

# PLAN OF ACTION | RIVER SCAN CHALLENGE

TEAM NAME : Water Warriors

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## Background of the Study

The problems caused by the widespread pollution in major rivers that courses through Cebu City and Mandaue City has raised environmental and health concerns. Proposals have been planned, pitched, and considered in the hopes of revitalizing these rivers. These bodies of water are quite essential and the changes that occur on these rivers will highly affect the ecosystem and the lives of the communities around it. The students from both the Netherlands and the Philippines are participating in order to help resolve and determine solutions for these environmental concerns and issues. However, due to the scope and complexity of this project, the chosen river, Butuanon River, was divided into multiple areas for each team to survey and study. The team is given the task to address the issues concerning the pollution, particularly, in the midstream area of the Butuanon River. This project will help provide solutions for the rehabilitation and rejuvenation of these rivers and creeks of Cebu City and Mandaue City. This is a collaboration of students from the Rotterdam University of Applied Sciences and Hanze University and from the University of San Carlos. It is also conducted in collaboration with the Cebu City Environment and Natural Resources Office (CENRO) and other participating LGU's in Cebu City and Mandaue City.

## Problem Statement

The Butuanon River, a river that traverses from the mountainous areas of Cebu City down to the urbanized barangays in Mandaue City is facing severe pollution due to the several activities like untreated wastewater discharge from commercial and industrial establishments, solid waste disposal and domestic wastewater disposal. This pollution greatly affects the water quality of the river which poses risks to the health and safety of the communities. In addition, the river has witnessed increasing urbanization where rapid urbanization caused the river to deteriorate throughout the years.

## Objectives

One of the major problems of bodies of water is water pollution which affects water quality, and the Butuanon River in Mandaue City is no exception. This project aims to identify measures to restore and improve the Butuanon River's water quality. Specifically, the project aims to:

- Identify and analyze the source of water pollution whether it is from industrial discharges, agricultural runoff, household wastes, urban wastes, human activities, another potential sources
- Involve the community that are within the Butuanon River's reach through an interview to identify problems that they have experienced from the deterioration of the river's water quality
- Identify the effects of the river's pollution on human, terrestrial, and animal life near the river, and other possible effects it causes
- Create solutions to mitigate water pollution and improve the river's water quality

- Involve the community nearby to raise awareness and to maintain the water quality of the river

## **Global question**

The following main questions presented are to be answered to solve the issues in this project:

1. How to create awareness for the residents in the surrounding area?
2. What are the methods to be used to improve the water quality of the river?
3. How will the government provide the funds for the improvement of the river?
4. What methods can be used to help improve the communication between the locals and the government??

## ACTION PLAN

Presented in the Action Plan below is the schedule of task and the target dates of completion for each. The following are as shown:

| <b>GOAL 1</b>         | <b>ACTION STEP DESCRIPTIONS</b>                                   | <b>RESPONSIBLE</b>              | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|-----------------------|---|---------------------------------|----------------------|-----------------|--------------------------|
| Creation of Team Logo | Arrange a meeting with the team to discuss and make the team logo | Alezandra, Lisandra, Dby, Uriel | April 11, 2024       | April 14, 2024  |                          |

| <b>GOAL 2</b>             | <b>ACTION STEP DESCRIPTIONS</b>  | <b>RESPONSIBLE</b> | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|---------------------------|--|--------------------|----------------------|-----------------|--------------------------|
| Creation of Community Map | <p>Create a community map with the community members. Indicate positive characteristics of the community and problems identified during the discussion.</p> <p>Write a one-paper with the main findings about the vulnerabilities of the community and climate-related vulnerabilities in the community.</p> |                    |                      | April 24, 2024  |                          |

| <b>GOAL 3</b>            | <b>ACTION STEP DESCRIPTIONS</b>                                    | <b>RESPONSIBLE</b> | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|--------------------------|--|--------------------|----------------------|-----------------|--------------------------|
| ArcGIS StoryMap Creation | Identify the problems in the assigned community, research relevant |                    |                      | April 24, 2024  |                          |

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|  | data, and create an ArcGIS story map to raise awareness and propose potential solutions |  |  |  |  |
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| GOAL 4                               | ACTION STEP DESCRIPTIONS  | RESPONSIBLE | DATE TO BEGIN | DUE DATE       | PERCENT COMPLETED |
|--------------------------------------|---|-------------|---------------|----------------|-------------------|
| Research Report / Practical Solution | <p>Investigate a section of the river; upstream, midstream, or downstream. Measure different parameters and upload the result in the team's Google Drive Folder</p> <p>Work on a detailed solution with the community and present an innovative solution for a problem that you have identified.</p> <p>Submit a group paper with a maximum of ten (10) pages for the research report and another ten (10) pages for the practical solutions which are proposed for implementation to the local government.</p> |             |               | April 24, 2024 |                   |

| GOAL 5 | ACTION STEP | RESPONSIBLE | DATE TO | DUE DATE | PERCENT |
|--------|-------------|-------------|---------|----------|---------|
|--------|-------------|-------------|---------|----------|---------|

|        | <b>DESCRIPTIONS</b>  |  | <b>BEGIN</b> |                | <b>COMPLETED</b> |
|--------|--|--|--------------|----------------|------------------|
| Poster | Create a poster that visualizes the problem and an innovative solution |  |              | April 24, 2024 |                  |

| <b>GOAL 6</b>            | <b>ACTION STEP DESCRIPTIONS</b>   | <b>RESPONSIBLE</b> | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|--------------------------|---|--------------------|----------------------|-----------------|--------------------------|
| Short three-minute video | Create a 3-minute video that visualizes the local pollution, measurement process and the results of the measurements through a compilation of photos and video clips. |                    |                      | April 24, 2024  |                          |

| <b>GOAL 7</b>         | <b>ACTION STEP DESCRIPTIONS</b>  | <b>RESPONSIBLE</b> | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|-----------------------|--|--------------------|----------------------|-----------------|--------------------------|
| Maximum Flood Heights | <p>Talk with local residents and ask them about the water levels during extreme floods.</p> <p>Ask local residents to indicate maximum flood heights on a bridge, or other infrastructures and indicate absolute flood heights</p> <p>Measure the height of the location and</p> |                    |                      | April 24, 2024  |                          |

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|  | indicate how high that location is above the river embankment and take photos. |  |  |  |  |
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| <b>GOAL 8</b>   | <b>ACTION STEP DESCRIPTIONS</b>   | <b>RESPONSIBLE</b> | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|-----------------|---|--------------------|----------------------|-----------------|--------------------------|
| Picture Gallery | <p>Taking different types of pictures during the fieldwork</p> <p>Uploading these pictures to designated team's Gdrive folder</p> |                    |                      | April 24, 2024  |                          |

| <b>GOAL 9</b>                   | <b>ACTION STEP DESCRIPTIONS</b>   | <b>RESPONSIBLE</b> | <b>DATE TO BEGIN</b> | <b>DUE DATE</b> | <b>PERCENT COMPLETED</b> |
|---------------------------------|---|--------------------|----------------------|-----------------|--------------------------|
| Web-based Mapping: Climate Scan | Creating a project site on ClimateScan with all the materials of the group. |                    |                      | April 24, 2024  |                          |