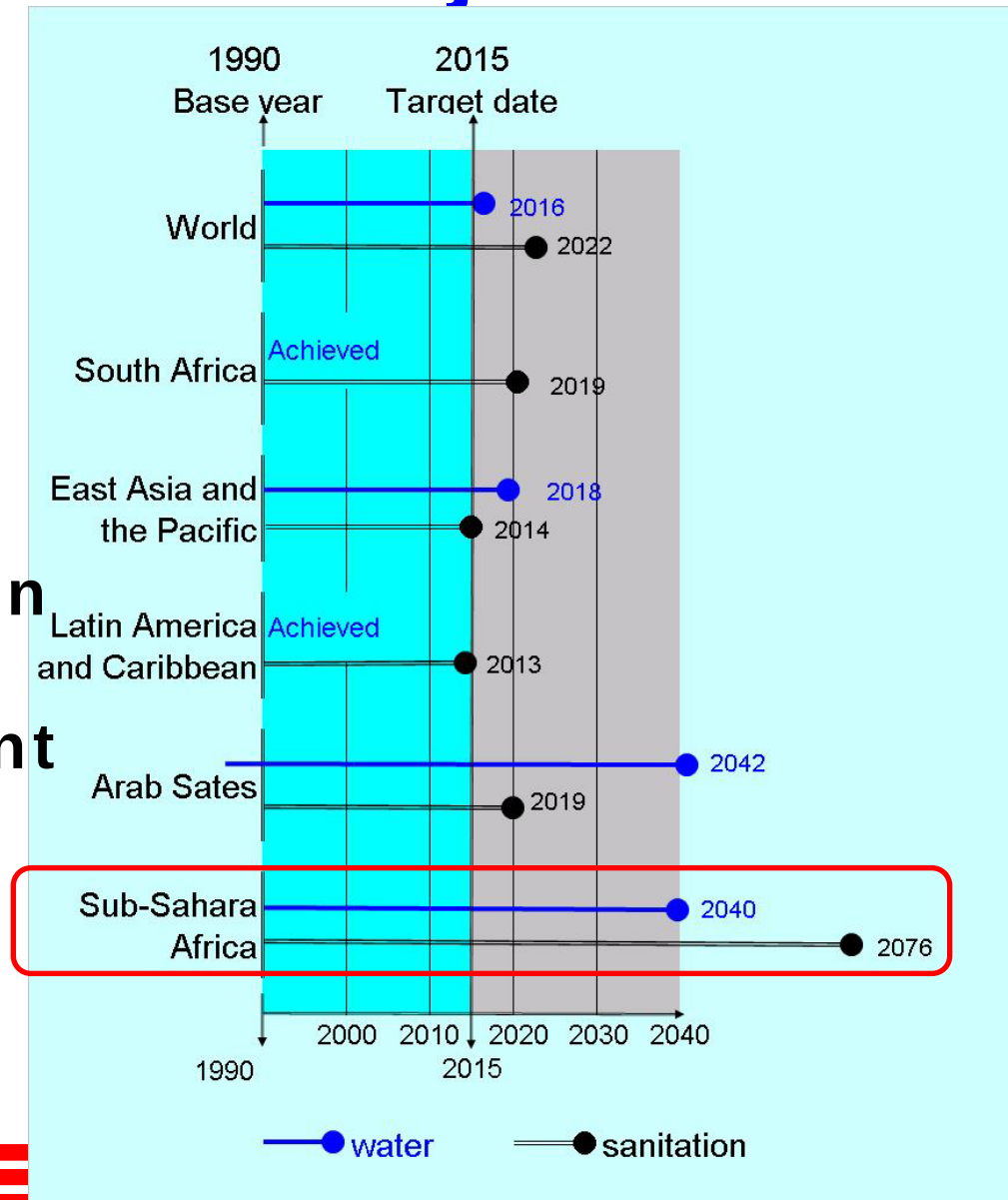


Improving Sustainable Water and Sanitation systems in Sahel Region in Africa: Case of Burkina Faso

Final goal of the Project

Contributing to the achievement of the Millennium Development Goals (MDGs) in water and sanitation

- (1) Research
- (2) Capacity development
- (3) Socialization



Summary

- **The role of technology:**
 - Technologies and social, institutional system should adapt to the social conditions.
 - Water technology should be a resource recovery technology, not a treatment technology.

Summary

- **The role of policy :**
 - Discrimination by gender, social and cultural aspects, handicap needs to be overcome by participatory approach.
 - We should give access to adequate education, income and health care to all the people, and consider how to include the poorest of the poor.
 - We should have the long term perspectives to how to adapt the change in developing countries from the society with one dollar per capita per day of GDP to the society with ten dollar and then a hundred dollar per capita per day.

Summary

- **The role of Science:**
 - The speed of the technological, economical and demographical changes taking in place in the current worlds must be slowed down **to have a time for the scientific evaluation of these solutions.**