September 29th - 30th, 2016
Palmeraie Golf Palace,
Marrakesh

INITIATIVE AAA
ADAPTATION DE L'AGRICULTURE AFRICAINE

MARRAKECH
COP22|2016|CMP12
UN CLIMATE CHANGE CONFERENCE

29 - 30 septembre 2016
Palmeraie Golf Palace,
Marrakech

HIGH-LEVEL MEETING ON THE INITIATIVE FOR THE ADAPTATION OF AFRICAN AGRICULTURE TO CLIMATE CHANGE "AAA"

RENCONTRE DE HAUT NIVEAU SUR L'INITIATIVE POUR L'ADAPTATION DE L'AGRICULTURE AFRICAINE AUX CHANGEMENTS CLIMATIQUES "AAA"

JEREMY BIRD

Director General of the International Water Management Institute (Colombo, Sri Lanka)

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ADAPTATION DE L'AGRICULTURE AFRICAINE

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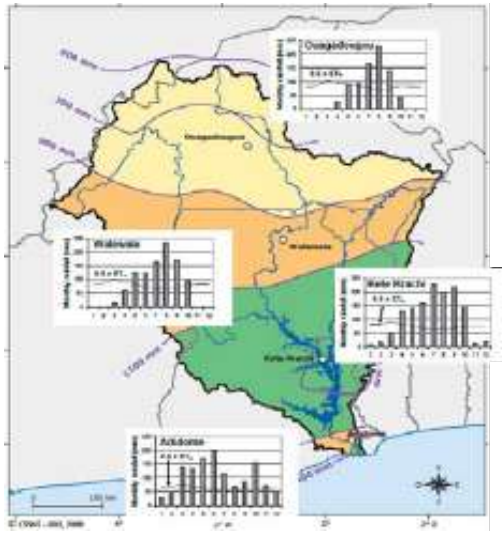
Adapt and Mitigate: Examples from IWMI's work on water related climate challenges in Africa

Jeremy Bird

Marrakech,
29 September 2016

Agricultural livelihoods and climate change

- 62% of population in SSA is reliant on agriculture for their livelihoods
- ~ 80% are smallholders and a large proportion women due to urban male migration
- Production is currently low, dependent on variable rainfall leading to high levels of vulnerability (e.g. 80% in West Africa)
- Land degradation is significant compromising future productive capacity and ecosystem services
- Investment in agriculture can address multiple SDGs (food, nutrition, poverty, etc.)

