| NEXUS Tools to Support Solarization of Agriculture in Asia and Africa |

| 18th April, 2023 | NEXUS Gains Talk |

SIP Sizing Tool for India and Beyond

From Prototype to Impact

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(... also on behalf of)

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IWMI International Water Management Institute | CGIAR | RESEARCH PROGRAM ON Water, Land and Ecosystems | ICAR | BISA Borlaug Institute for South Asia | german cooperation DEUTSCHE ZUSAMMENARBEIT | giz | IWMI-TATA Water Policy Program | CGIAR INITIATIVE ON NEXUS Gains

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Why ‘Right-Sizing’?

- Proper design of an irrigation system requires that the pumping system be matched to meet irrigation requirements
- PM-KUSUM: World’s largest ‘agri-solarization’ campaign
  - 2m standalone and 1.5m grid-connected SIPs are envisaged
  - These would entail significant public and private investments
- Right sizing to ensure *optimal utilization* and *avoid maladaptation*
- **Negligent under-sizing** and/or **unnecessary over-sizing** can be avoided with a simple but robust DSS
- SIP sizing tool (*Beta* version) designed to provide guidance for key stakeholders including farmers, SNA officials, bankers, field practitioners and solar developers

Key Features…

- Built in MS Excel for easy inter-operability
- Fully functional in *offline* mode
- Most user *inputs pre-loaded* using secondary data
- Users free to *over-ride default* options
- Suitable for *data-poor* as well as *data-rich* environments

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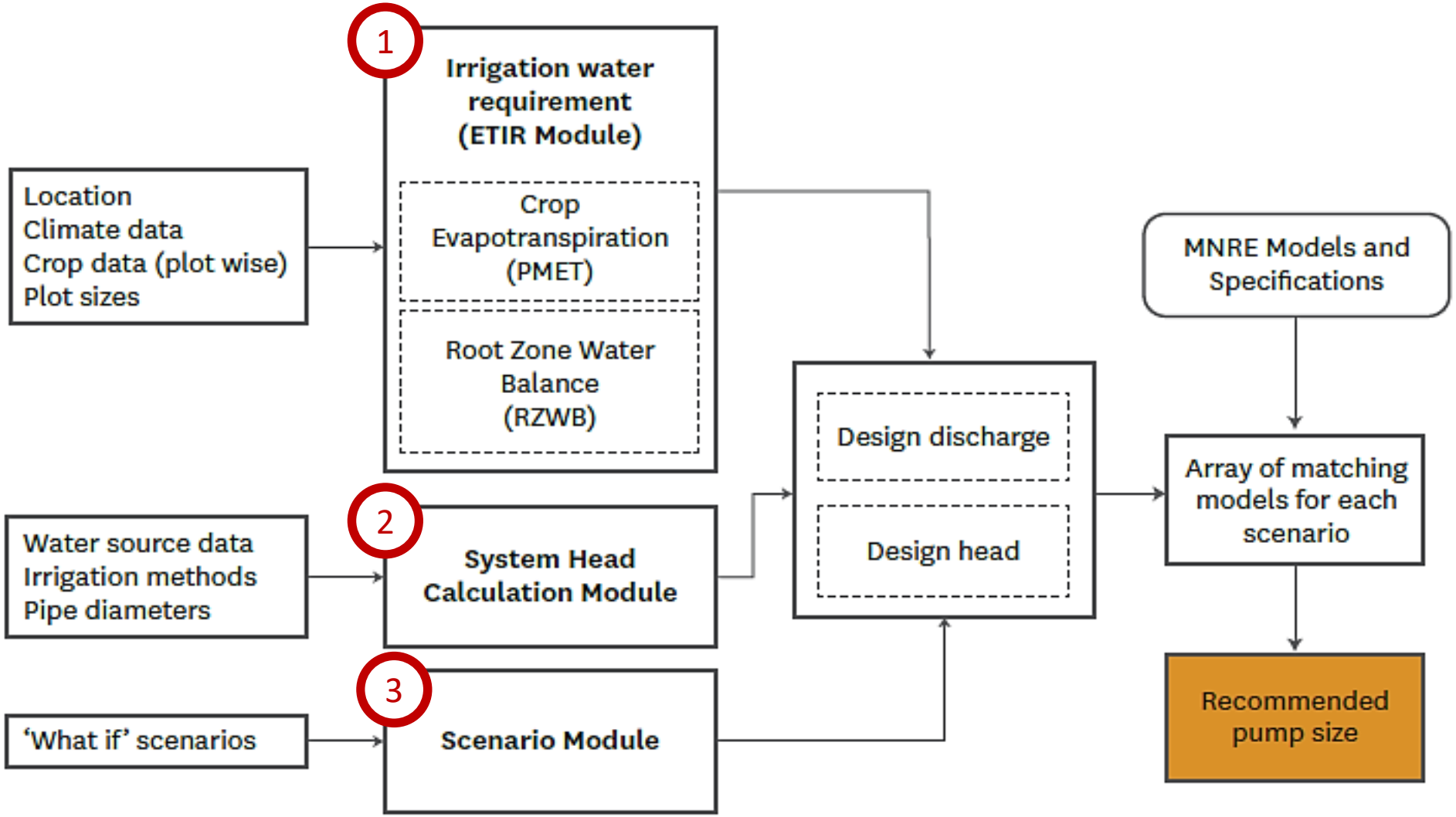
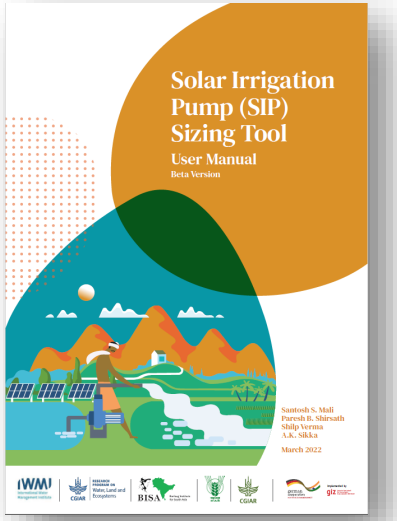
Tool Architecture…





