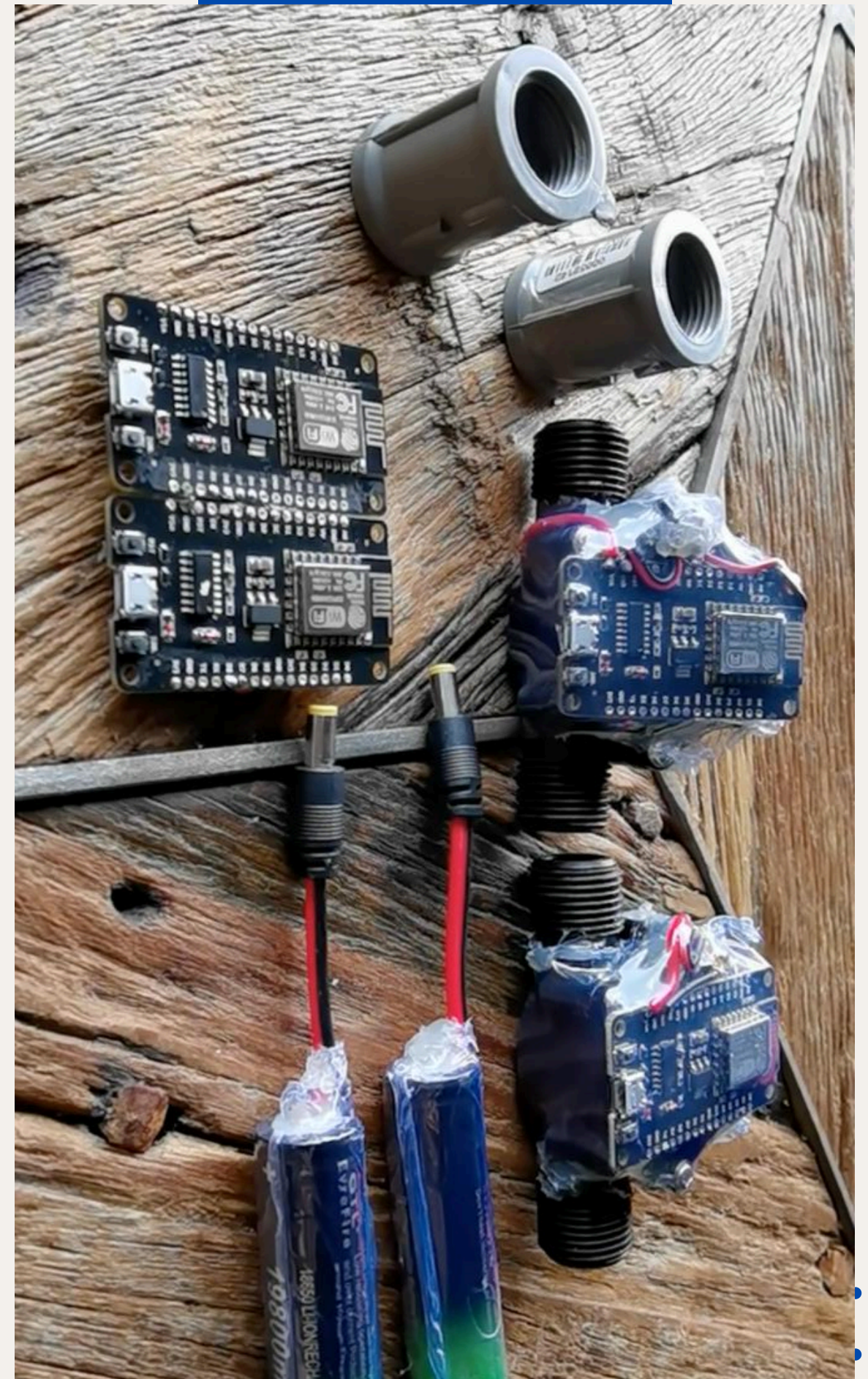


UNESCO WATER RESILIENCE CHALLENGE 2024 - ROAD TO BALI

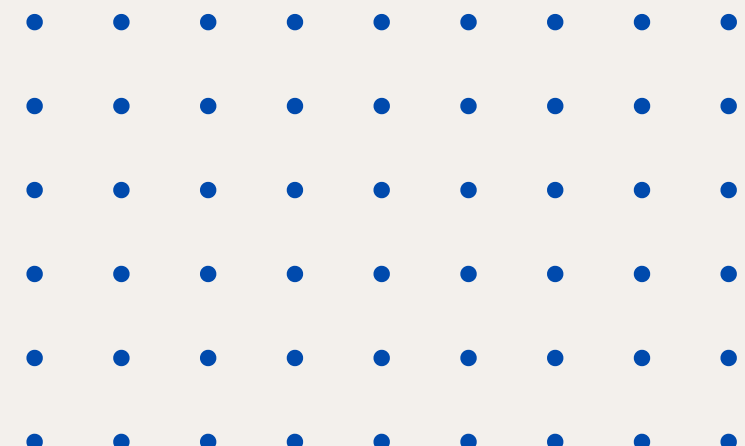
C_H2O

Kueh Tze Shuen
Chai Hong Jie
Ivy Kuan Yen Ting
Houng Jun Hong

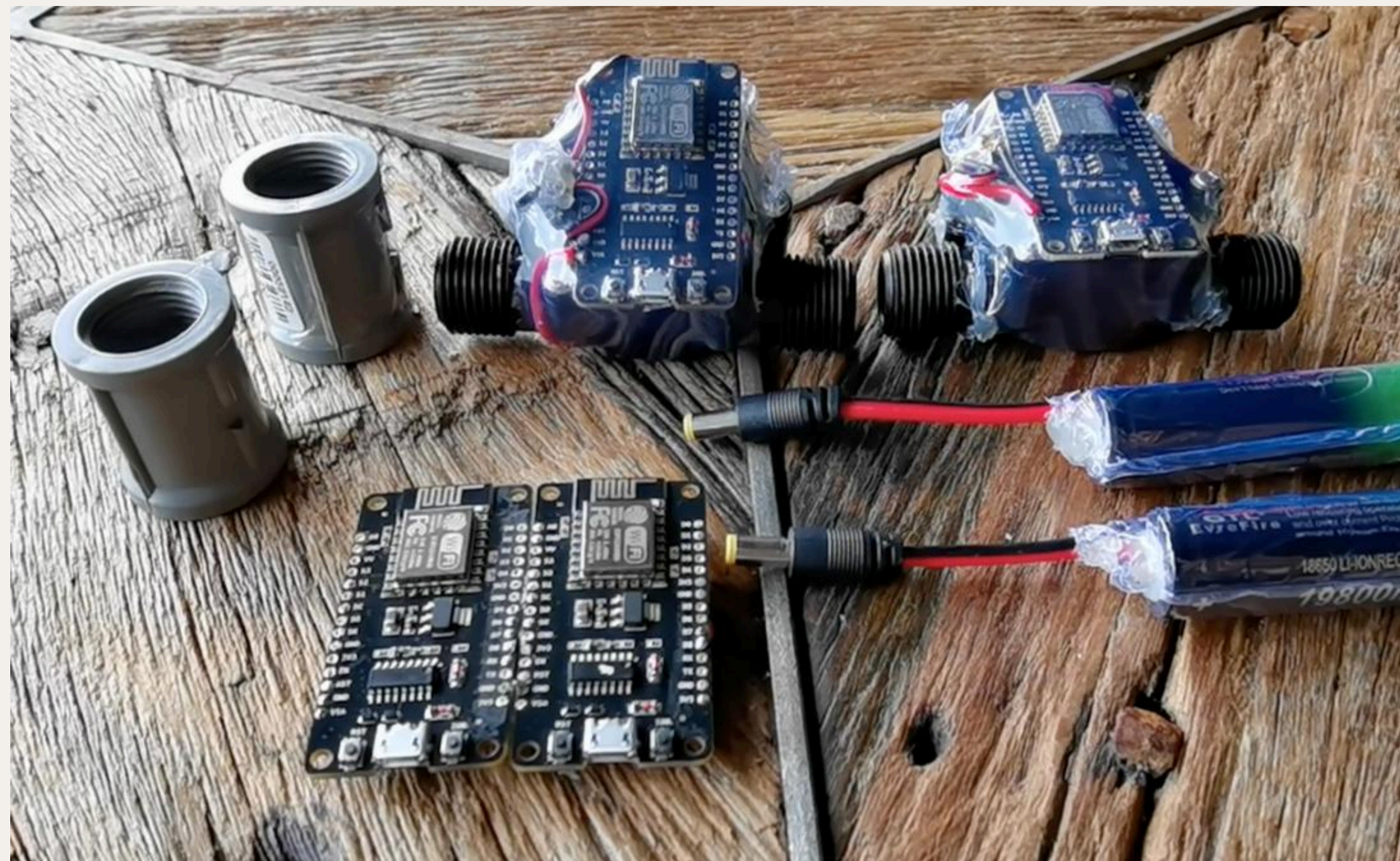


PROBLEM STATEMENT

Water Overuse in Langkawi
due to **Tourism** led to
Frequent Water Shortage



AquaTally

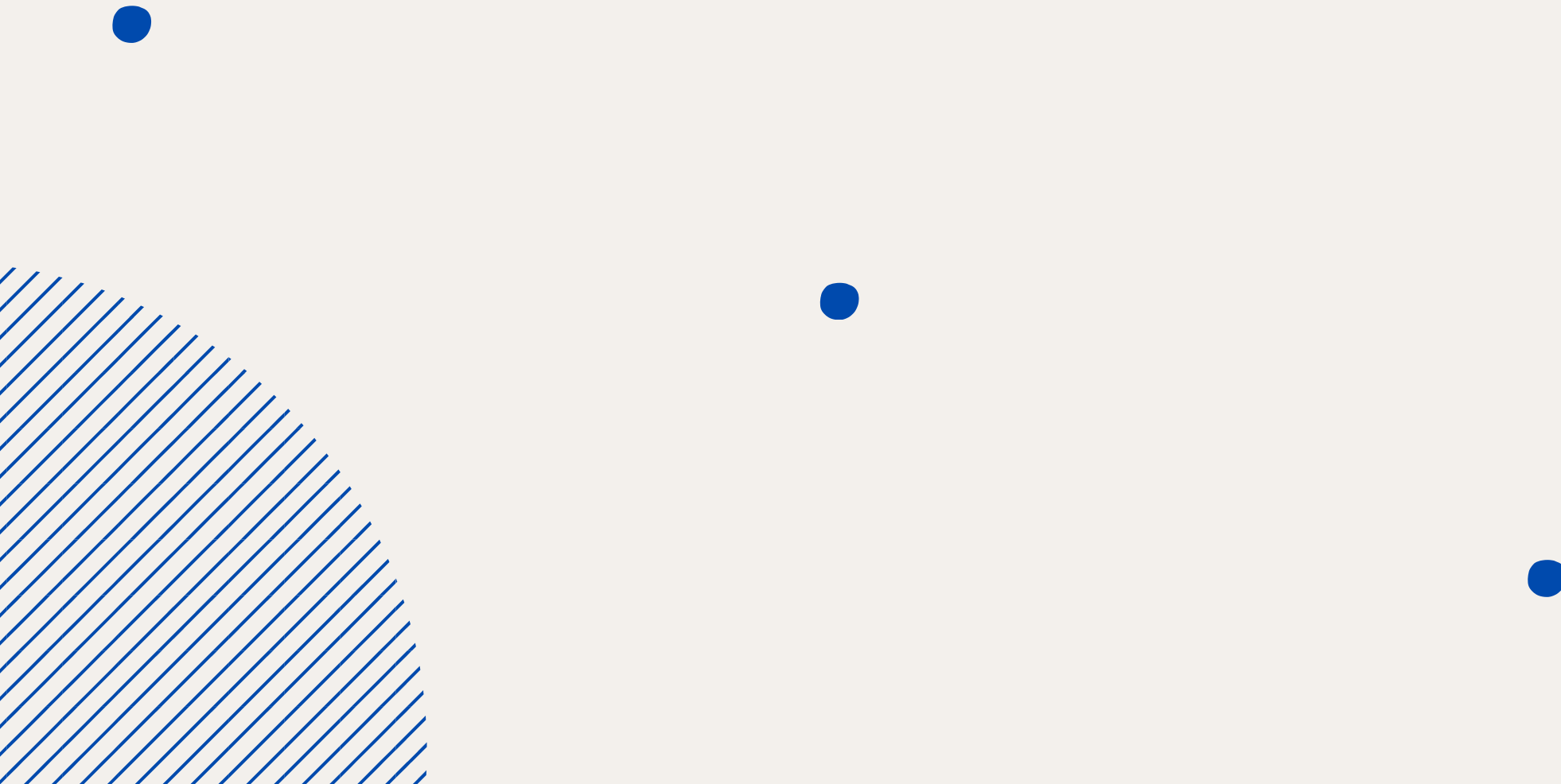


