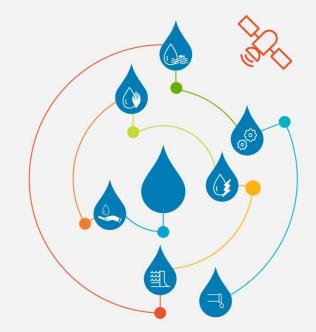
Variability of Field Scale Water Productivity in Different Crops as a Basis for Policy Making



Wim Bastiaanssen & Xueliang Cai IHE-Delft Water for Food Session, 2 October 2018

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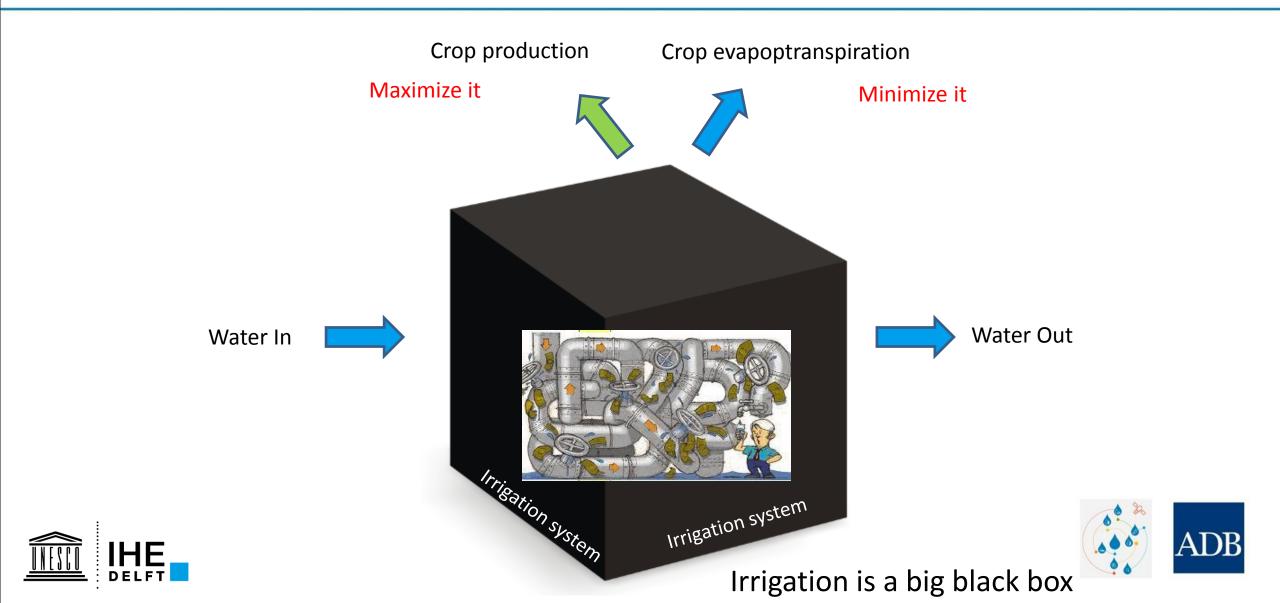
Problem description

- Water in the agricultural sector is not used optimally
- Significant within-irrigation system variability of crop production and water availability = NON Uniform practices
- Irrigators think in terms of water supply; water resources planners in terms of water consumption
- Applied water is rarely measured
- There is no WP reference for different agro-ecosystems, hence benchmarking is absent: WHEN IS IT GOOD ?