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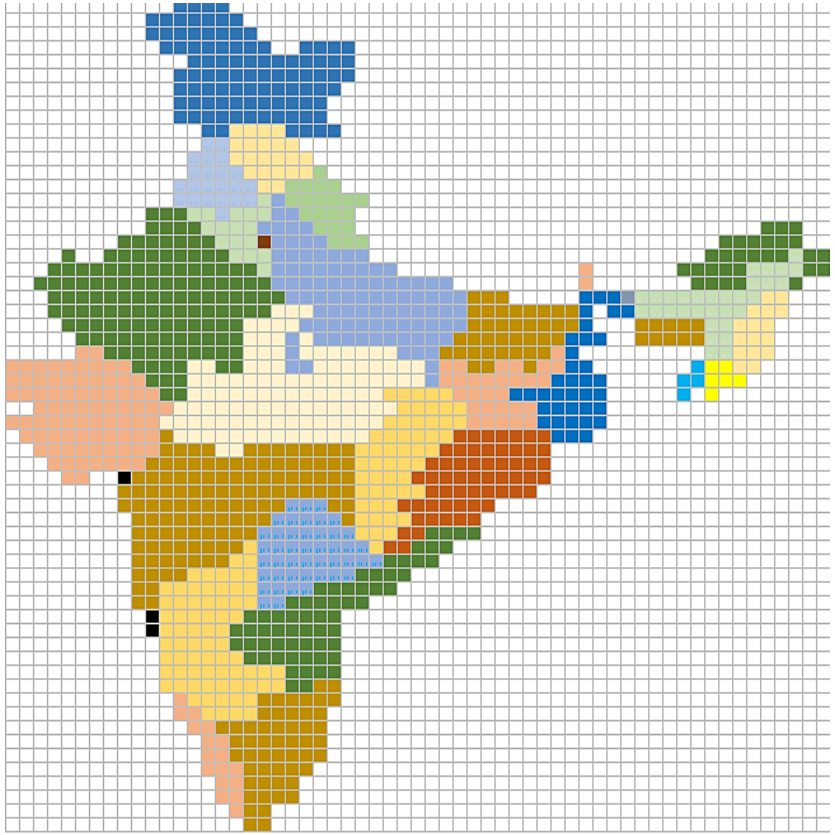
Data Requirements...