Data-Driven Smart Water Monitor

AquaTally

Count Every Drop

Make Every Drop Count



AquaTally

Count Every Drop

Make Every Drop Count

- **MONITOR WATER USAGE**

AquaTally

Count Every Drop

Make Every Drop Count

- MONITOR WATER USAGE

- ALERT WATER OVERUSE

AquaTally

Count Every Drop

Make Every Drop Count

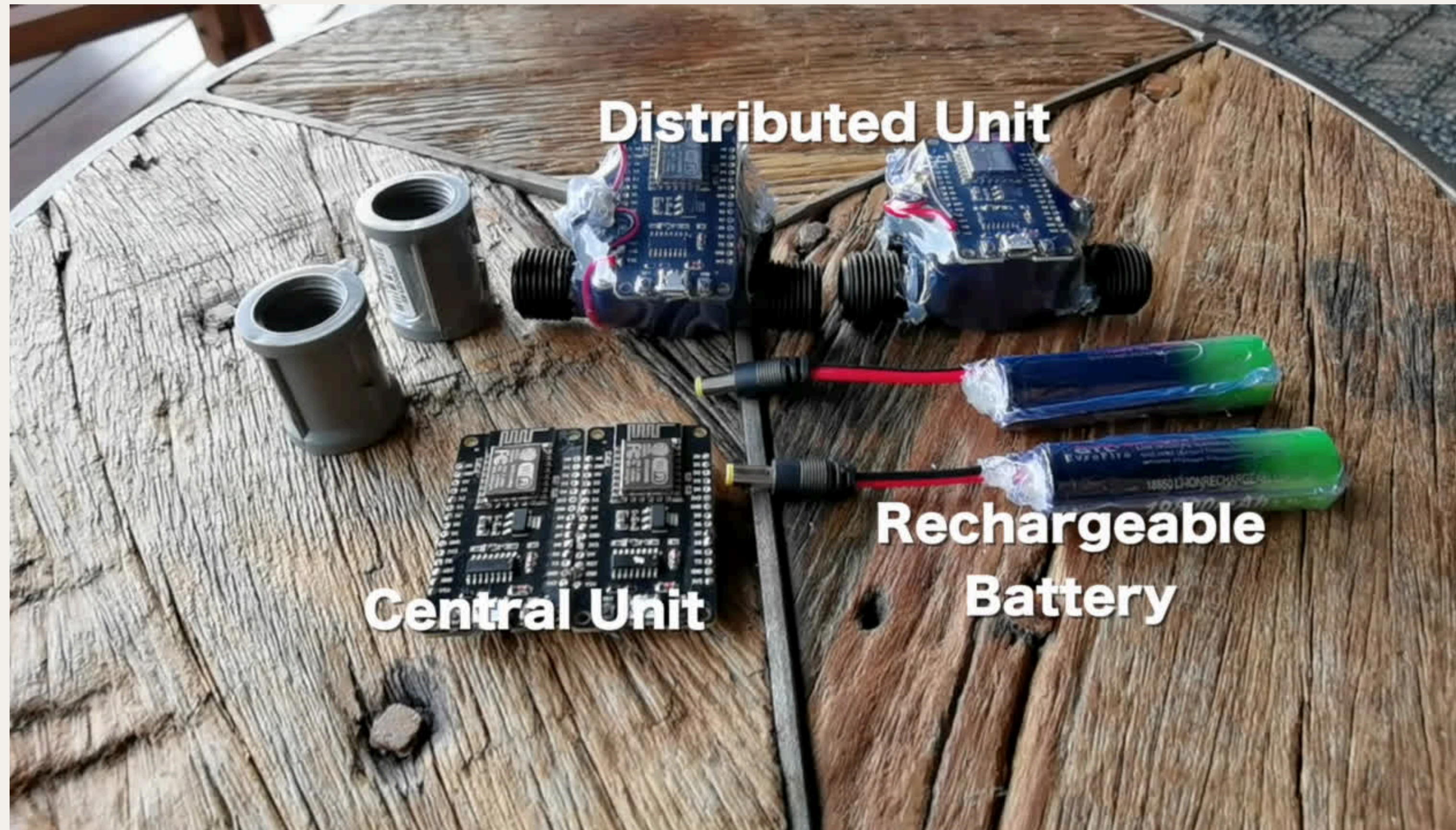
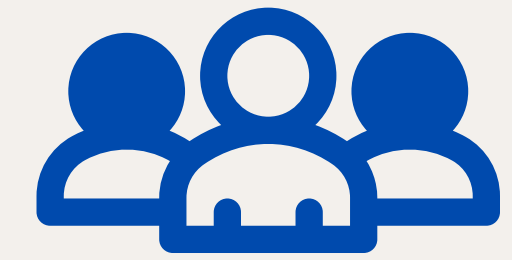
- MONITOR WATER USAGE

