WBE Project

Wastewater Based Epidemiology Project

Using Wastewater Based Epidemiology to solve social problems.

November 2023
Yachiyo Engineering, Japan

YACHIYO
Engineering

YACHIYO Engineering (yec)

Japan's leading integrated civil engineering consultant

YEC has the following three business pillars in its core; 1) land conservation, 2) urban and regional development, and 3) transportation.

These three pillars include six cross cutting sectors such as environment and energy, management and ICT, etc.

Major Projects
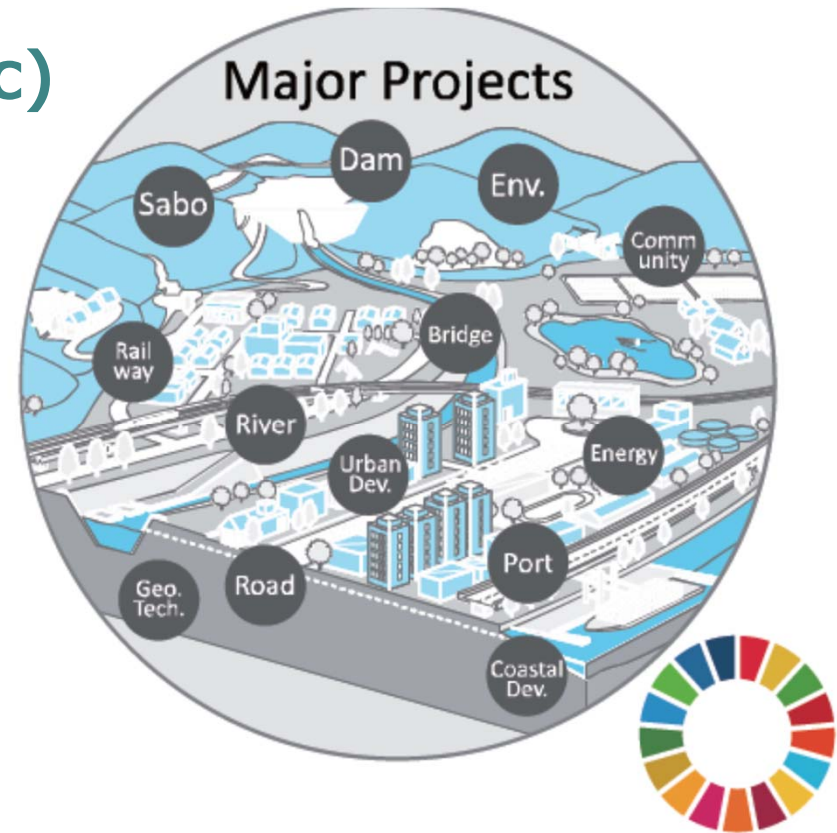
Project Vision

*De-growth .per. se is a nature phenomenon
by re-definition of metabolisms.*

Project Concept

*Re-define future of
social infrastructure*

WBE Project

Wastewater Based Epidemiology
Project

It is hard to people change behavior.
However, sometimes people force to
change the life being from outsides.

Detect Value

Add a function of WBE to sewerage infrastructure.

Recognize

Build a data platform that leads to improving
public health.

Re-design

Solve social issues by re-defining social
infrastructure

Need

- Allow the population to safely return to normal with COVID-19
- Establish a sustainable society without the excessive capitalism and growth of the past.

Goal

- Create a sustainable society that is concern about abundance of intangible through re-defining social infrastructure using Wastewater Based Epidemiology

Solution

- Establish a detection, analysis and monitoring system to obtain sewage epidemiological data, and
- Build an data platform that contributes to the improvement of public health

In WBE project, **yec** designs the concept, coordinates the overall operation and leads the social implementation.