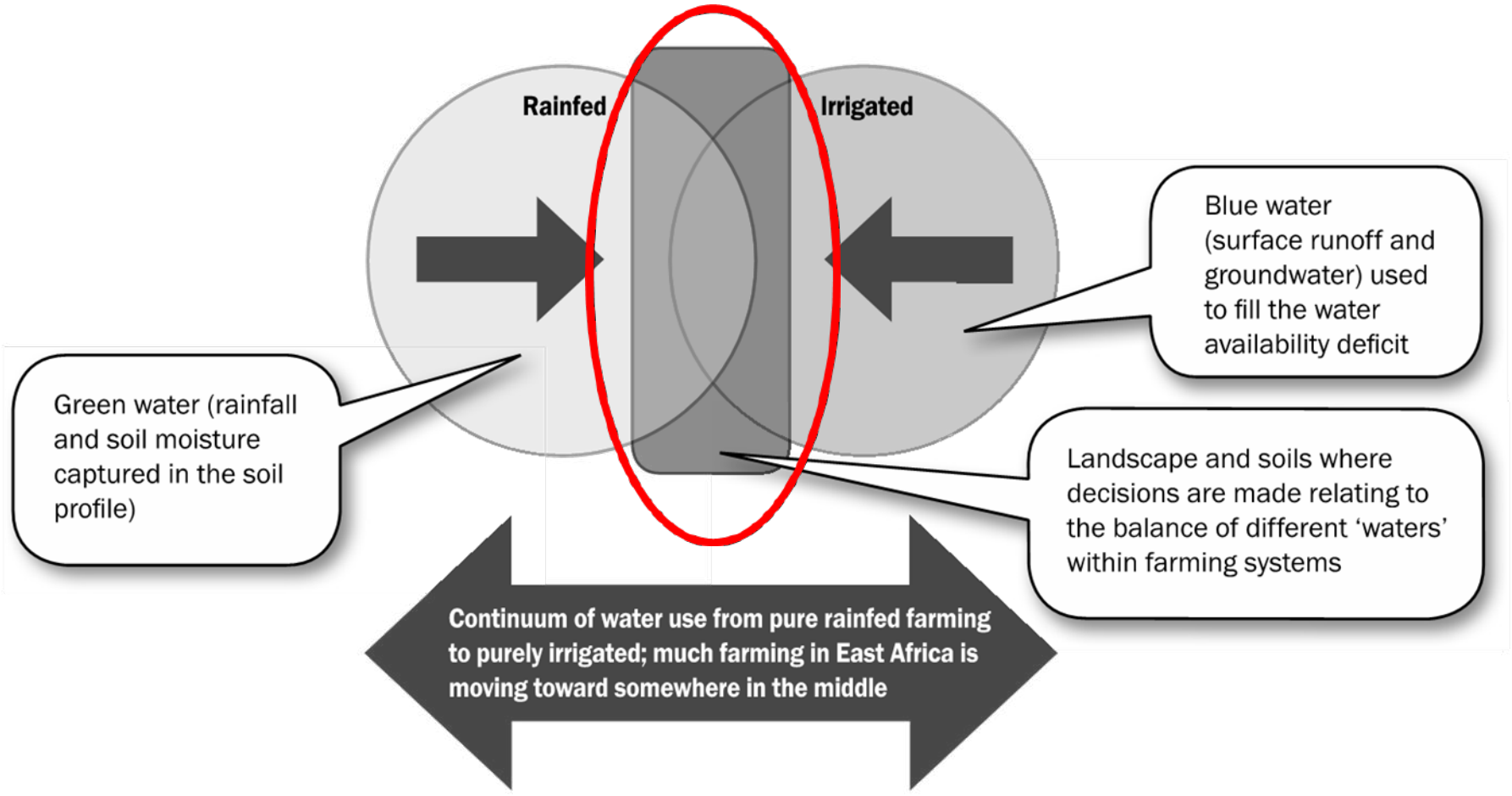


Adaptation focus of IPCC

- Adaptation will bring **immediate benefits** and reduce the impacts of climate change
- Adaptation is fundamentally about **risk management**
- Adaptation **experience** in Africa **is growing**
- Africa stands to benefit from **integrated** climate adaptation, mitigation and development approaches
- International **cooperation is vital**

Source: IPCC AR5

Towards climate and water smart agriculture



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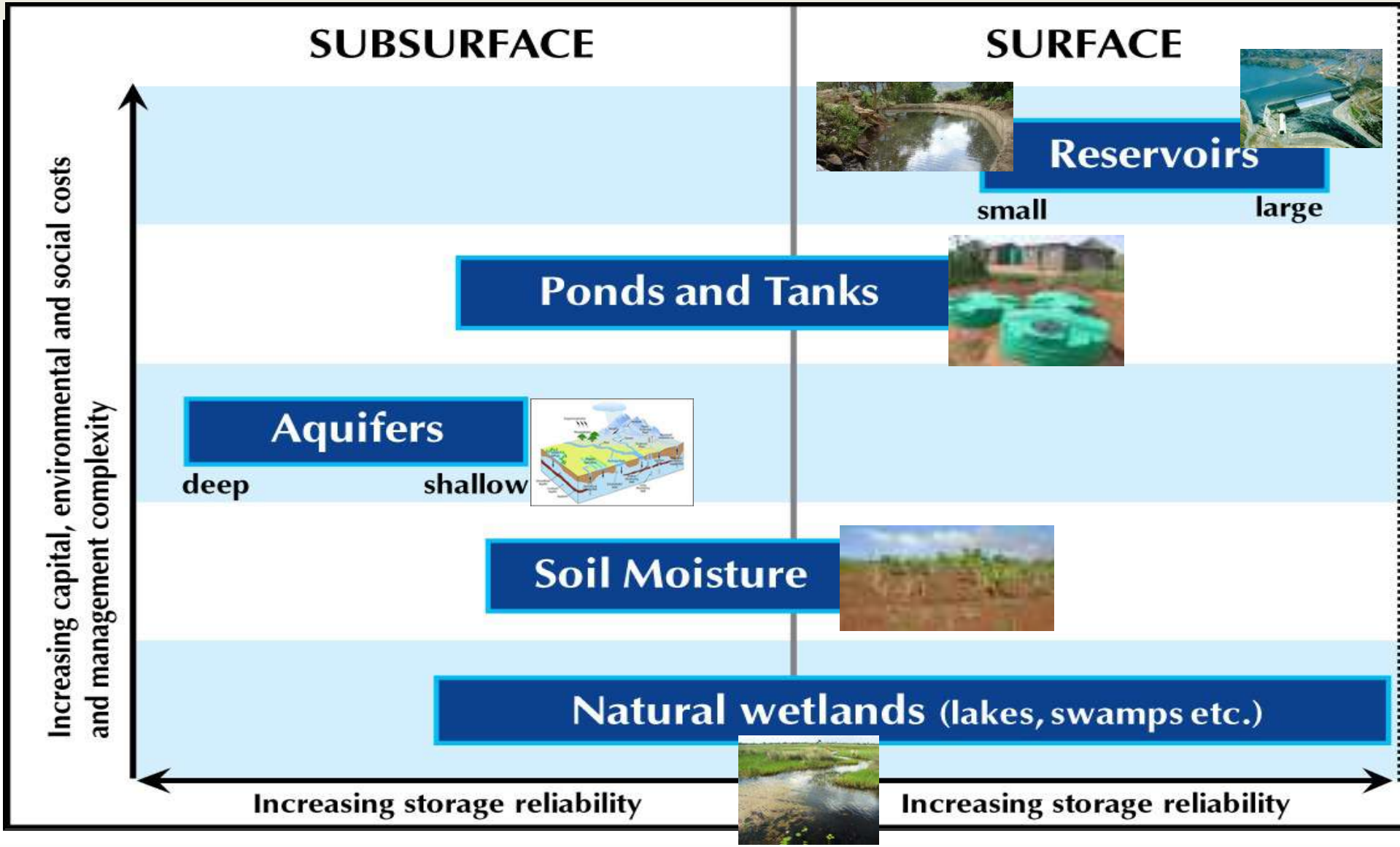
FROM THE AMERICAN PEOPLE