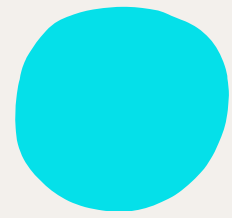
- ALERT WATER OVERUSE

- DRIVE BEHAVIOUR CHANGE



DEMONSTRATION





FUNCTIONALITY

Function **ACHIEVED**

37.304

ON

Water Usage

15D7D1D1HLIVE

2.5

MONITOR + ALERT





FUNCTIONALITY

Function **ACHIEVED**

37.304

ON

Water Usage

15D

7D

1D

1H

LIVE

MONITOR + ALERT

Measurement

1986	2024-05-02 11:08:12	0	device001
1987	2024-05-02 11:08:22	0	device001
1988	2024-05-02 11:08:32	0	device001
1989	2024-05-02 11:08:42	0	device001
1990	2024-05-02 11:08:52	0	device001
1991	2024-05-02 11:09:02	0	device001
1992	2024-05-02 11:09:12	0	device001
1993	2024-05-02 11:09:22	0	device001
1994	2024-05-02 11:09:32	0	device001
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1998	2024-05-02 11:10:12	0	device001
1999	2024-05-02 11:10:22	0	device001
2000	2024-05-02 11:10:32	0	device001
2001	2024-05-02 11:10:42	0	device001
2002	2024-05-02 11:10:47	0.15	device001
2003	2024-05-02 11:10:50	0.15	device001
2004	2024-05-02 11:10:58	0	device001

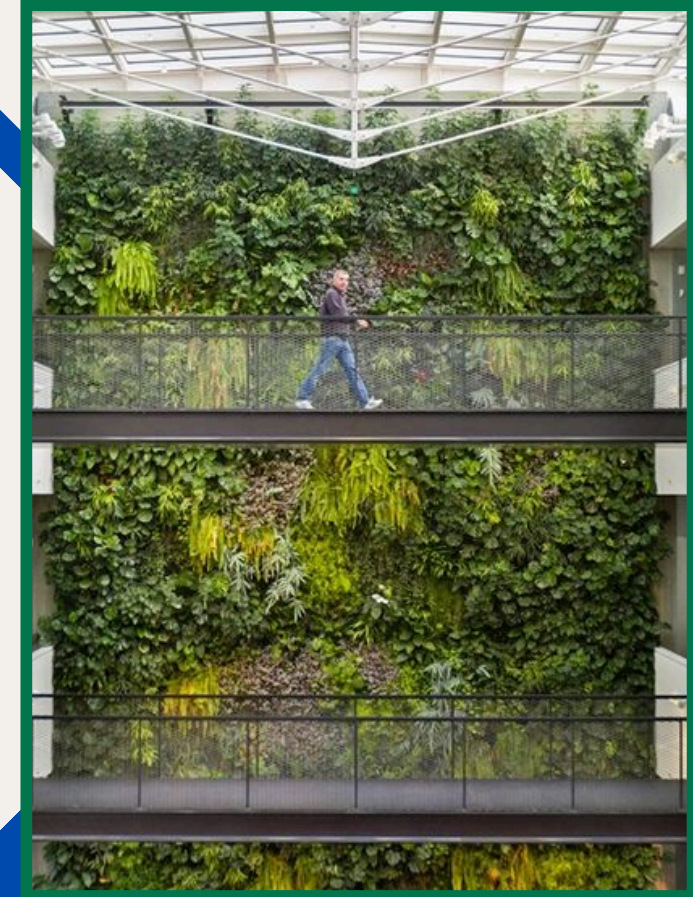
DATA COLLECTION +
STUDIES

PRODUCT INSTALLATION

Community - Household

Need: Monitoring

- Installed in households in Langkawi
- Record water usage in different appliances
- Identify main water wastage source
- Optimise water consumption



PRODUCT INSTALLATION

Community - Household

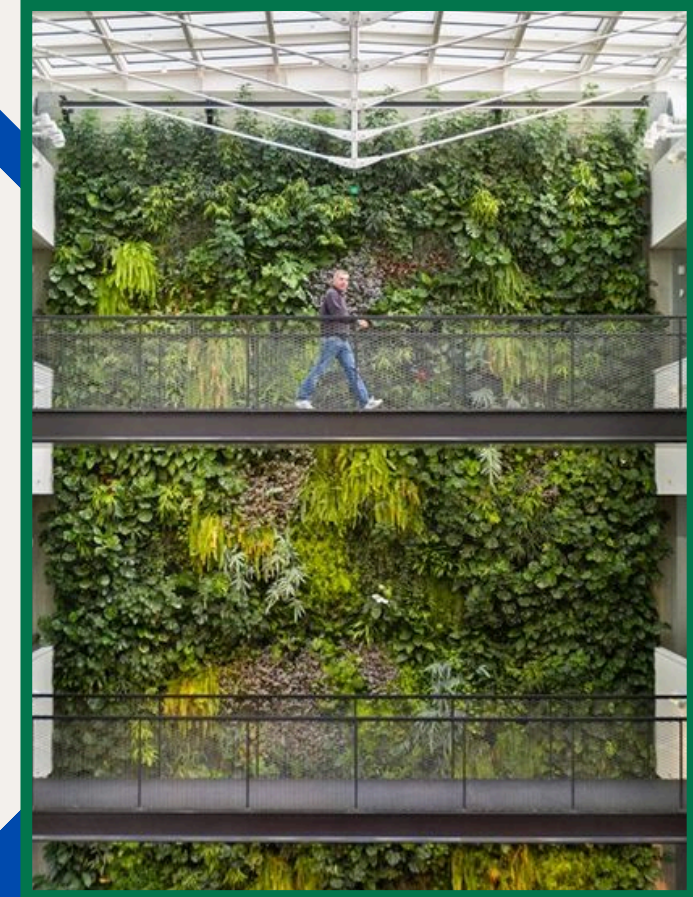
Need: Monitoring

- Installed in households in Langkawi
- Record water usage in different appliances
- Identify main water wastage source
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Tourism - Hotels

Need: Alerting

- Installed in resorts and airbnb in Langkawi
- Alert tourists on high water consumption
- Instill awareness in tourism industry