Detect

Recognize

Re-design
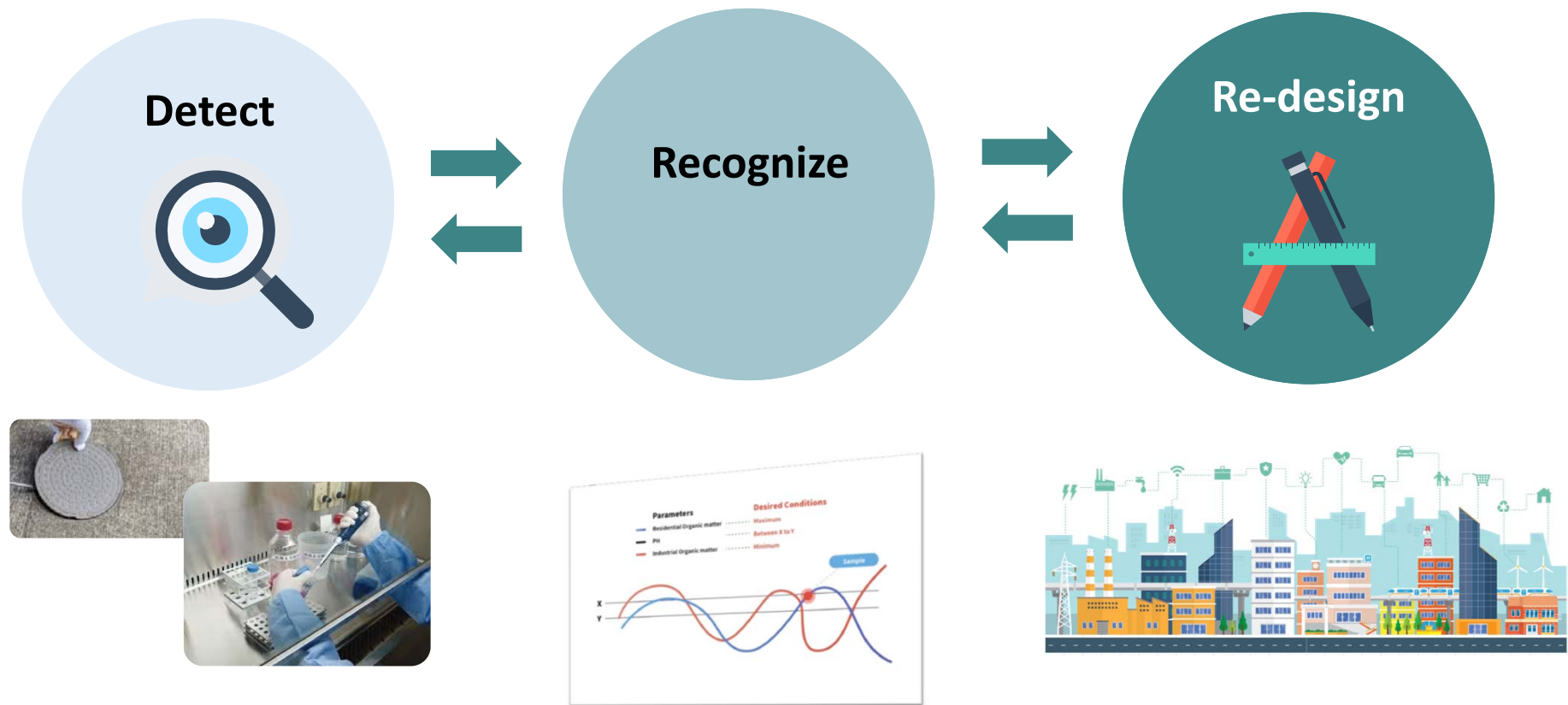
WBE Project
Roadmap

Stage1.
Defining Value

1 Pre-feasibility study

2 Secure clear, ambitious targets

3 Secure management commitment

4 Secure investment (study)

5 Case study research

6 Establish WBE model mockup in ASEAN

Stage2.
Launch & acceleration

7 Feasibility study

8 Start with initial implementation

9 Organize to promote new, agile ways of implementation

10 Establish a high-caliber launch team

11 Establish WBE model & data platform in ASEAN

Stage3.
Scaling up

12 Build operation capabilities

13 Adopt a new operation model

14 Expansion of coverage area

Stage4.
Co-creation

15 Collaboration and co-creation with other data
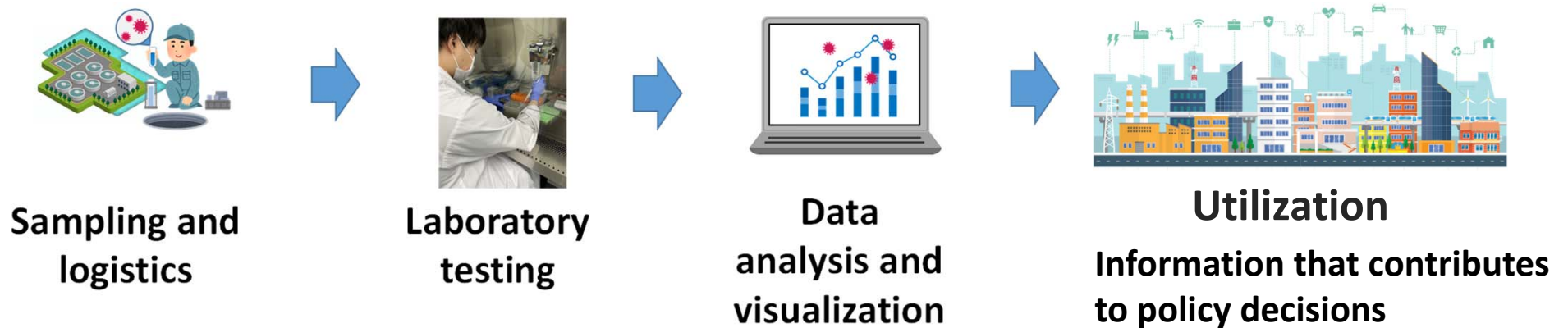
16 Agile improvement, development