IWMI
International Water Management Institute

Moving along the pathway from rainfed to irrigated

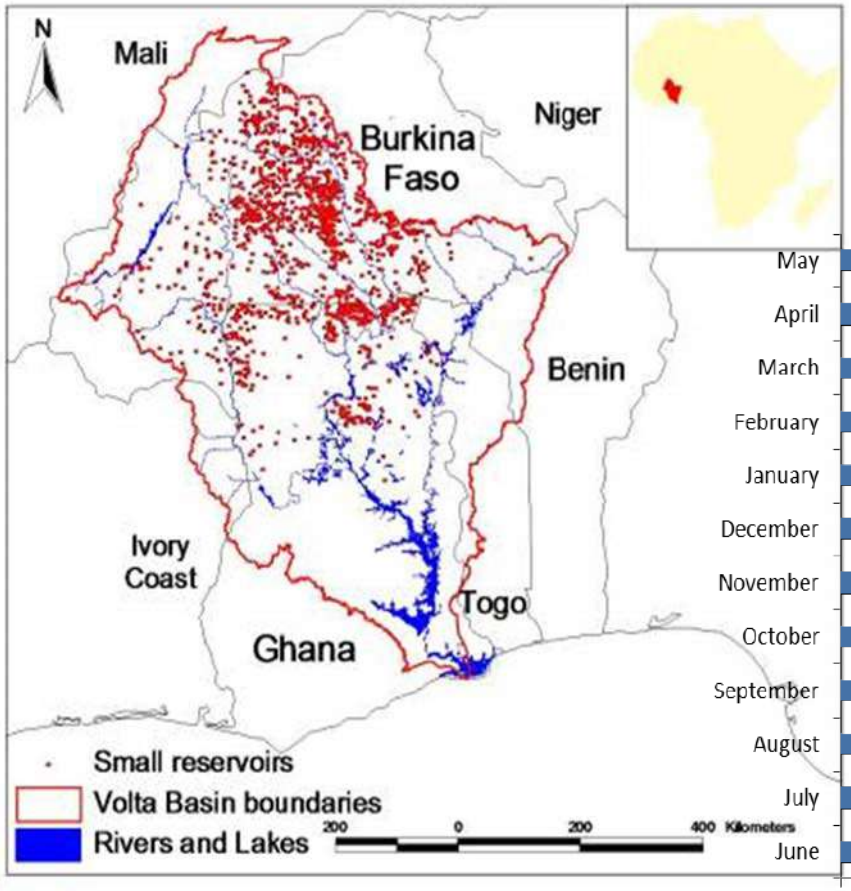
- Encourage productivity increases and multiple cropping
- Redress land degradation and lost fertility
- Requires a landscape (watershed) approach

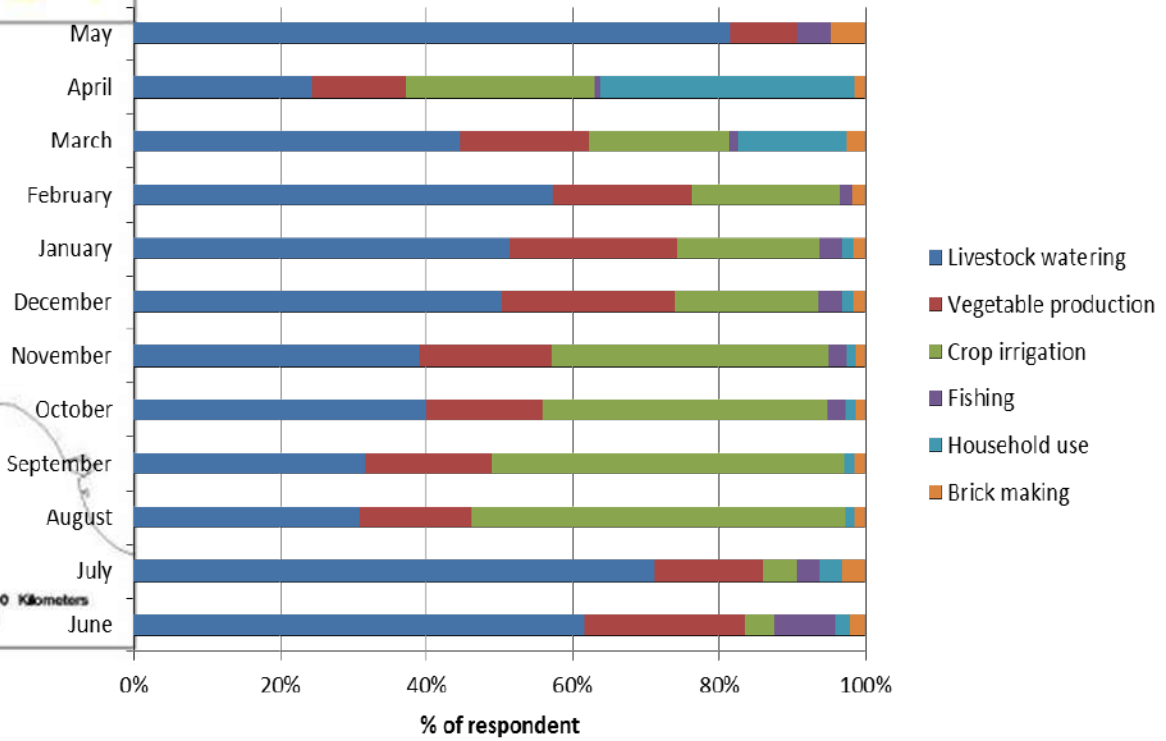
Consider all forms of storage to increase resilience



