



TERMS OF REFERENCE – Dutch Risk Reduction and Surge Support (DRRS) – Phase 2: Deployment to the Province of Negros Occidental, Republic of the Philippines, 2026

Introduction

DRRS is looking for a **Hydrologist/ flood risk expert** and a **Junior data scientist** to support a collaboration – including a visit May/June 2026- with the Province of Negros Occidental (Philippines). The aim of this visit is to support the province in *preparing* for a province-wide flood hazard and impact-based risk assessment.

Background

The Philippines has recently endured a series of severe weather events, including Typhoons Tino and Uwan, followed most recently by tropical storm Verbena. These typhoons brought unprecedented rainfall and widespread flooding across several provinces, with Negros Occidental among the hardest hit. Major parts of Bacolod City and surrounding municipalities were submerged, leading to large-scale displacement, significant damage to critical infrastructure, and disruptions to essential public services.

Beyond the physical destruction, the economic and livelihood impacts have been substantial. Flooding severely affected homes, farmlands, local businesses, and transport networks. Many communities, already vulnerable from past disasters, now face increased hardship, with prolonged recovery needs in both urban and rural areas. The cumulative effect of these recurring disasters underscores the urgent necessity for strengthened risk reduction planning and resilient infrastructure.

The Province of Negros Occidental has a strong Disaster Risk Reduction system in place, but the increasing frequency of disasters has exposed several technical gaps, particularly in flood modelling and risk analysis during high-impact events. The Safe Water Team of the Governor's Office has therefore requested support from the DRRS program for a province-wide flood risk and impact-based assessment, improved flood hazard mapping, enhancements to the early warning system, real-time monitoring of weather and rainfall, and capacity building with knowledge transfer. For the initial stages of the scoping study, it has been decided to focus on improved flood hazard mapping and impact-based modelling.

Expected output

a. Scope and objectives

RVO is seeking a small team of experts to support the team leader in a potential deployment. The objective is to build on the outcomes of the initial scoping study, as well as insights gained from discussions with provincial stakeholders on disaster risk management and resilience building.

The visit (May/June) will focus on capacity exchange related to exposure analysis, flood risk mapping, and impact modelling—both through hands-on engagement and the sharing of best practices. This aims to: (1) strengthen the knowledge base at the provincial level, and (2) identify the key components required to develop Terms of Reference (ToR) for a follow-up project on a province-wide, hazard- and impact-based flood risk assessment.

b. Activities by DRRS team

Phase 1: remote scoping study (3 days) - COMPLETED

Phase 2: Visit to Negros Occidental



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1. Verify institutional capacity, data availability, and DRR practices, including evacuation procedures and communication at provincial and LGU levels through stakeholder consultations.
2. Review (and potentially update) current flood models and review historical disaster records, in collaboration with the local university.
3. Facilitate stakeholder meetings with the Governor’s Office, EKN Manila, and other relevant stakeholders.
4. Carry-out hands-on improvement of the existing GIS-based datasets to better map exposure of assets and populations, including mapping of upper river basins, critical infrastructure (roads, bridges, rivers), and building footprints using automated tools where possible.
5. Prepare elements for a TOR in co-creation with the province for a follow-up study to be co-financed by them, other donors or stakeholders. Based on the current information this could be a province-wide flood hazard and impact-based risk assessment, including updating hydrological and exposure data, and revising and improving the existing and available flood or hydrological models. Whether it will be a revision or a new model will depend on the quality assessment of the existing models. The impact-based risk assessment will help PGNO to identify areas with the highest human and economic risk and prioritize future risk reduction measures or interventions.

c. Deliverables after deployment

1. A concise report for RVO, with clear findings, conclusions, and recommendations.
2. An overview of the required elements for the ToR
3. Analysis of the existing and available flood / hydrological models
4. Follow up call to present the findings with the Governor’s Office, EKN Manila, RVO and other relevant stakeholders.