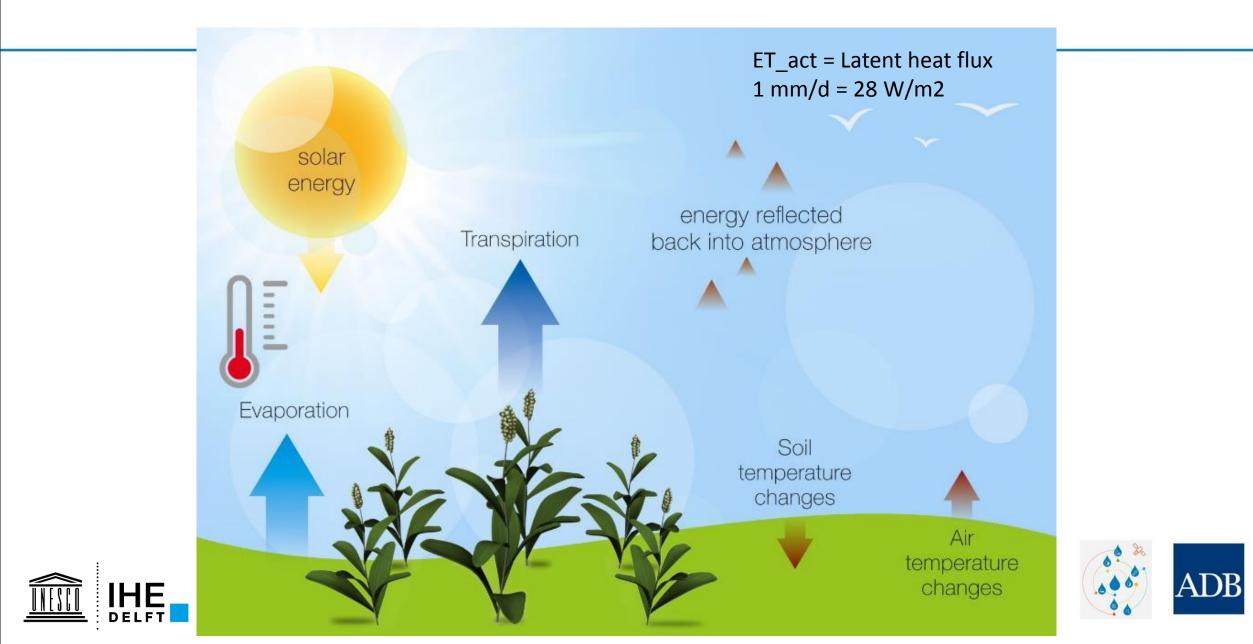




Let's focus on the impact of irrigation: food produced and water consumed



SEBAL energy balance model applied in 6 Asian irrigation systems



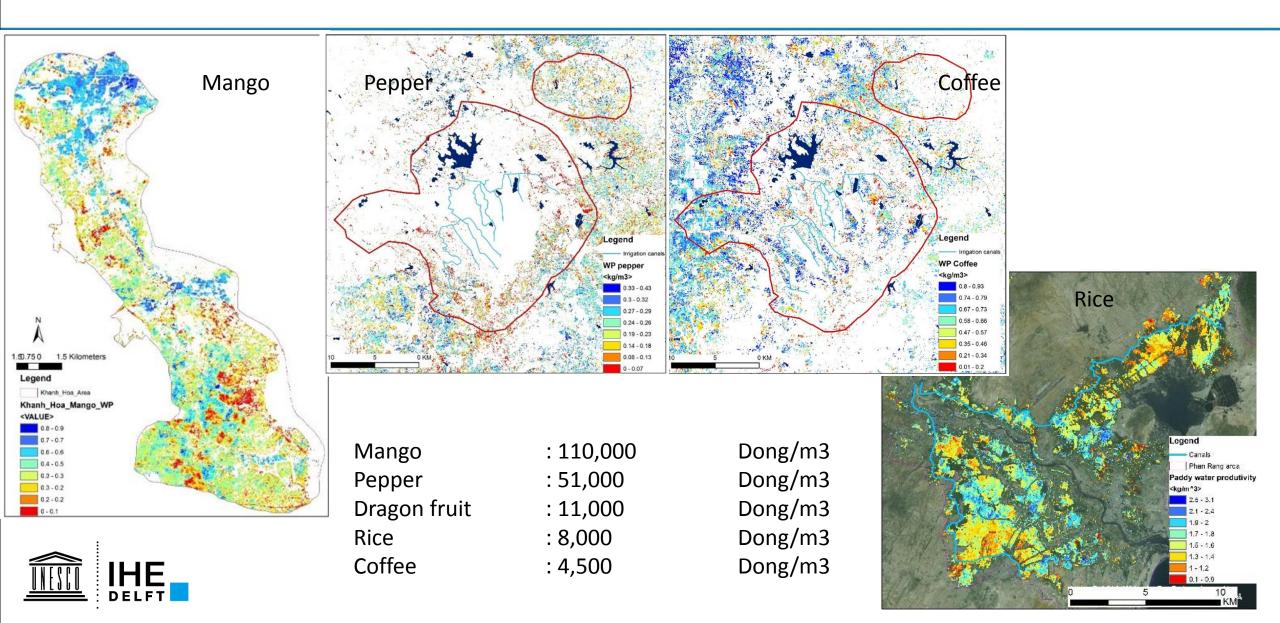
What did we do ?