Stage5. Expansion

17 Expansion to ASEAN countries

2021

2022

2023

2024

2025

6

Objectives of WBE Project in Denpasar

Main Pillar of WBE

Sampling and logistics → Laboratory testing → Data analysis and visualization → Utilization — Information that contributes to policy decisions
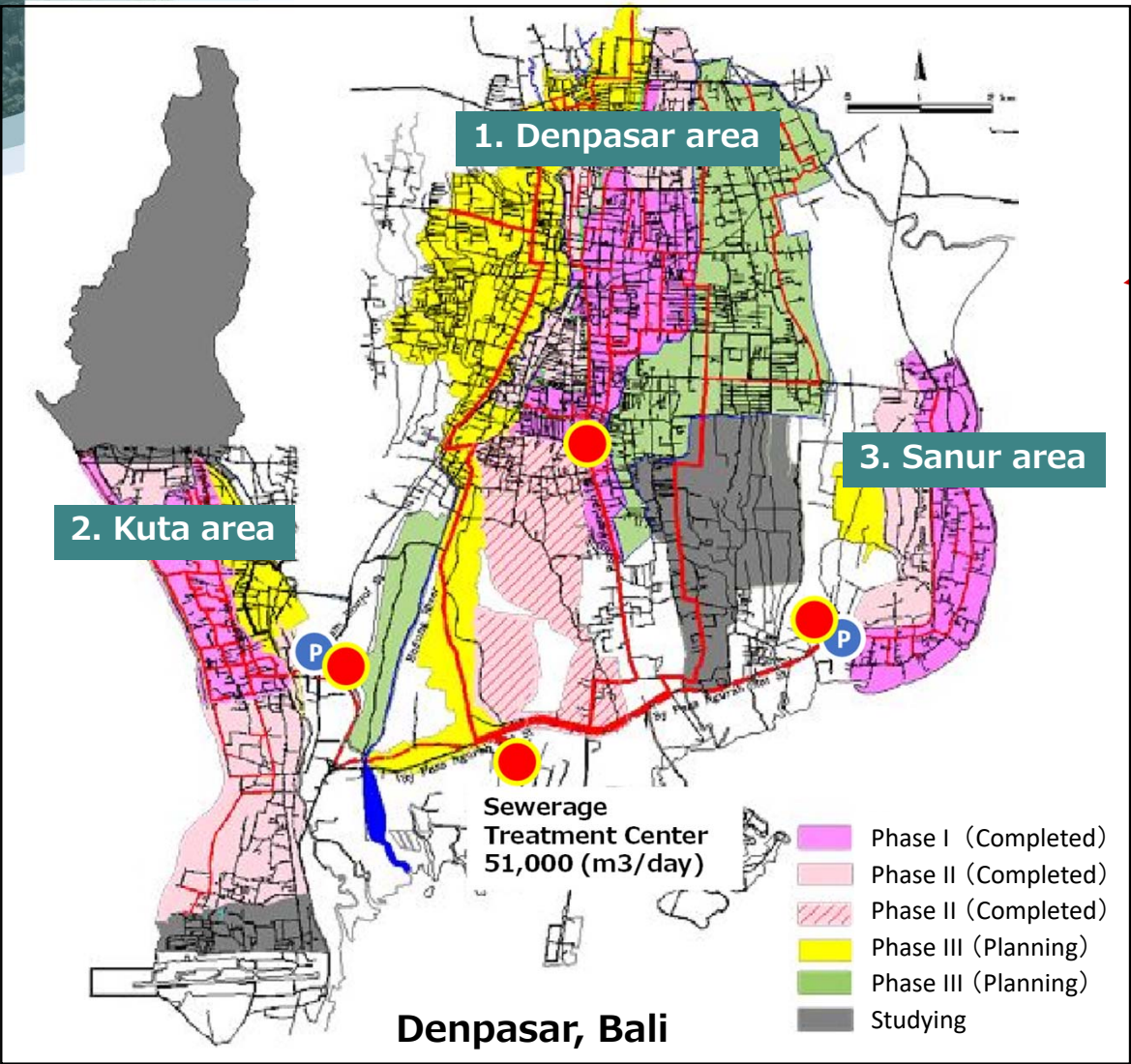
The ideal goal is to **achieve and secure sustainable operational methodology and protocols** to be adoptable to **Indonesian context**

NOTE: There have been no reports of SARS-CoV-2 infection from sewage yet, and SARS-CoV-2 in sewage is not considered to be infectious.

