IWMI enhances farmers' climate resilience through flood risk reduction maps for the Ayeyarwaddy Delta
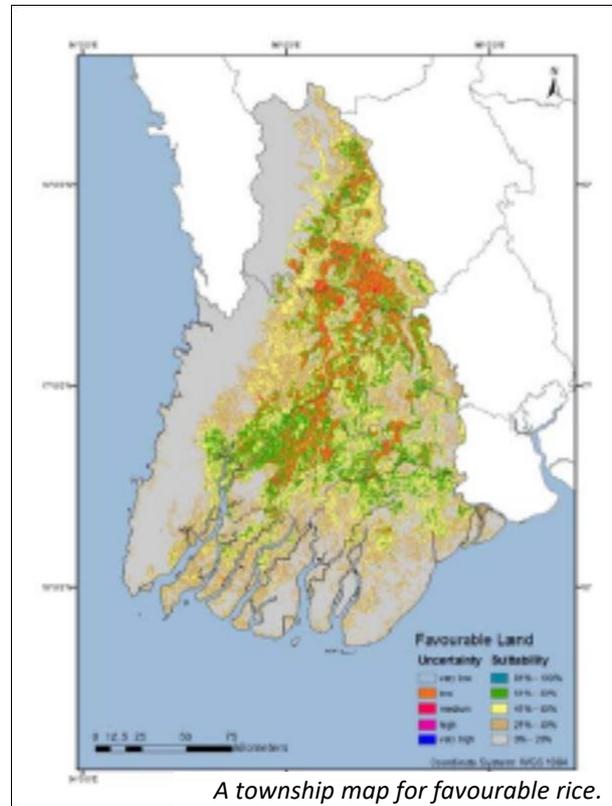
According to the Department of Agriculture (DoA), floods cause the loss of 350,000 tons of rice in the Ayeyarwaddy Delta in most years, affecting over 62,000 farmers and costing economic losses for farmers between USD 16 million and USD 22 million. Floods are the primary cause of crop losses in the delta, owing to significant changes in flood behaviour due to a combination of altered rainfall patterns and changes in flows due to irrigation and other infrastructure in the landscape. The current maps originating from several decades ago, and a limited capacities in the use of geo-spatial data collection and analysis have limited the DoA's ability to adopt adaptive responses.

A township map for favourable rice.

The maps developed by IWMI in close collaboration with the DoA's Department of Land Use Division (LUD) address this problem by indicating areas suitable (and less suitable) for three categories of rice (favourable/modern, deep water and flooded) in each of the 26 townships in the delta. Based on 30-year rainfall data, salinity, soil, slope and other data, three maps were developed for each township: one each for the three rice categories. Each map provides a suitability scale that indicates where in each township suitability is high or low for that particular rice category (Figure 1). The scale, divided into five blocs starting at 100-80% and ending with 20-0% suitability, reflects the level of certainty/uncertainty provided by the underlying data. Lower suitability could for example reflect areas where floods show significant variation from one year to another.

In addition to enabling DoA township extension staff to help farmers better match their rice variety choices and planting times, the maps help the DoA estimate the total area in the delta suitable for each category of rice, depending on the suitability percentage chosen (e.g. 80-100% or 70-100%).

To facilitate the interpretation, application and updating of these maps, IWMI conducted presentations and several short theory and practical training events for all administrative levels within the DoA. These included the presentation of the maps to senior staff; training the DoA's geo-spatial staff on the architecture and operation of the model underlying the maps and both classroom and field-based training of staff from all 26 townships in the use of

DoA staff discussing the township maps with IWMI staff

KoboToolbox for geo-spatial data collection and in the interpretation and application of the maps at field level. The KoboToolbox training was supplemented by providing a GPS-enabled tablet to each township office, and together with the training, township staff were able to collect additional data for inclusion in the maps, which also helped ground-truth them.

These maps and the associated capacity building contribute simultaneously to the Agriculture Development Strategy 2018-2023 (ADS) and Myanmar Climate Change Adaptation Strategy 2018-2030 by supporting increased land-water productivity and in terms of Myanmar's staple crop, were adaptive cropping choices will also make cultivation more climate smart. The training and provision of the TABs also now enable DoA to collect geospatial data for a range of needs that was not possible before, thereby contributing to building foundational capacity for shifting to geo-spatial-assisted land use planning in the future.

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