With regards to the report, the following standards are maintained:

- The findings and recommendations shall be presented in a reader friendly and professional manner, and may include illustrations and photos.
- The report will be based on the standard DRRS-Team format/lay-out, which will be made available. This standard is a starting point and it is recommended to make any necessary changes to accommodate local needs as identified by the team.
- Peer review using the DRRS Think Tank is to be part of the process.
- The report will be written in the English language.
- The report shall be concise and include a summary.

d. Required expertise

Role	Expertise
Team Leader (position filled)	Position filled
Hydrologist/ flood risk expert	<i>Minimum 5-7 years of progressively responsible experience in hydrological modeling, flood risk assessment, and water resources management, with</i>



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<p>(OPEN)</p>	<p><i>demonstrated fieldwork capabilities in diverse geographic and climatic contexts.</i></p> <p>Flood Hazard & Risk Mapping: Advanced proficiency in developing flood hazard maps using hydraulic modeling software (e.g., HEC-RAS, MIKE FLOOD, InfoWorks ICM) and integrating topographic, hydrological, and land-use data to assess flood extents, depths, and velocities across various return periods.</p> <p>Hydrological Data Analysis: Expertise in the interpolation and extrapolation of hydrological data, including rainfall, river discharge, groundwater levels, and sediment transport. Skilled in applying statistical methods (e.g., frequency analysis, trend analysis, regression models) to fill data gaps and extend time series for ungauged or poorly monitored catchments.</p> <p>Catchment Hydrology: Deep understanding of watershed processes, runoff generation mechanisms, and the impact of land-use change and climate variability on hydrological regimes. Experience in rainfall-runoff modeling and flood forecasting systems.</p> <p>Risk Assessment Frameworks: Ability to conduct comprehensive flood risk assessments by integrating hazard, exposure, and vulnerability data. Proficient in developing risk matrices, damage-probability curves, and cost-benefit analyses to inform resilience planning and infrastructure investment decisions.</p>
<p>Junior data scientist (OPEN)</p>	<p><i>Maximum 3 years of experience in flood risk mapping, geospatial data processing (drone imagery), acquisition of field data and working with different sets of data. Feel free to apply even if you do not match all of these criteria, we look forward working with you!</i></p> <p>Geospatial Data Processing: Familiarity in processing drone-captured imagery (orthomosaics, point clouds, and digital elevation models) using GIS software (e.g., QGIS, ArcGIS) and photogrammetry tools (e.g., Pix4D or Agisoft).</p> <p>Excellent (intercultural) communication skills: The candidate is expected to productively work with local experts and both understand their needs as well as bring across new ideas.</p> <p>Infrastructure Mapping: Ability to identify, vectorize, and categorize critical infrastructure (e.g., bridges, embankments, drainage systems) from high-resolution aerial datasets to support spatial risk assessments.</p> <p>Flood Risk Modeling: Understanding of hydrological and hydraulic principles to assist in mapping flood-prone areas, calculating inundation</p>



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	<p>extents, and integrating field-collected data into flood susceptibility models.</p> <p>Data Management & Visualization: Skills in managing large spatial datasets, ensuring data integrity, and creating clear, actionable thematic maps and dashboards for non-technical stakeholders.</p> <p>Technical Tools: Familiarity with drone mission planning software, basic scripting for data automation (e.g., Python, R), and experience with data collection mobile platforms (e.g., Qfield/KoboToolbox/ODK).</p> <p>Experience in working in lower-middle income countries is an advantage.</p>
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General requirements applicable to the entire team:

- Able to rapidly assess situations and data and provide conceptual and practical solutions.
- Experience in and knowledge of the local/regional context.
- Ability to be a relevant sparring partner for the local officials and to provide feedback on the existing plans and ideas, as well as provide input for suitable alternatives.
- Excellent presentation and reporting skills in English.
- Good communication skills in English.

Timing

The maximum number of (on site) working days for phase 2 (visit): 7-10 days.

Budget

The maximum budget for this deployment is conform DRRS tariffs.