Designing a rural development project in Yemen

Overcoming COVID-19 and conflict constraints using GIS

Geospatial analysis made it possible to design a new rural development project in Yemen in a time when it was not feasible to visit the country because of COVID-19 and security issues. The geospatial assessment identified intervention areas and preliminary response options for the Rural Livelihood Development Project (RLDP), an initiative to improve the livelihoods of 26,000 poor households by increasing their agricultural production and building their resilience to climate change.

GIS study

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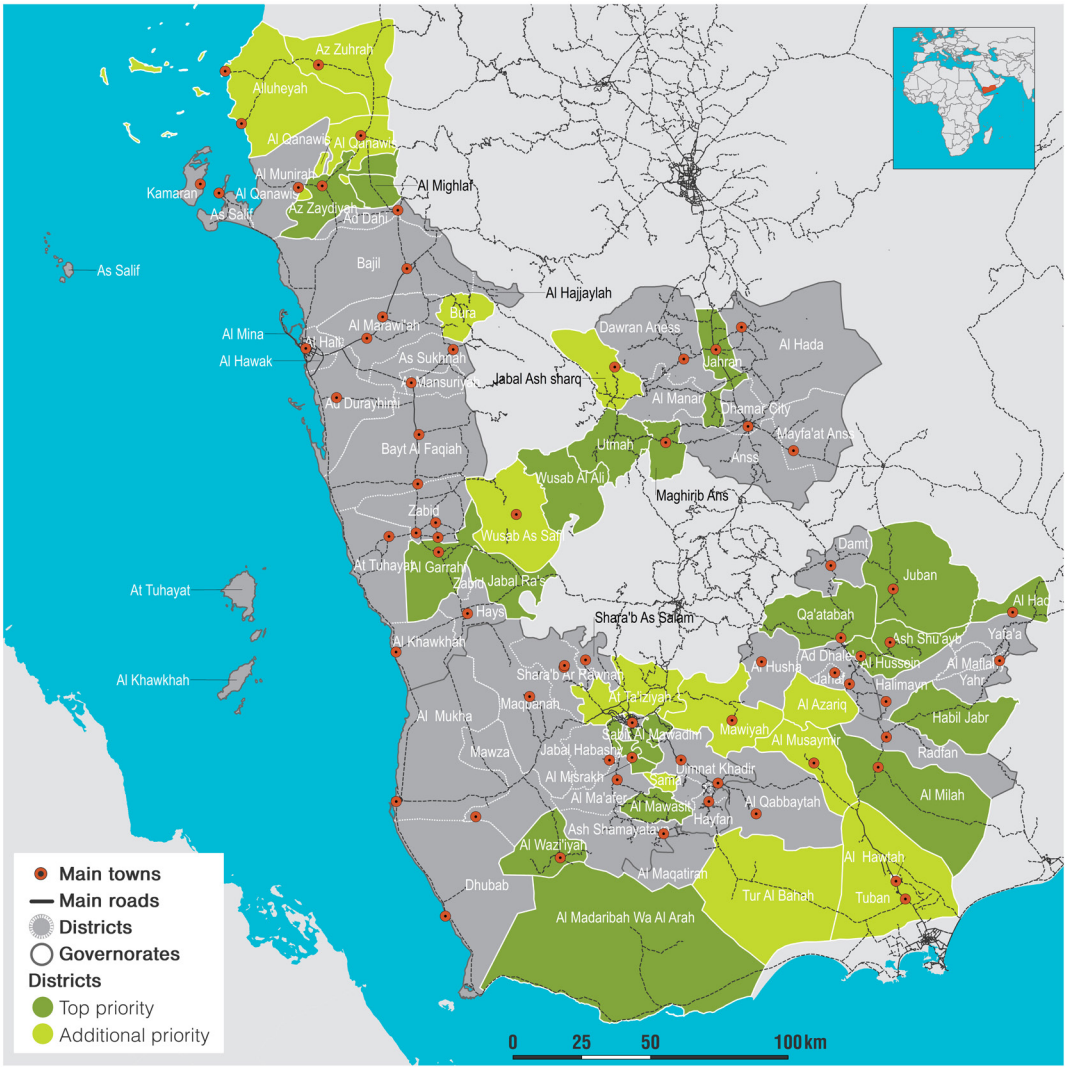

Figure 1. Priority districts of the Rural Livelihood Development Project.