Source: McCartney & Smakhtin 2010

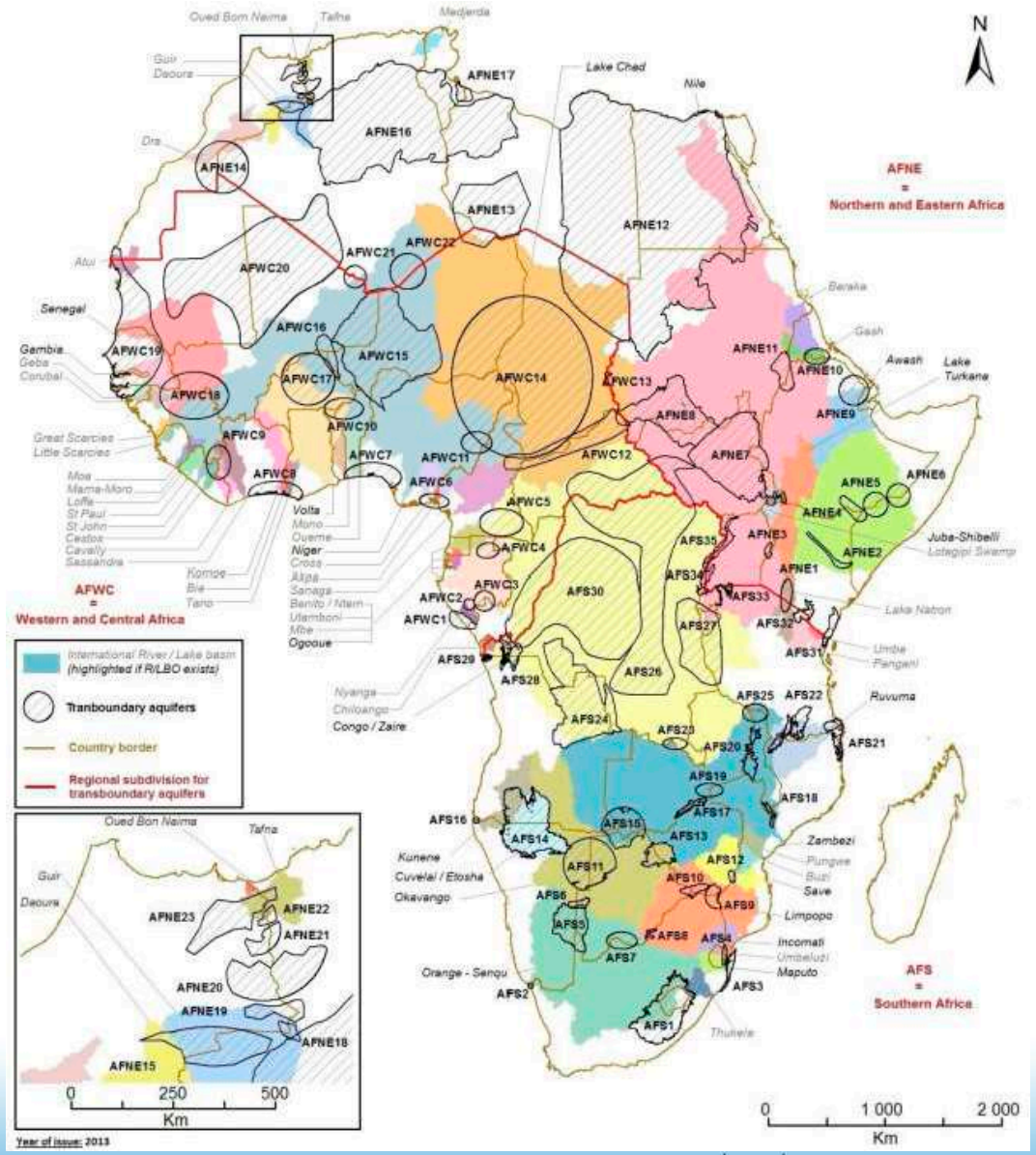
Small reservoirs can increase resilience – have multiple uses





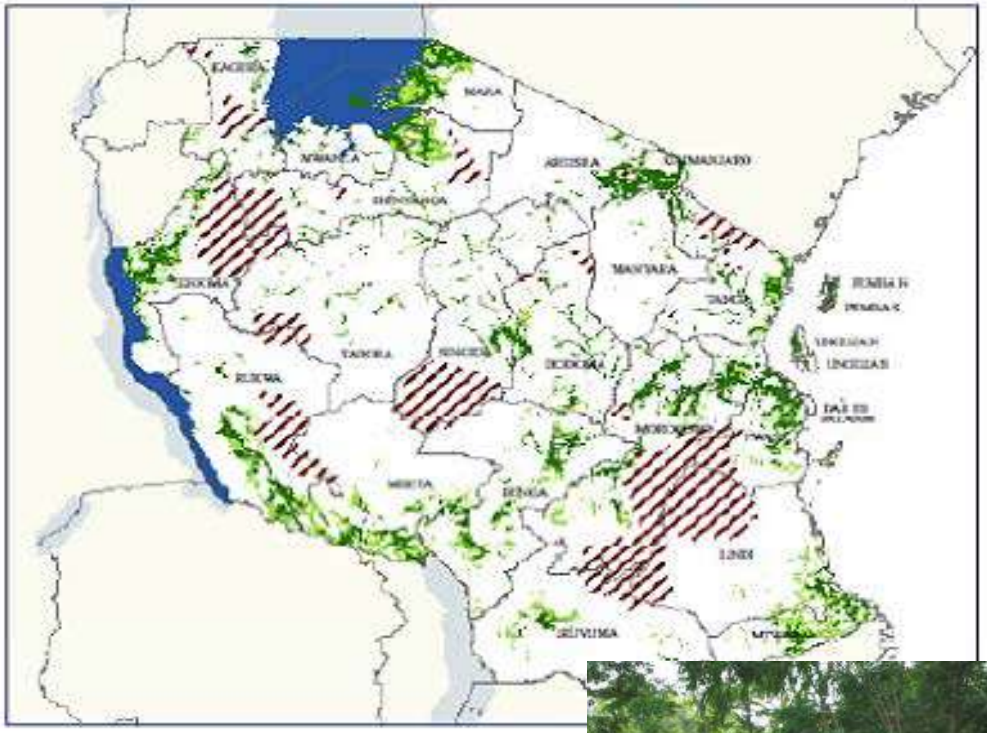
Significant groundwater potential exists in Africa

- Groundwater reserves in Africa are 20 times storage in lakes
- Pumps could benefit 185 million people with USD 22bn value
- But knowledge base and means of access lacking
- How sustainable?