PRODUCT INSTALLATION

Community - Household

Need: Monitoring

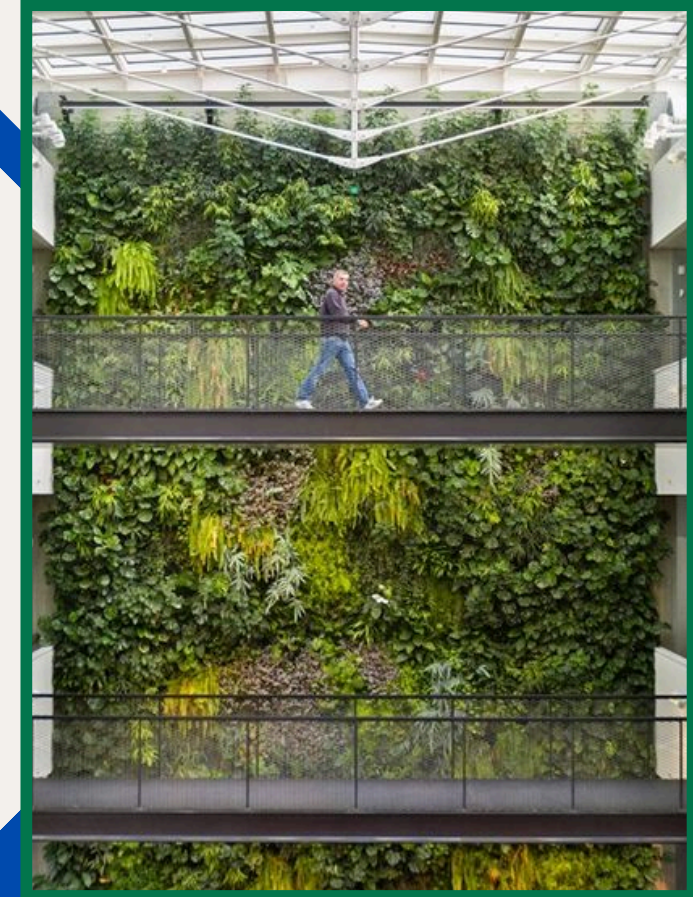
- Installed in households in Langkawi
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- Identify main water wastage source
- Optimise water consumption

LEMBAGA PEMBANGUNAN LANGKAWI

Tourism - Hotels

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PRODUCT INSTALLATION

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Need: Monitoring

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- Record water usage in different appliances
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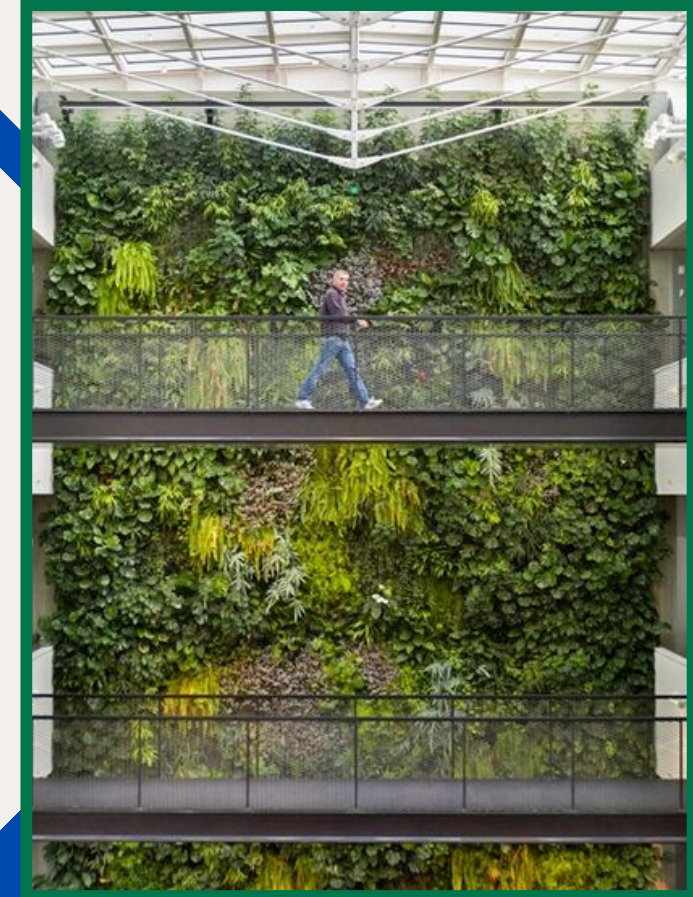
LEMBAGA PEMBANGUNAN LANGKAWI

UNDERWATER WORLD LANGKAWI

Tourism - Hotels

Need: Alerting

- Installed in resorts and airbnb in Langkawi
- Alert tourists on high water consumption
- Instill awareness in tourism industry