- Six irrigation systems in Indonesia, Vietnam, India, Pakistan and Sri Lanka have been diagnosed with one standard remote sensing measurement and methodology
- Local agronomists inspect the crop types and the yield from ground surveys; Crop yield is thus calibrated
- Ranges of land (kg/ha) and water productivity (kg/m3) have been determined
- Gaps of local water productivities are determined
- One week training course on SEBAL modelling provided

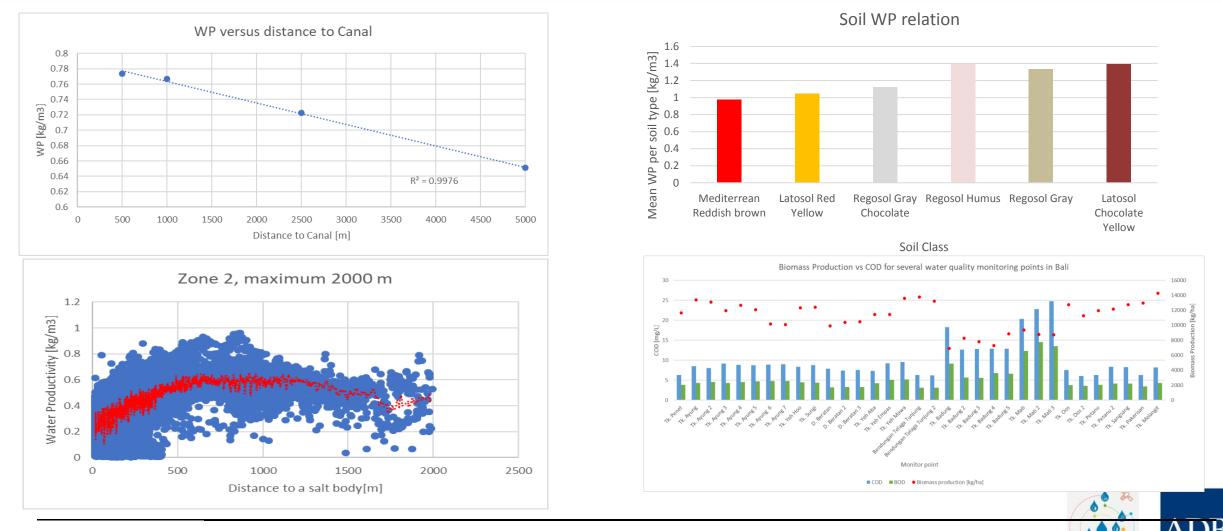




Water productivity for different crops (Vietnam)



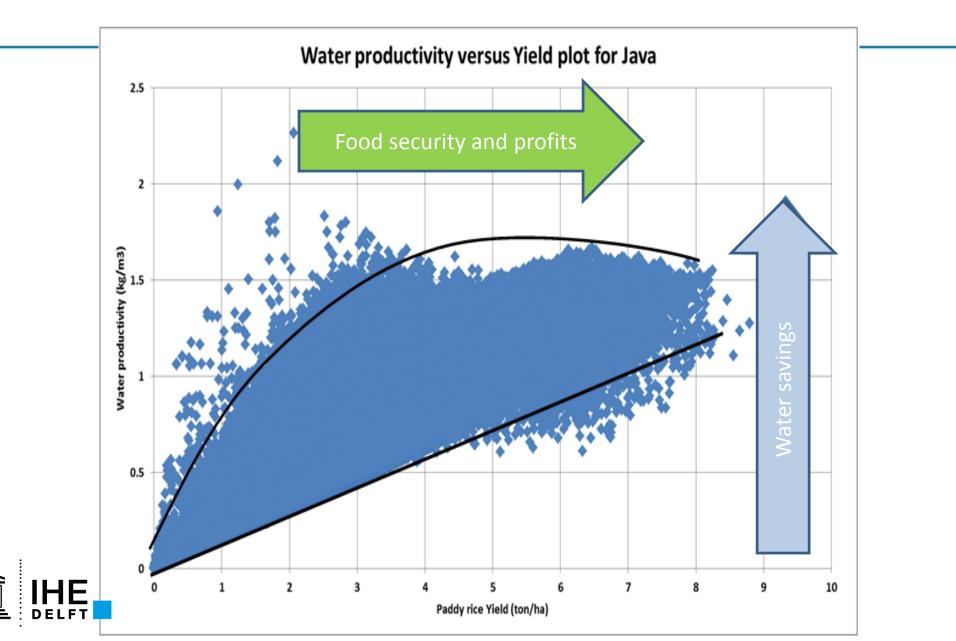
Explanatory factors for WP variability (Indonesia)





