De-Risk Southeast Asia

Applying seasonal climate forecasting and innovative insurance solutions to climate risk management in the agriculture sector in SE Asia
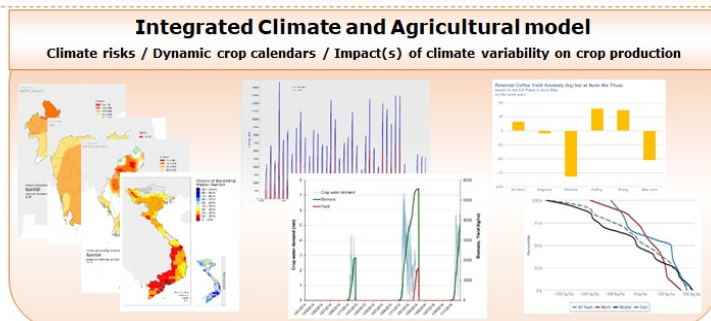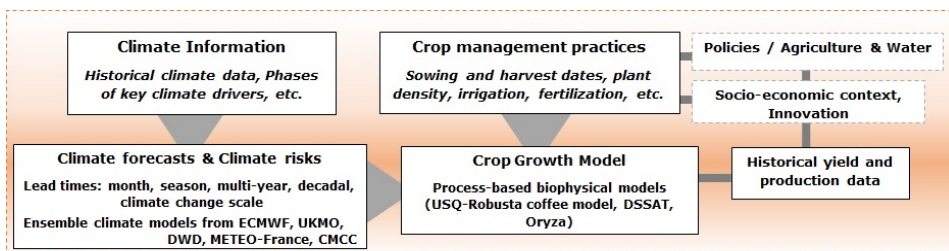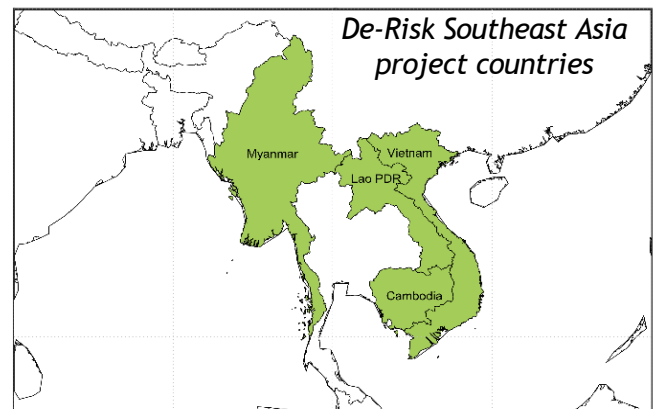
Targeted seasonal climate forecast systems, agricultural and water resource modelling

Work Package 3

The target countries for the De-Risk project are Myanmar, Lao PDR, Cambodia and Vietnam. This part of the project will develop a fully integrated climate forecasting-agricultural production modelling system, and associated decision support systems (DSS) and tools to assist with climate change adaptation within the De-Risk project countries.

As climate changes, climate risk is increasing

Climate change threatens the safety and wellbeing of millions of smallholder farmers, as well as the sustainability of agribusinesses throughout mainland Southeast Asia, as elsewhere.

De-Risk Southeast Asia project countries

Climate Information	Crop management practices	Policies / Agriculture & Water
Historical climate data, Phases of key climate drivers, etc.	*Sowing and harvest dates, plant density, irrigation, fertilization, etc.*	Socio-economic context, Innovation

Climate forecasts & Climate risks	Crop Growth Model	Historical yield and production data
Lead times: month, season, multi-year, decadal, climate change scale. Ensemble climate models from ECMWF, UKMO, DWD, METEO-France, CMCC	Process-based biophysical models (USQ-Robusta coffee model, DSSAT, Oryza)	

Integrated Climate and Agricultural model

Climate risks / Dynamic crop calendars / Impact(s) of climate variability on crop production

Integrated climate and agricultural models will assist in conducting scenario analysis related to changes in incentives, climate, and crop management practices on farm economics

Project aim: Developing targeted seasonal climate forecast systems, agricultural and water resource modelling, and associated integrated decision support systems and tools to assist with climate change adaptation

To be achieved through:

- Understanding the impacts of climate variability and change on crops using agricultural production and climate smart water simulation models (such as DSSAT) that have tested capability at field or regional scale

- Improving on-farm crop management practices, e.g. develop a best management practices (BMP) guideline based on climate information. This will include dynamic crop calendars, optimal fertilisation (time and amount) and water resource management

- Facilitating longer term climate change adaptation through the incremental shifting of farm management practices according to the seasonal and long term climate forecasts.

Expected outcomes

- Country and crop-specific improved operational seasonal climate – crop model forecasting system for the needs of the agricultural sector and decision makers
- Enhanced decision-support tool such as a BMP guideline for each selected crop and for each region
- Smallholder farmers, agri-business managers and consultants are trained in the development of climate risk management strategies and application of the decision support tools developed

Who is involved?

The World Meteorological Organisation (WMO) and implementing partners:

- University of Southern Queensland (USQ), Australia
- International Center for Tropical Agriculture (CIAT), Vietnam

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