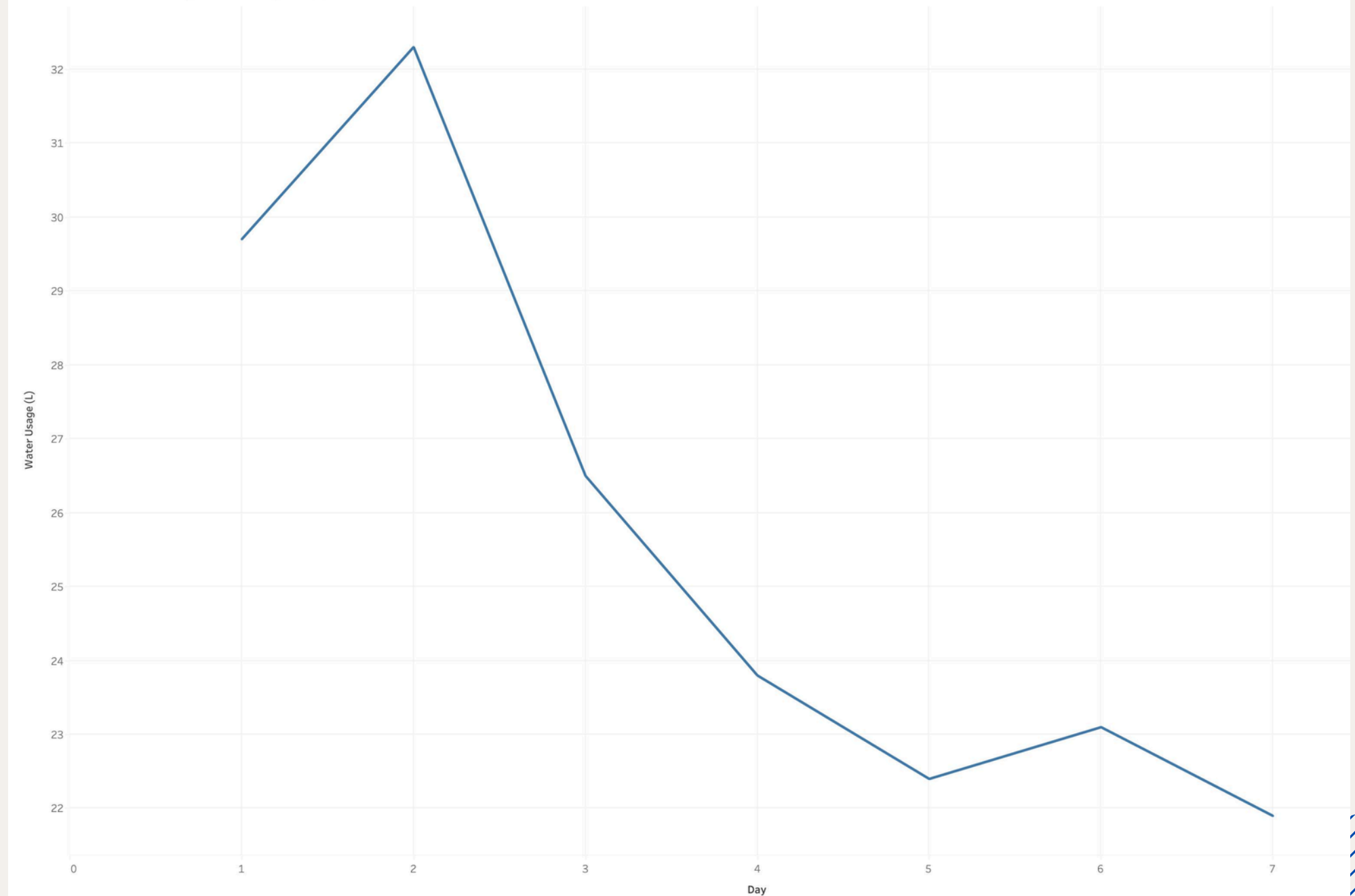


PROJECT IMPACT

AquaTally - CH2O



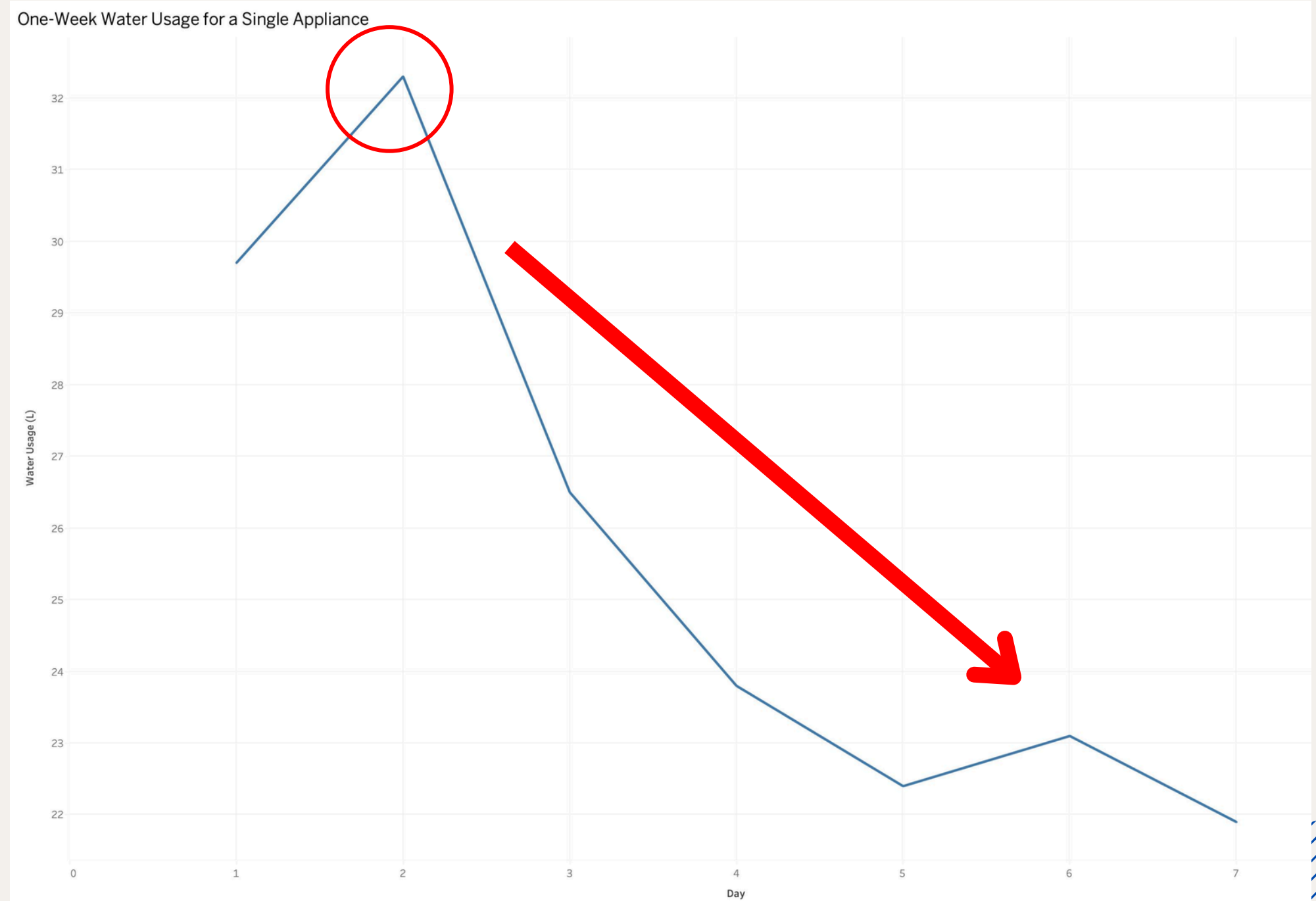
One-Week Water Usage for a Single Appliance