Tanzania – from bucket to pump – facilitating entry into the irrigation market

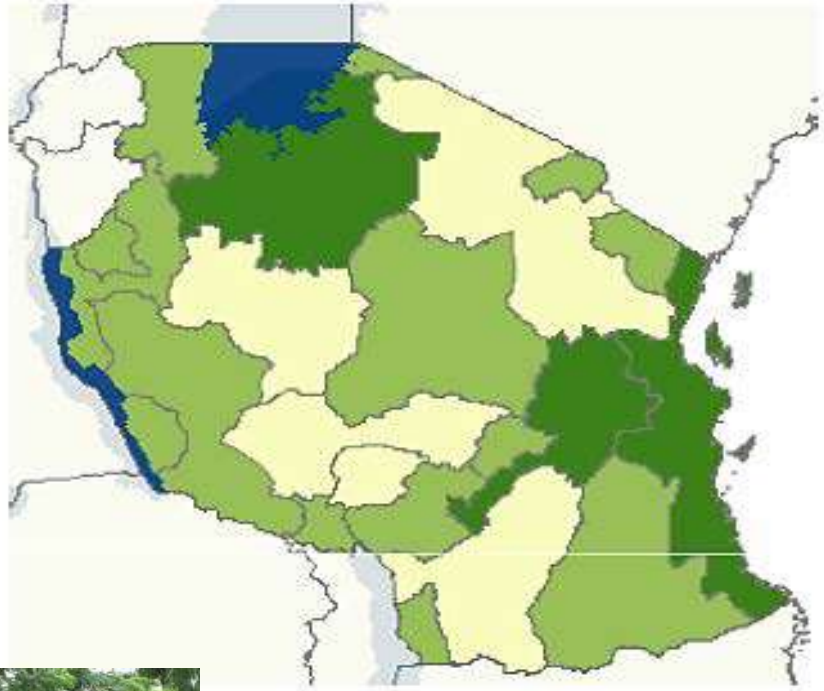
Biophysical suitability



Highly suitable

Moderately suitable

Livelihood-based demand



High

Medium-high

Medium-low

IWMI International Water Management Institute

A water-secure

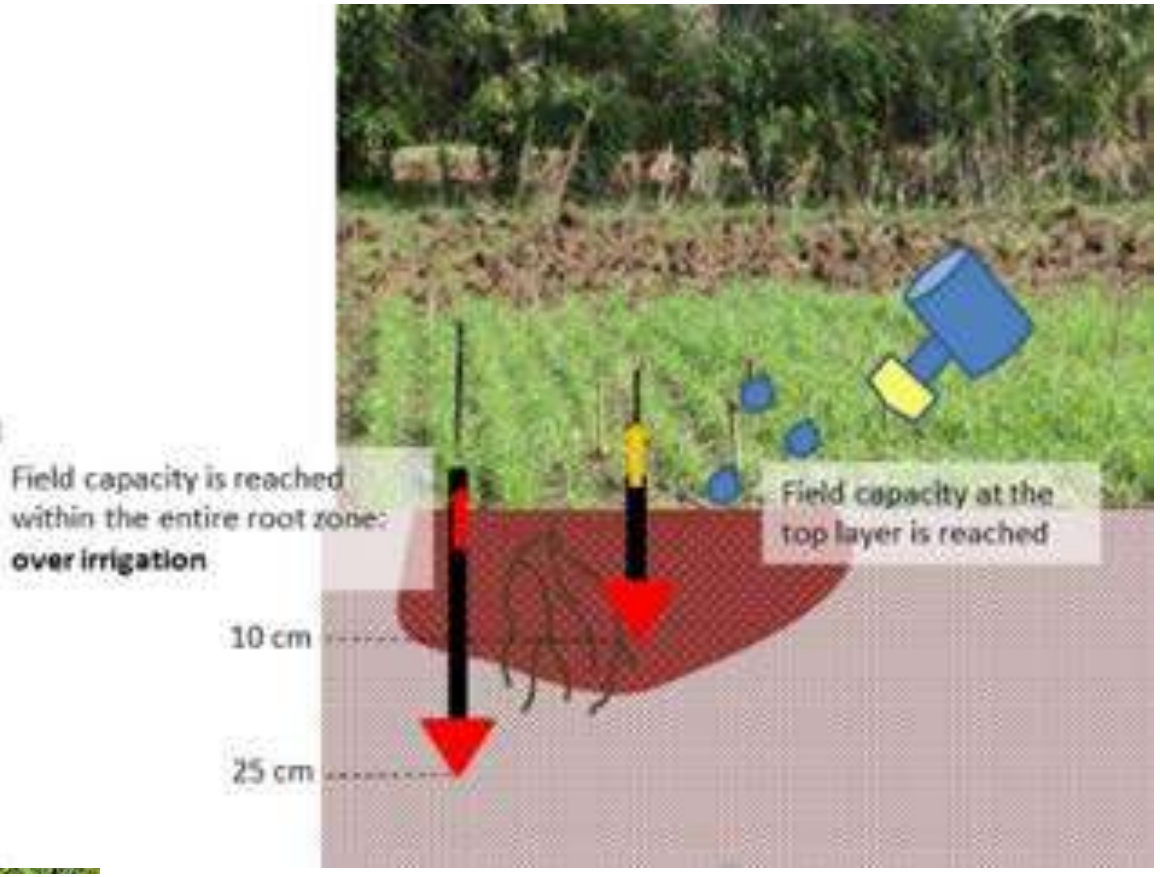
AGWATER SOLUTIONS

improved livelihoods for smallholder farmers

Scope for new technology

Solar Pumps
(access and mitigation potential)

