Rice Landscapes and Climate Change
Options for mitigation in rice-based agroeosystems and the scaling-up of climate-smart rice cultivation technologies in Asia

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The Changing Landscape in Paddy Irrigation Systems
- The Case in Malaysia

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Looking for opportunities to upscale climate change impact mitigation and adaptation

- Need to identify common issues faced by multi-stakeholders
- Need a driver with good positional leverage on other stakeholders
- Need strong public participation
- Need to be able to assign “Political Value” to the initiatives
**Paddy Irrigation Development**

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- Essentially objectives remains consistent and will continue to be so:
  - Farmers’ social and economic well-being; inclusivity in economic development
  - Food Supply and Food Security
- The changes are and will be in water management
- **Political Value of Paddy Farmers will continue**
Case: The Northern Region of Peninsular Malaysia – MADA, Penang & Kerian Granaries

Northern Region Water Resources Management System
- A region that cannot sustain modern living without water resources development and good water management
- Three Granaries out of twelve (large scale paddy irrigation schemes that are special focus areas for paddy production) located in this region
- The MADA Water Management System – the largest and longest operating water management system
- Principally designed for the Agriculture Sector (Paddy Irrigation) i.e. single-use system
- Now a multi-use system responding to increasing demands from:
  - Other sectors – Energy, Water Supply, Tourism
  - Flood Management
  - Inter-State transboundary water management (Kedah, Perlis, Penang and Perak States)
- The 3 Granaries also face Land issues:
  - Increasing pressure to convert paddy areas to urban and other uses (e.g. proposed paddy lands for water storage system for the Water Supply Sector in Langkawi)
  - Timber logging industry in the water catchment areas (additional income for the State but affecting water resource yields)
Case: The Northern Region of Peninsular Malaysia – MADA, Penang & Kerian Granaries

Northern Region Water Resources Management System
- A similar landscape changes has happened in the Kerian Granary
- The system management has change from single-use to multi-use
  - From for single crop (paddy) to accommodating aquaculture (Arowana)
  - Increasing supply to the Water Supply Sector
  - Dam operations need to incorporate more frequent and severe floods
  - Dam operations also need to support the Tourism industry
  - Further dam storage increases limited by a railway causeway (Transportation Sector)
  - Proposal for a water transfer scheme from the hydroelectric dam (Energy Sector) to meet the increasing demands and to manage the existing water management constraints
The landscape changes could be attributed to the Water-Energy-Food Nexus influences

The WEF Nexus has transformed the water resources and irrigation landscape

- The single-use systems are now multi-use systems with increasing sectorial demands and pressures on common resources – water and land
- The Paddy Irrigation Managers have (unknowingly?) transformed from exclusively to service paddy farmers to one that serve diversified end-users within the irrigation scheme, across sectors and transboundary!
- This transformation is attracting the interest of multi stakeholders – a ripe situation and therefore opportunity for the landscape approach
- And in these cases, Agriculture (Irrigation) is in the “command” position
- Therefore Agriculture (Irrigation) could initiate and lead the landscape approach that includes incorporating climate change impact management and mitigation
- The WEF Nexus models could be the reference structure to activate and implement the initiative
Water-Energy-Food Nexus + Water Resources Model as a framework

• Provides a framework showing key sectors, stakeholders, areas and levels of responsibilities, and connectivity
• Could be used as a focal point for multi-stakeholder discussion and an integrated platform
The Changing Irrigation Landscape - Opportunities for Climate Smart Systems
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There is general agreement that public participation is a critical success factor.

But not much done.

Good to formalise.

The Irrigation Sector has Water User Groups (Associations).