PROJECT IMPACT

AquaTally - CH2O

**Reduction of 8 litres
per day per appliance**



PROJECT IMPACT



1

Household

**Save 400,000
litres per day**

PROJECT IMPACT



1

Household

Save 400,000
litres per day

2

Tourism Industry

Save 10,750
litres per day



POTENTIAL DATA USAGE



Connect...New Query

SG-NME-WEB1236.MAIN-HOSTING.EU (U85

MySQL 10.11.7-MariaDB-cll-lve

Users

u859087219_arduino

Tables

Views

Programmability

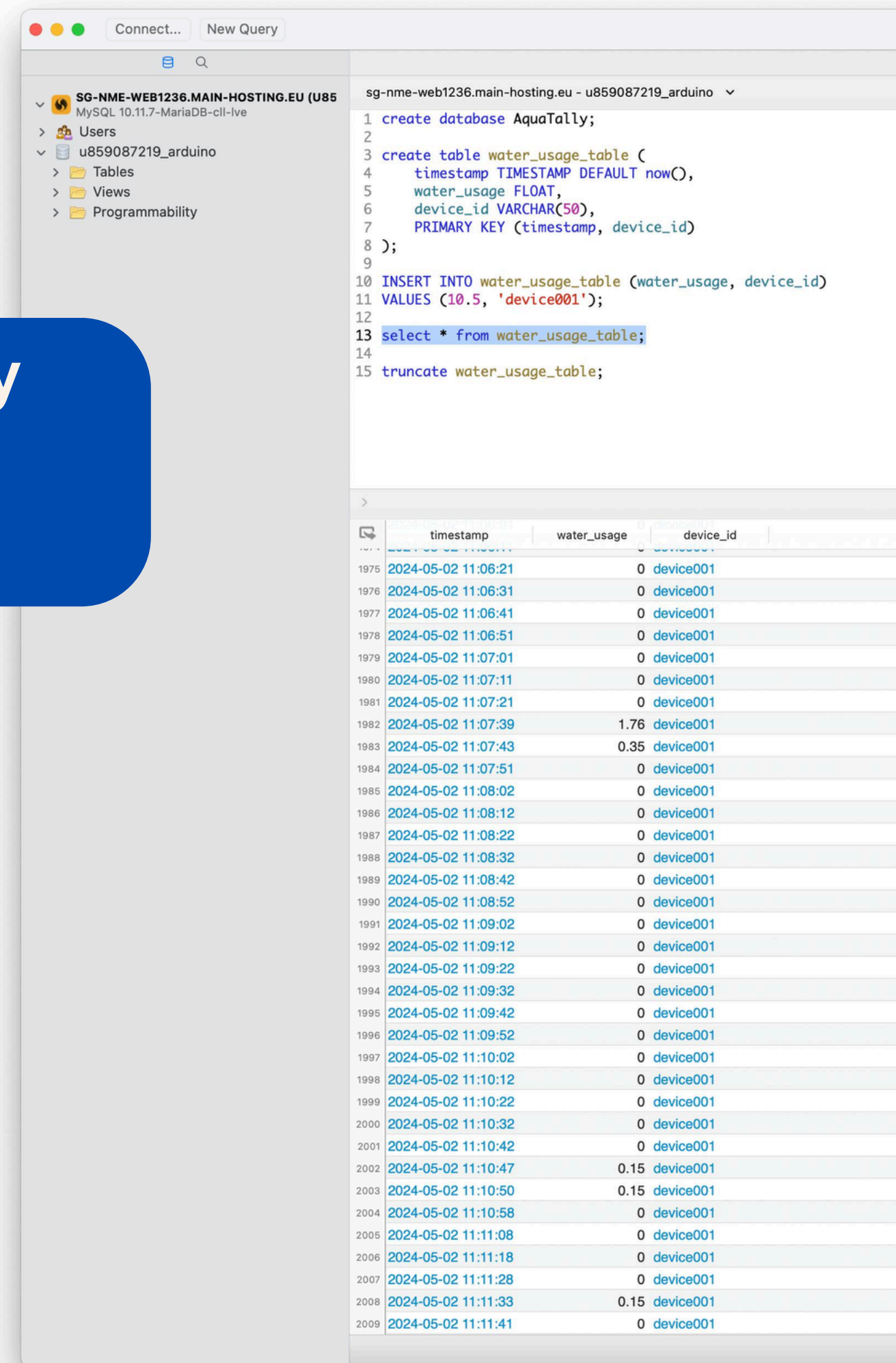
sg-nme-web1236.main-hosting.eu - u859087219_arduino

```
1 create database AquaTally;
2
3 create table water_usage_table (
4     timestamp TIMESTAMP DEFAULT now(),
5     water_usage FLOAT,
6     device_id VARCHAR(50),
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9
10 INSERT INTO water_usage_table (water_usage, device_id)
11 VALUES (10.5, 'device001');
12
13 select * from water_usage_table;
14
15 truncate water_usage_table;
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1975	2024-05-02 11:06:21	0	device001
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1977	2024-05-02 11:06:41	0	device001
1978	2024-05-02 11:06:51	0	device001
1979	2024-05-02 11:07:01	0	device001
1980	2024-05-02 11:07:11	0	device001
1981	2024-05-02 11:07:21	0	device001
1982	2024-05-02 11:07:39	1.76	device001
1983	2024-05-02 11:07:43	0.35	device001
1984	2024-05-02 11:07:51	0	device001
1985	2024-05-02 11:08:02	0	device001
1986	2024-05-02 11:08:12	0	device001
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2006	2024-05-02 11:11:18	0	device001
2007	2024-05-02 11:11:28	0	device001
2008	2024-05-02 11:11:33	0.15	device001
2009	2024-05-02 11:11:41	0	device001

POTENTIAL DATA USAGE

- ## Water Behaviour Study
- Regional Impact
 - Tourism Analysis