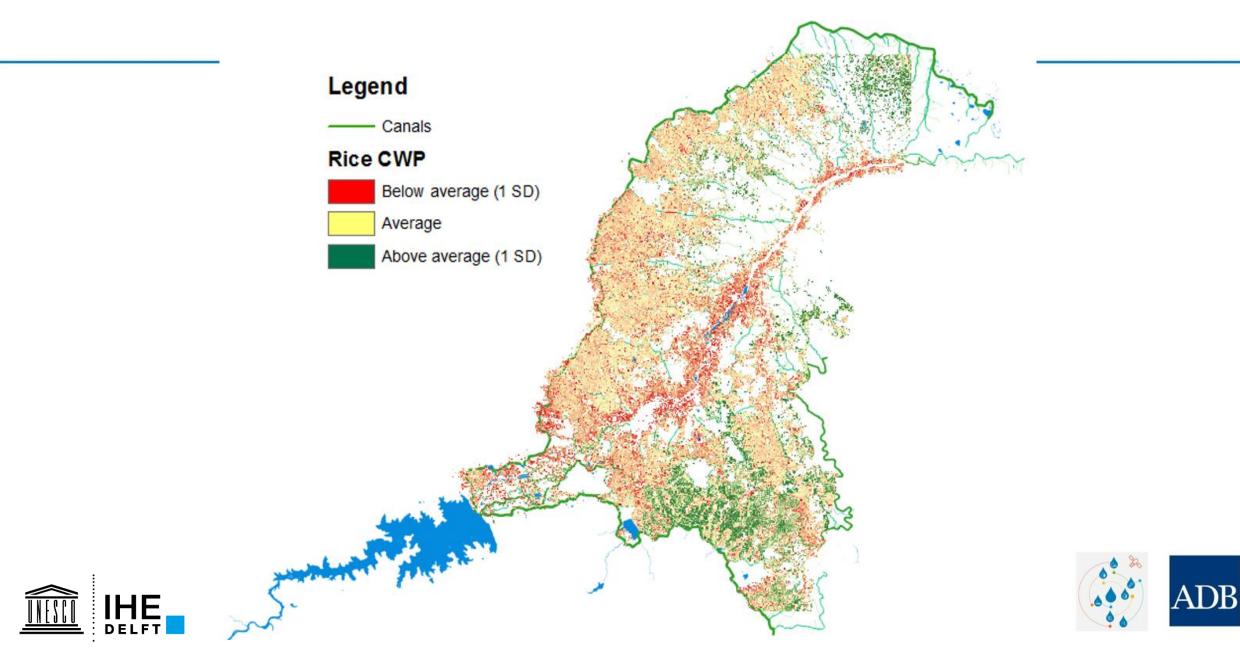
What is the target ?

Optimizing land and water productivity





Priority investment Karnataka (India)





Some observations

- Efficiency and productivity are confused; they are different concepts and policy makers confuse them
 – guarranteed. ADB staff is also on the learning curve
- Improving by **X** % as a project target across **Y years** should be introduced (is also Dutch policy)
- Baseline survey is crucial for ADB projects to evaluate success
- Local crop maps can only be made by local agronomists; this cannot be automated and upscaled

UNESCO-IHE Institute for Water Education					500 ADB		50 ADB
Water Productivity Assessment for Improve Irrigation Performance and Water Security i Asia-Pacific Region: Viet Nam	Water Productivity Assessment for Im Irrigation Performance and Water Secu Asia-Pacific Region: Indonesia	Water Productivity Assessment for Imp Irrigation Performance and Water Secur Asia-Pacific Region: Sri Lanka	Water Productivity Assessment for Improved Irrigation Performance and Water Security in Asia-Pacific Region: Pakistan	Water Productivity Assessment for Improv Irrigation Performance and Water Security Asia-Pacific Region: Karnataka, India		Water Productivity Assessment for Improved Irrigation Performance and Water Security in the Asia-Pacific Region: Madhya Pradesh, India	
Technical report	Technical report	Technical report	Technical report	Technical report		Technical report	
Xueliang Cai, Wim Bastiaanssen	X. Cai, G. Hoogmoet, S. Klop, E. Mulder, I. Ned van der Vliet, W. Bastiaanssen	X. Cai, W. Bastiaanssen	Xueliang Cai, Wim Bastiaanssen	Xueliang Cai, Wim Bastiaanssen		Xueliang Cai, Wim Bastiaanssen, Ram Kumar Saxena	
January 2017		February 2018	May 2018	March 2018		March 2018	
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Way forward

- Policy makers need to understand the merits of water productivity and develop policy accordingly
- Definition of target values of WP for zones with similar physical conditions and economic opportunities. The Governments of Indonesia and Cambodia want this. 5 and 10 year targets need to be developed
- India and Pakistan are also interested, but less concrete actions (at least for now)
- Reduce huge spatial variability of production and water consumption by community engagement and extension services using modern devices (after policy is set)
- Building Water Productivity online tool where users can upload crop maps of a particular region and WP assessments will be made. WaPOR for Africa and Near East is a nice example
- SDG 6.4 is difficult to implement; better seek for Water Productivity based on water consumed
- ADB staff and international consultants becoming confident to explain differences between efficiencies and WP and use it in RRP an DMF