Target Area

1. Denpasar area

3. Sanur area

2. Kuta area

Sewerage Treatment Center 51,000 (m3/day)

Denpasar, Bali

Legend:
- Phase I （Completed）
- Phase II （Completed）
- Phase II （Completed）
- Phase III （Planning）
- Phase III （Planning）
- Studying

Republic of Indonesia

Profile of sewerage service area

	1. Denpasar	2. Kuta	3. Sanur	Total
Service area (ha)	520	295	330	1,145
Population	-	-	-	104,286
No. of Connected H/H	11,081	2,146	4,154	17,381
Pipe length (m)	75,210	23,230	35,281	133,421
No. of relay pumps	-	1	1	2
Characteristics of the area	Office area, dominated by gov't offices and residences.	Tourist area, mainly tourist facilities such as restaurants and hotels	A traditional resort area, with residential area in the hinterland	Not much differences in sewerage facilities thus relative comparisons can be made

1st Proof Of Concept

Outline

➢ **Date :**10th , Feb. 2022 (AM 9:00 ～ 10:00)
➢ **Implementer :**UPTD-PAL
➢ **Sampling Point :**4 (WWTP, Manhole, PS × 2)
➢ **Amount : (**250ml × 2 bottles) × 4 points
➢ **Method :**Grab Sampling
➢ **Analyze by ITB**

Sampling Point
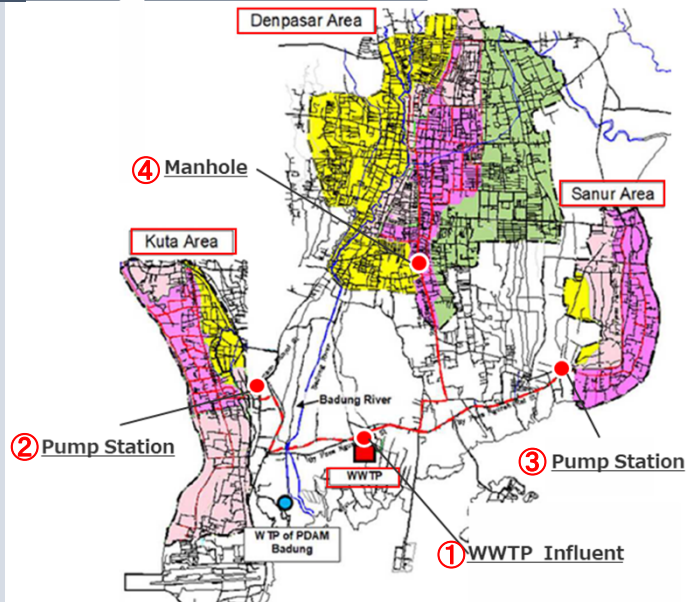
Pic1. Collecting influent sewage samples from WWTP

Pic2. Collecting sewage samples from manhole in Denpasar area

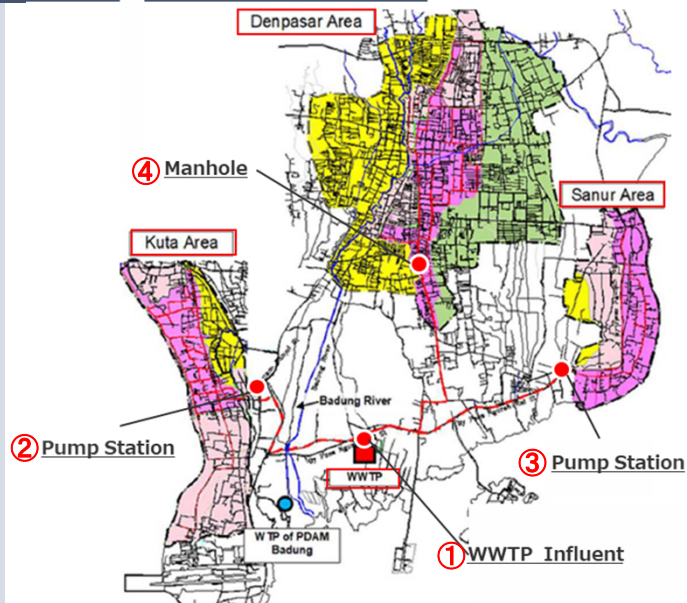Pic3. Storing sample bottles in a freezer (Total 8 bottles)

2nd Proof Of Concept

Outline

- **Date :**9th,Sep.2023-current (AM 9:00 〜 10:00)
- **Implementer :**UPTD-PAL
- **Sampling Point :**4 (WWTP, Manhole, PS × 2)
- **Amount : (**250ml × 2 bottles) × 4 points
- **Method :**Grab Sampling
- **Analyze by Health Lab in Bali**

Sampling Point

Confidential Data

The result of analysis cannot be disclosed.

Result in Bali

We look forward to collaborating
with you on changing the world together!!