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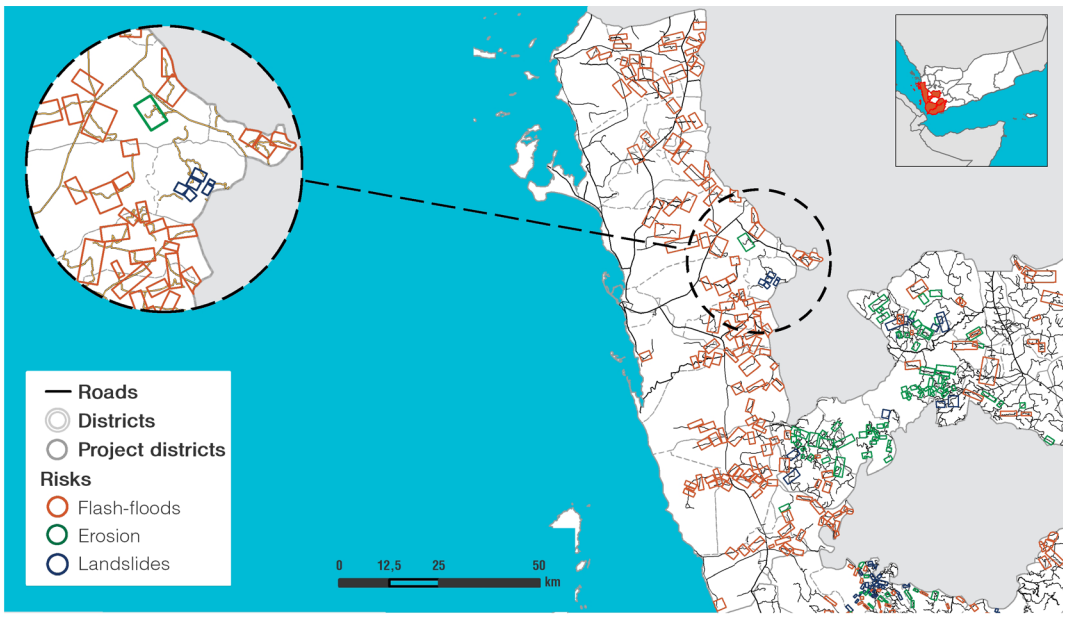

Figure 2. Response analysis for climate-resilience interventions suggests locations for measures to control and prevent flash floods, erosion and landslides.

Yemen, one of the Arab world's poorest countries, has been in a state of civil war since 2014. The conflict has had devastating effects on the rural population, which faces acute food insecurity and extreme poverty.

The RLDP, a US$20 million project funded by IFAD and the Global Environment Facility, was designed in March and April 2020, at the height of the COVID-19 pandemic. **Travel at this time was impossible**. International staff and local experts had to design the project without visiting the field or meeting beneficiaries. The project design relied heavily on the analysis of spatial information and Earth observation data to identify the most vulnerable districts and villages to intervene in and to prioritize the intervention options.

The IFAD design team was supported by the Food and Agriculture Organization of the United Nations (FAO) Country Office, Yemen's Social Fund for Development, and an experienced national consultant who had **"ears on the ground"**. Geospatial analysis expertise was provided by the World Food Programme (WFP) through the IFAD-WFP Joint Climate Analysis Partnership that has been supporting IFAD operations since 2014.

Three **risk indices** were calculated to help with selection of intervention areas using the following spatial datasets:

- **Climate risk:** Rainfall variability and trend, dry-spell trend, maximum and minimum temperature trend;
- **Environmental risk:** Erosion, flooding and landslides;
- **Nutrition vulnerability** e.g., from the Integrated Food Security Phase Classification [IPC] and Global Acute Malnutrition measure.

The risk indices were combined into a map showing **priority districts** (see figure 1) and a long list of 34 potential districts. The selection of districts also considered population density, previous investments by IFAD, the current security situation, and the presence of other agency programmes. Having a long list of districts gives the project flexibility in case the security situation changes and the focus has to be set on other districts. The final selection of districts was undertaken by the IFAD design team and the FAO Country Office.

Geospatial analysis was also used to identify the appropriate **climate-resilience measures** for over 4,000 villages. These were grouped into village units, each containing around four villages or around 100,000 inhabitants. GIS analysis and maps (see figure 2) suggested where to promote small-scale irrigation schemes and flood-based agriculture in order to mitigate flash floods, and where the project should focus on soil and water conservation measures to prevent soil erosion and landslides.