Data embedded in tool	
Soil	Soil texture, field capacity, wilting point, saturation percentage and infiltration rate, percolation rate
Spatial reference	Latitude, longitude, elevation
Climate	Maximum temperature, Minimum temperature, Rainfall
Irrigation system	Operating heads for different irrigation methods
User inputs	
Location	Selected directly on the map of India
Crop data	Type of crop, cropped area, planting date, planting month
Irrigation system	Type of water source (Well, pond, stream, river etc.), Depth to water table (in case of groundwater sources), Depth of the water level (in case of surface sources), Number of days allocated for irrigation in a month



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User Manual – *Beta* Version

- Context
- Architecture and design
- Data and sources
- Embedded equations, assumptions
  - Irrigation requirement
  - Discharge and head
  - Pump selection
  - Scenarios
- Step-by-step guide
- Using the tool

Tool + Manual on USB

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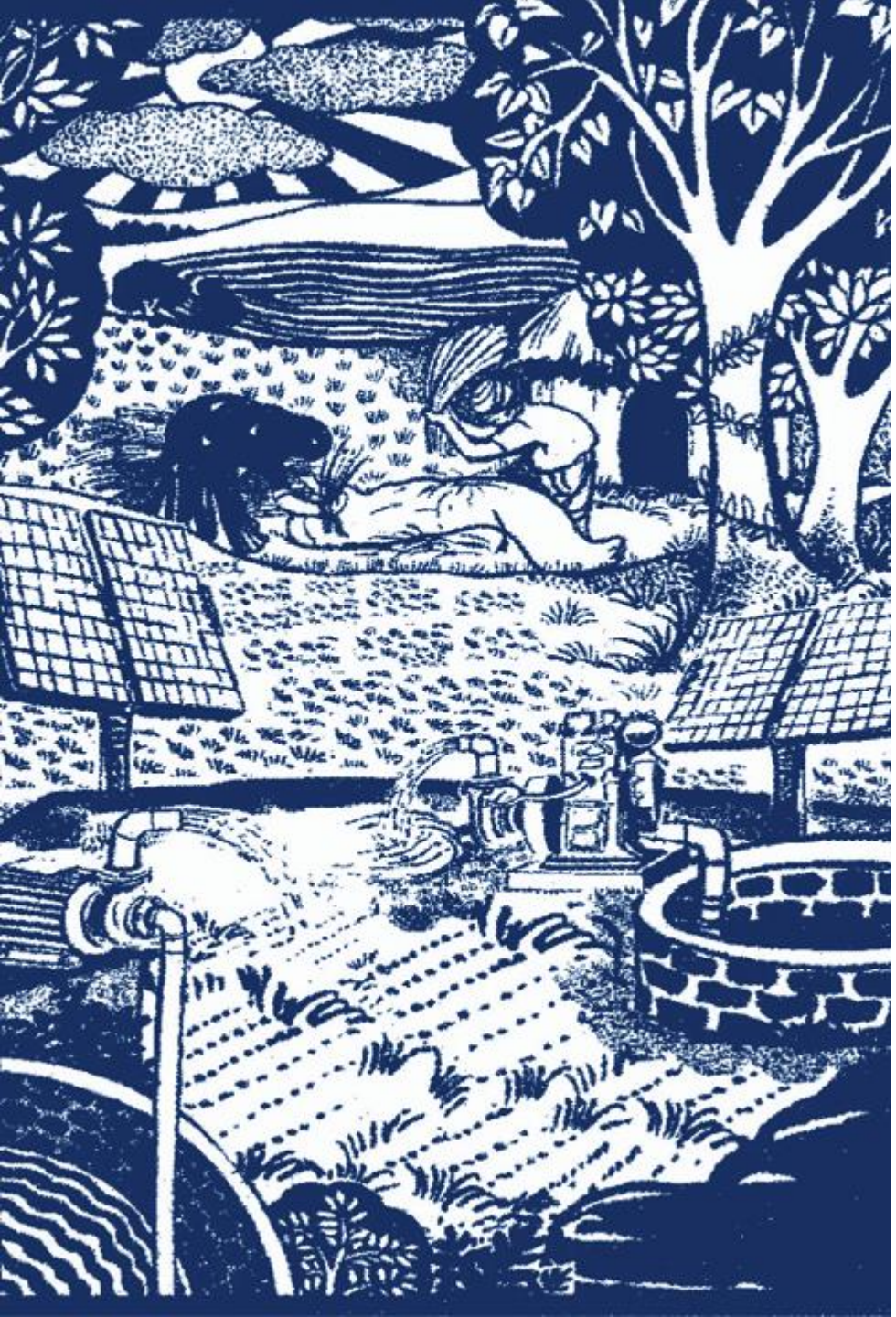

Next Steps…

- IWMI and ICAR committed to supporting further development and use of the tool in India
- … support MNRE and GIZ in development of Web version and Mobile application for PM-KUSUM
- SIP Sizing Tool as an 'Incremental Innovation' in NEXUS Gains
- Respond to demand for similar tool development in Nepal (with GIZ), Bangladesh and elsewhere…

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Thank You...