The screenshot shows a MySQL database interface. The left sidebar displays the database structure for 'SG-NME-WEB1236.MAIN-HOSTING.EU (U85)'. The main area shows a SQL query being executed, and the results are displayed in a table below.

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1980	2024-05-02 11:07:11	0	device001
1981	2024-05-02 11:07:21	0	device001
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POTENTIAL DATA USAGE

Water Behaviour Study

- Regional Impact
- Tourism Analysis

Informed Decision Making

- Urban Planning
- Resource Allocation



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POTENTIAL DATA USAGE

Water Behaviour Study

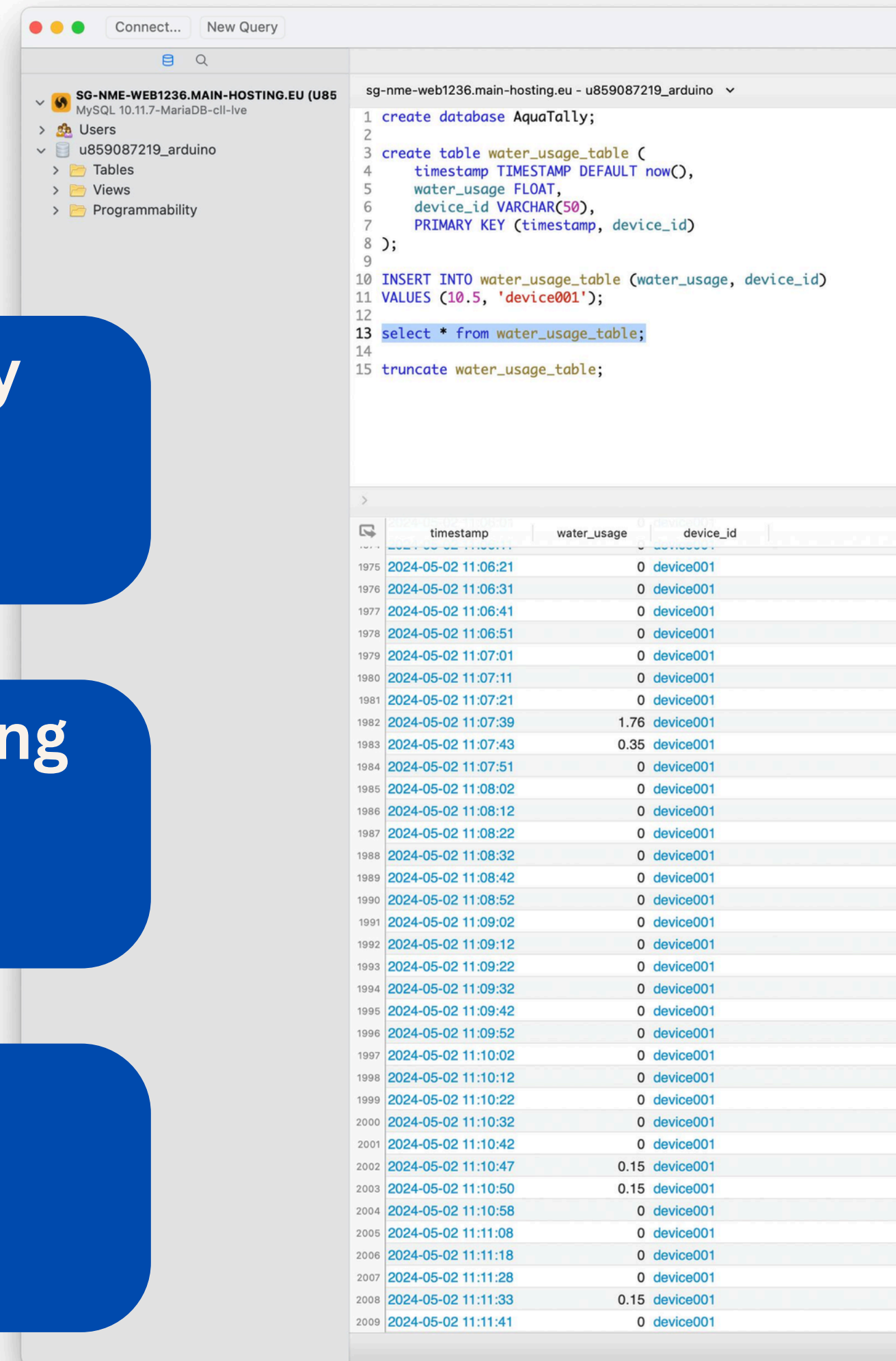
- Regional Impact
- Tourism Analysis

Informed Decision Making

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Awareness Education

- Data Visualisation
- Correction in Action



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PUBLIC DISSEMINATION

Meet - tyx-nrxc-aop

meet.google.com/tyx-nrxc-aop

HOUNG JUN HONG (Presenting)

CH20 AquaTally

CH20 AquaTally

PULAU LANGKAWI

CH20 Malaysia

Contributors

19

People

Search for people

IN MEETING

Contributors

19

Hong Jie (You)

Chiang Ru

HOUNG JUN HONG Meeting host

HOUNG JUN HONG Presentation

huiying

Ivy Kuan

Mei has left the meeting

15 others

Jack

Jarvis Wong

Jayden Choo

JERRY LEE

Juliet Lim

Kenneth Zheng Yuan Lim

Lai Chie Mei

Mandy Voon

19:11 | tyx-nrxc-aop

7:06 PM | tyx-nrxc-aop

86°

PUBLIC DISSEMINATION

ma | Das | Sea | Tea | Rec | (35) | x | My | 202 | Go | HO | ho | Go | AQ | Ch | ho | +

https://meet.google.com/tyx-nrxc-aop Relaunch to update

HOUNG JUN HONG (Presenting)

AquaTally

Total Water Usage: 2.158

Water Usage Monitoring: ON

Water Usage: 15D 7D 1D 1H LIVE

11:38:00 11:38:05

HONG JUN HONG

Wong Xin Shan Ivan

Jarvis Wong

Hong Jie

Yih

Tang Ai Chian

Shao Qian