Wetting Front Detector
(productivity and efficiency)



Improved livelihoods – more than just water

1 Increase access to water

Rainwater harvesting
- Create suitability maps
- Show farmers the benefits
- Garner local support
- Provide loan capital
- Offer smart subsidies
- Provide technical support

Shallow groundwater
- Map groundwater resources
- Develop affordable drilling
- Raise awareness and create demand
- Monitor environmental risks

Small reservoirs
- Reduce investment costs
- Pilot new management approaches
- Acknowledge multiple uses

2 Catalyse smallholder value chains

Innovative financing mechanisms
- Pilot financial instruments
- Support rental markets
- Explore irrigation service providers' model
- Link specialist financing to existing programmes
- Encourage women to own equipment

Helping farmers buy equipment and become profitable
- Provide better information
- Educate about marketing
- Provide crop storage facilities
- Promote 'try-before-you-buy' schemes
- Use networks to disseminate information

3 Create policy synergies between sectors

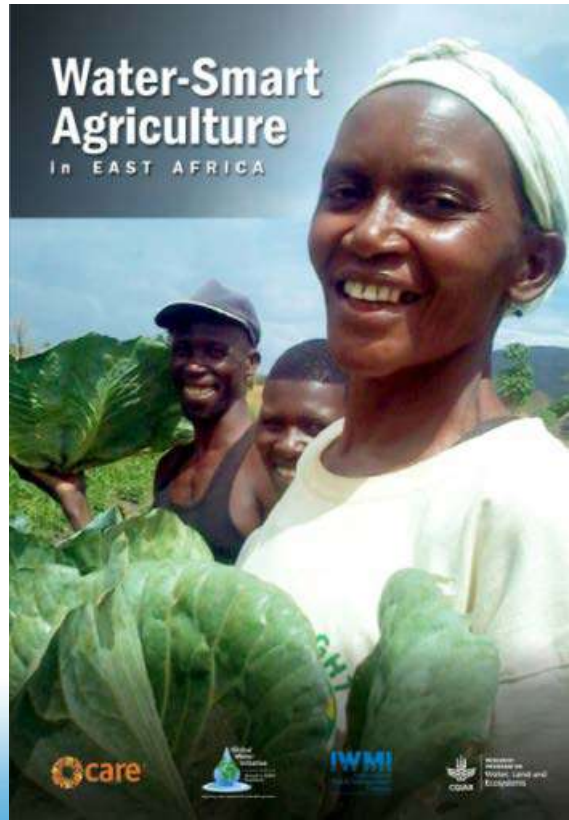
Addressing the influence of external sector policies
- Align energy, import and water policies
- Develop alternative energy sources
- Privatize procurement and marketing of irrigation equipment
- Review tax policies and import duties

4 Take a watershed perspective

Managing social and environmental impacts
- Consider multiple AWM investments
- Develop systems to promote cooperation
- Improve evaluation of investments
- View impacts in broad context

Importance of targeting women in AWM solutions

- In sub-Saharan Africa more than 60% of all female employment is in agriculture.
- yet women lack access to finance, inputs, extension services and information
- less than 5% of motor pump owners are female
- Urban male migration and ageing population is leading to the feminization of smallholder agriculture



Nutrition benefits of small scale irrigation

	Ethiopia		Tanzania	
	Non-irrigators n=185	Irrigators n=284	Non-irrigators n=224	Irrigators n=227
	Mean	Mean	Mean	Mean
Household food insecurity access scale, 0-27 [higher means worse]	5.78	4.04	3.92	2.58
Female dietary diversity score: number of categories consumed	3.69	3.58	3.71	4.20
Household dietary diversity: number of food categories consumed	5.69	6.06	4.88	5.63

Source: IFPRI, **statistically significant changes in red**

Groundwater Solutions Initiative for Policy and Practice (GRIPP)

Themes

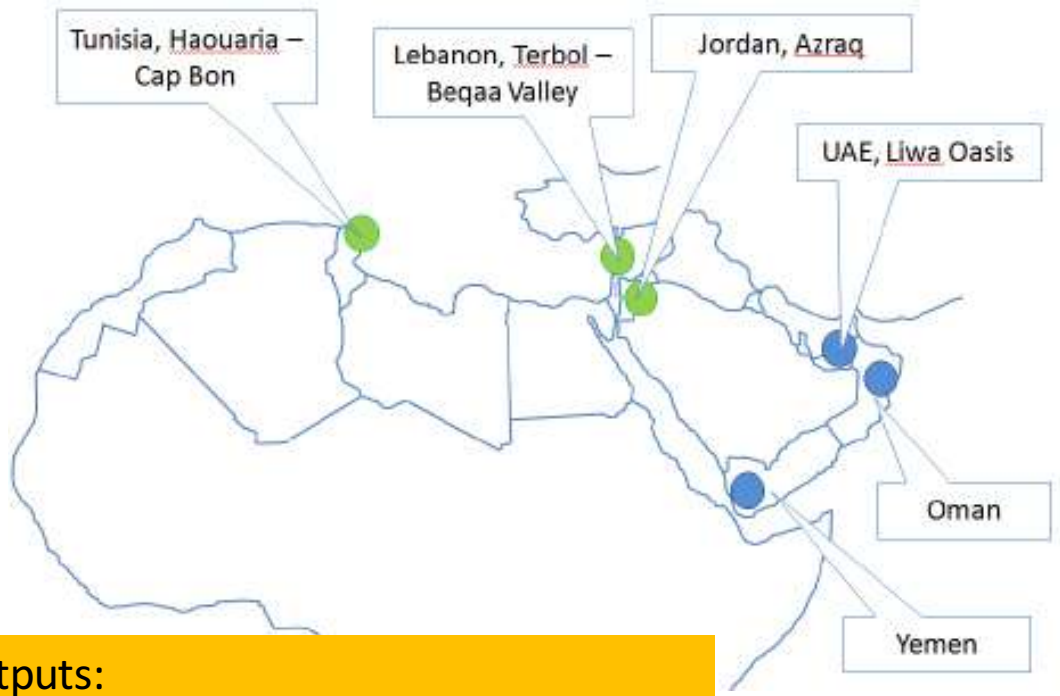
1. Groundwater and Food Security
2. Groundwater for Sustainable Development
3. Groundwater, Water Security and Climate Change Adaptation
4. Groundwater and Energy
5. Transboundary Aquifers
6. Groundwater Governance

IWMI International Water Management Institute

GRIPP GROUNDWATER SOLUTIONS INITIATIVE FOR POLICY AND PRACTICE

Promoting dialogue on groundwater governance in the MENA region

What are the governance options available for different contexts, and how can we make them work?



Outputs:

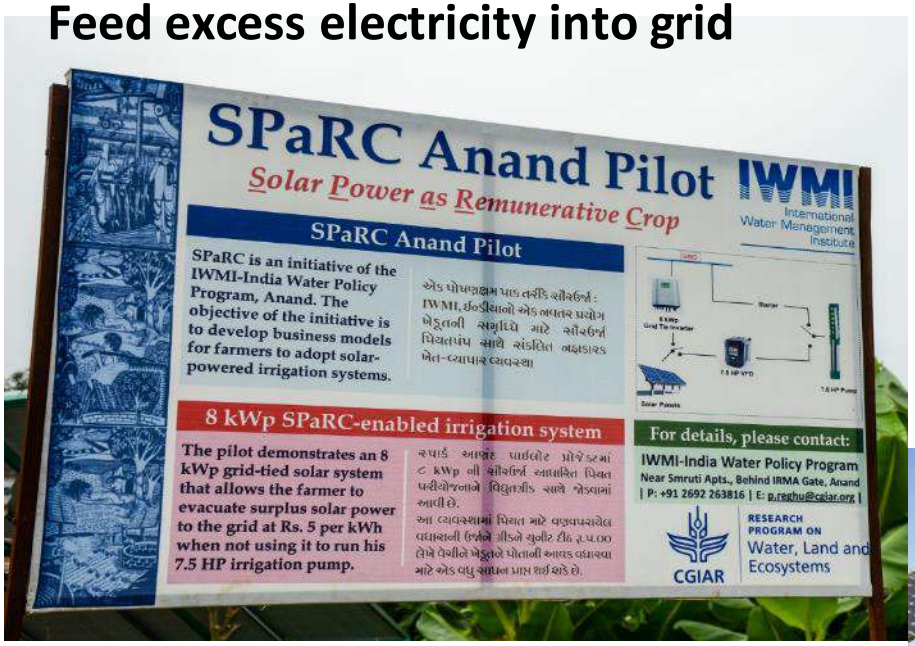
- Regional dialogue on groundwater governance
- A participatory approach to the co-construction of solutions
- Knowledge products on groundwater governance

Partners:

IWMI, ICBA
LRBA (Lebanon)
INRGREF (Tunisia)
University of Jordan
LISODE (France)
Consultants

Solar irrigation – will aquifer levels keep declining? …or is there an opportunity to recover?