8 others

Ivy Kuan

7:10 PM | tyx-nrxc-aop

86°

7:10 PM 1/5/2024

PUBLIC DISSEMINATION

ma | Da: | Sea | Tea | Rec | (33) | x | My | 202 | Go | HO | ho | Go | AQ | Ch | ho | + | - | X

https://meet.google.com/tyx-nrxc-aop | Relaunch to update

HOUNG JUN HONG | Wong Xin Shan Ivan | Jarvis Wong | Hong Jie | Yih | Tang Ai Chian

Zenn | Shao Qian | YI Shan Tlaw | Ting Mei Na | Jayden Choo | Shito Yee Thong Sim


Shuen Kueh | Chiang Ru | Kenneth Zheng Yuan Lim | Jack | PT Tan | Ivy Kuan

7:16 PM | tyx-nrxc-aop

86° | ENG US | 7:16 PM 1/5/2024



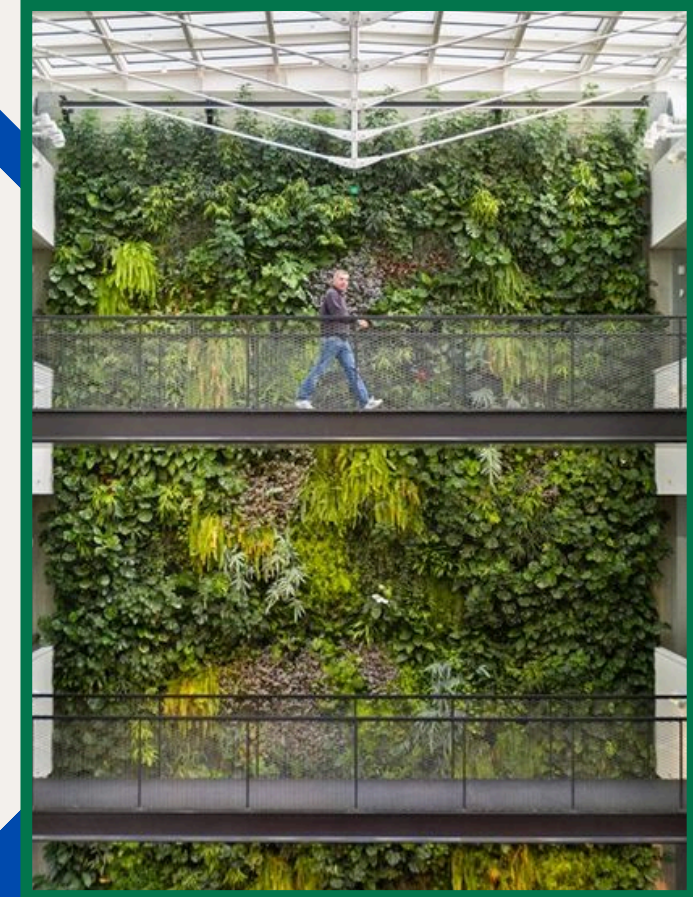
INCENTIVE FOR SUSTAINABILITY



Community - Household

Monitoring

- Reduction in monthly water bills
- Leaderboard system in the community
- Voucher reward scheme



INCENTIVE FOR SUSTAINABILITY

Community - Household

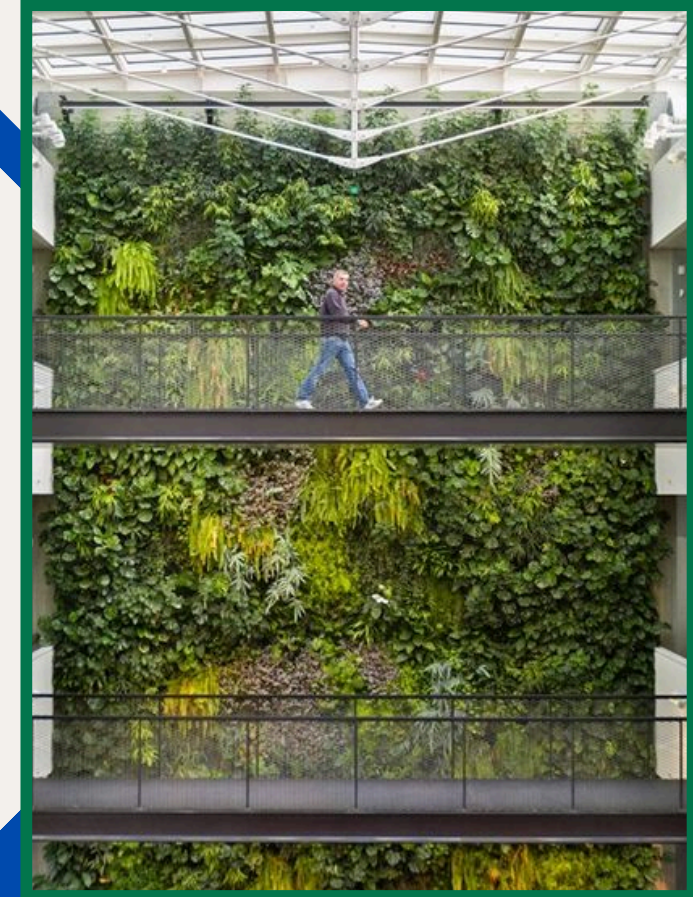
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Tourism - Hotels

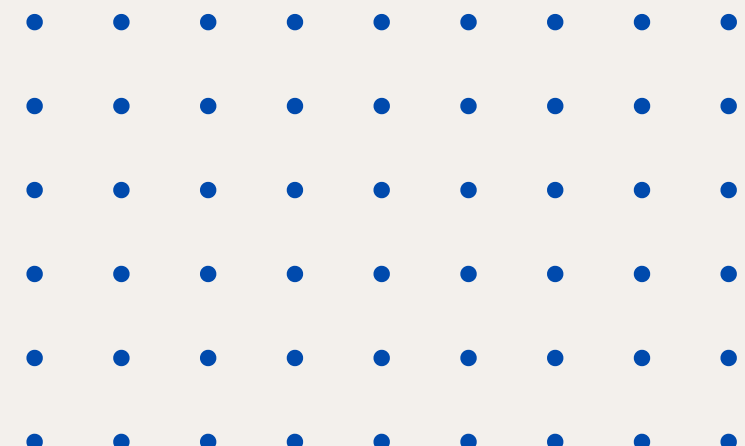
Alerting

- Collaboration with SADA to recognise hotels in climate efforts
- Improve ESG branding
- Advertisement by reputational bodies



PROBLEM STATEMENT

Water Overuse in Langkawi
due to **Tourism** led to
Frequent Water Shortage

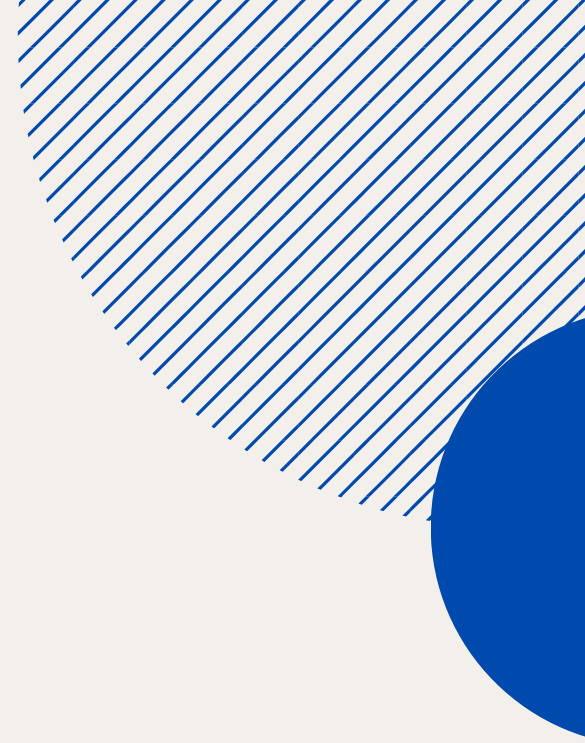
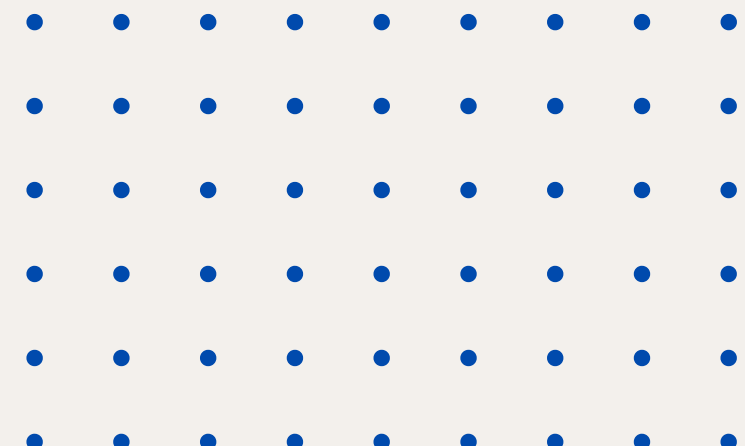


PROBLEM STATEMENT

Water Overuse

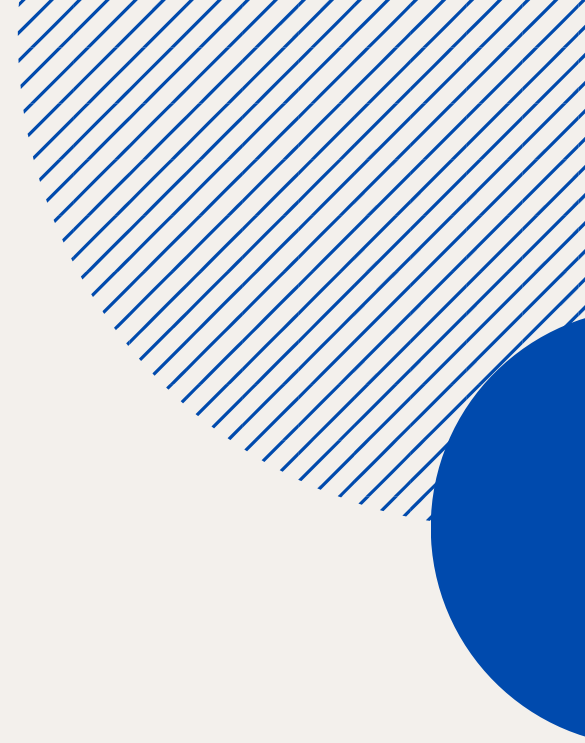
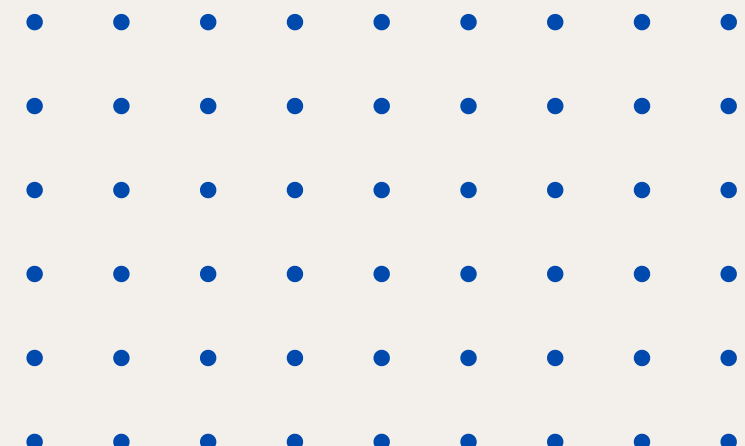
Tourism

Water Shortage



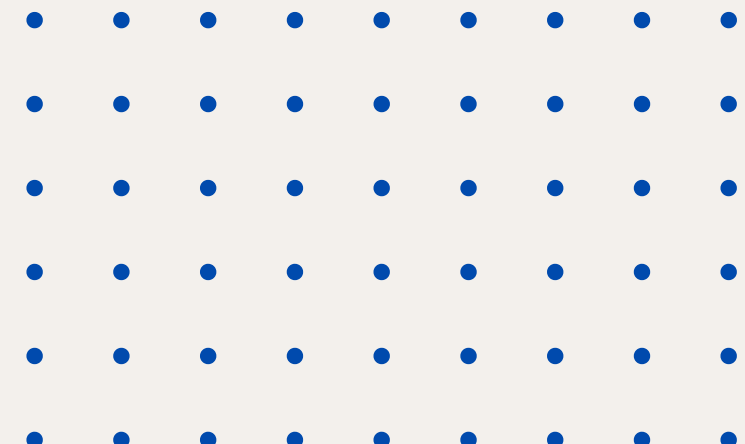
PROBLEM STATEMENT

Tourism Water Shortage

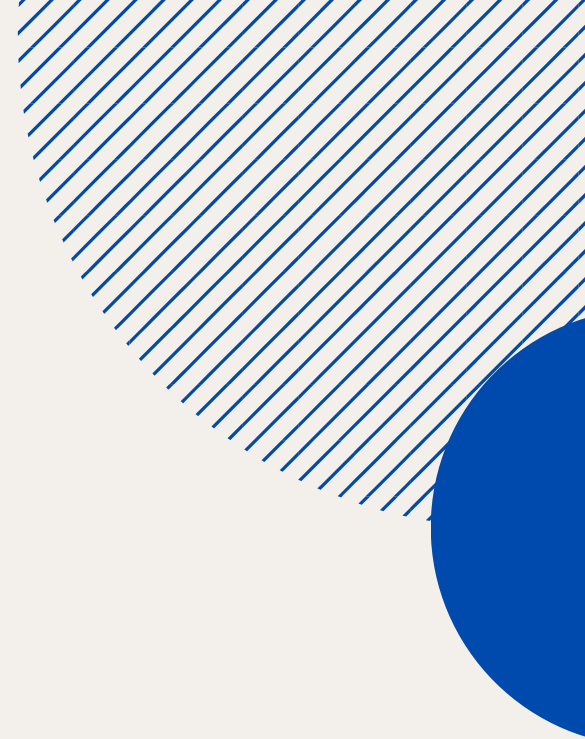
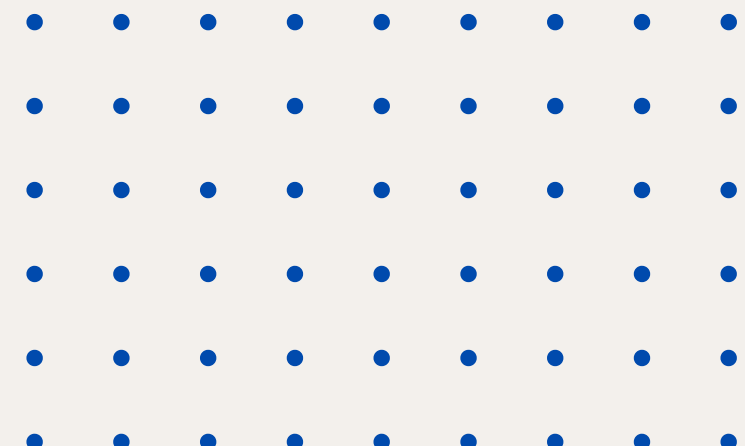


PROBLEM STATEMENT

Water Shortage



PROBLEM STATEMENT



AquaTally

Data-Driven Smart Water Monitor

C_H2O

Kueh Tze Shuen
Chai Hong Jie
Ivy Kuan Yen Ting
Houng Jun Hong

**Count Every Drop,
Make Every Drop Count**