Feed excess electricity into grid



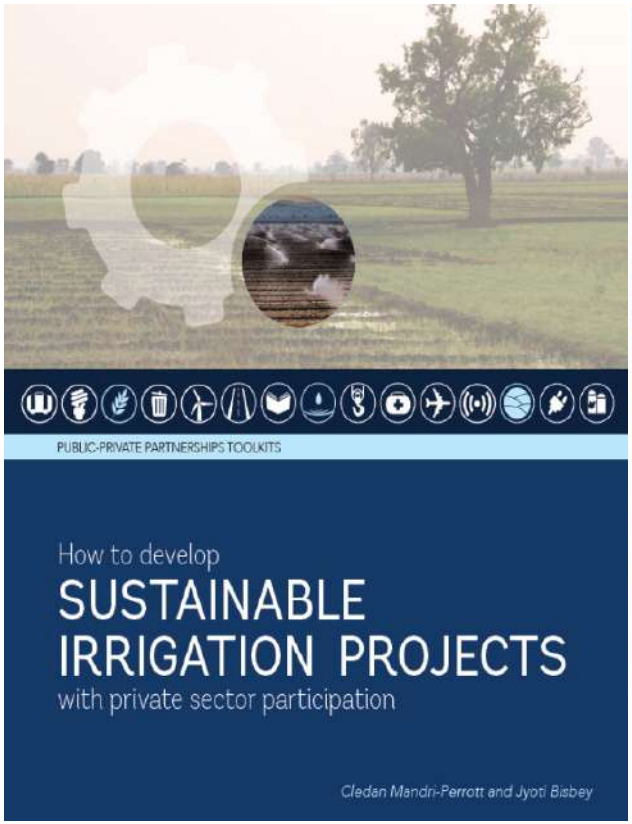
The opportunity

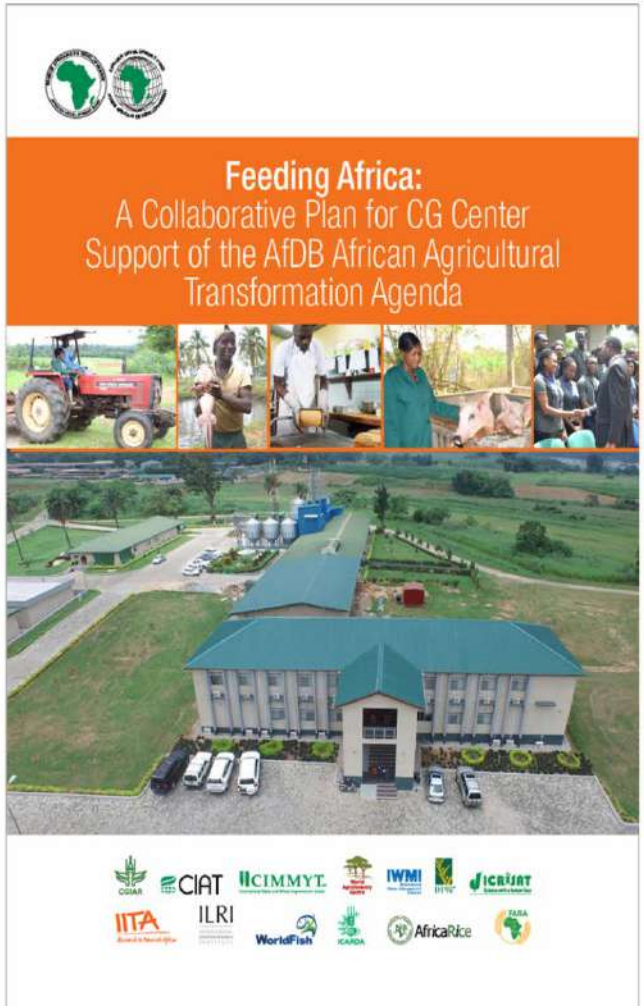
- **Carbon mitigation** – replacing 130,000 GW of electric and diesel tube wells
- **Water savings** – incentivize through feed-in tariff to sell excess electricity to grid

Triple wins:

- Reduction in greenhouse gas emissions
- Sustainable use of groundwater
- Higher income to farmers

Engagement in regional initiatives and new approaches to irrigated agriculture

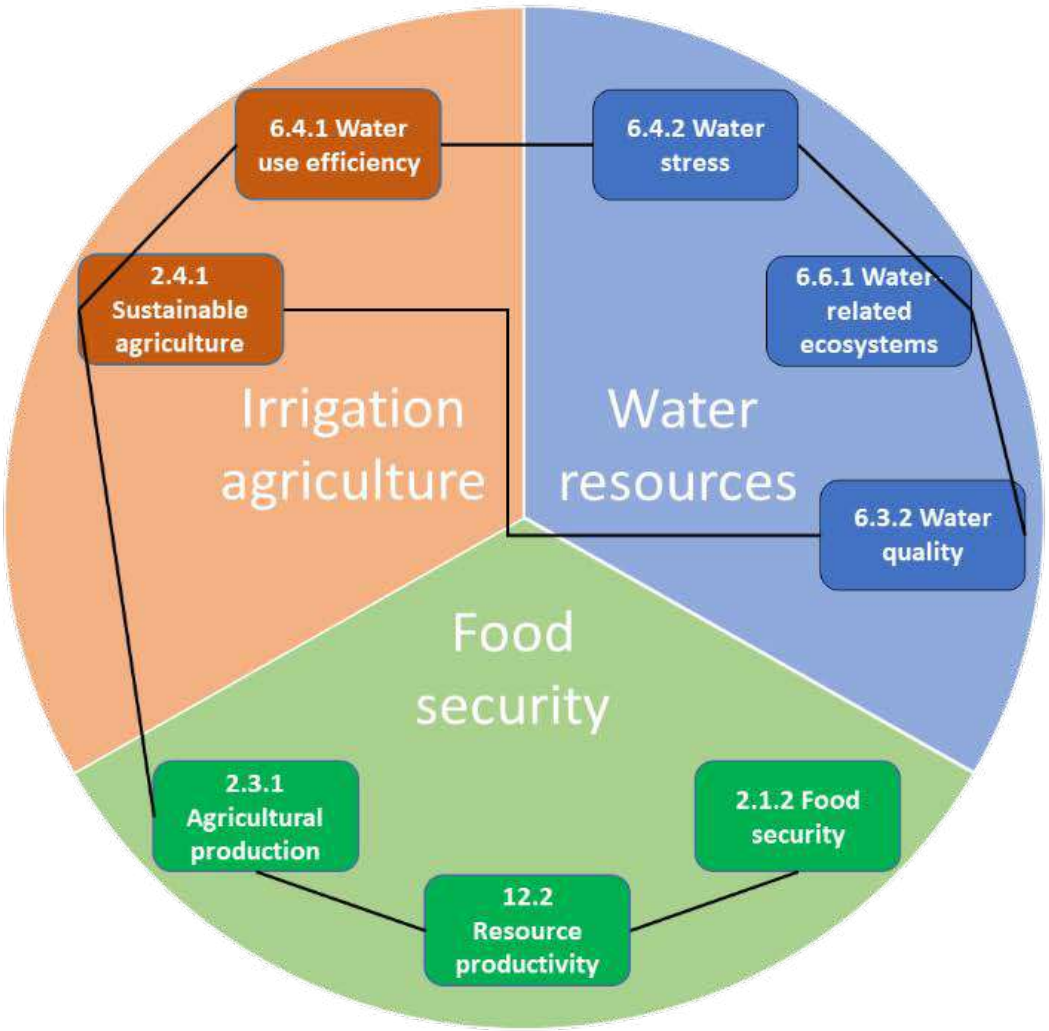




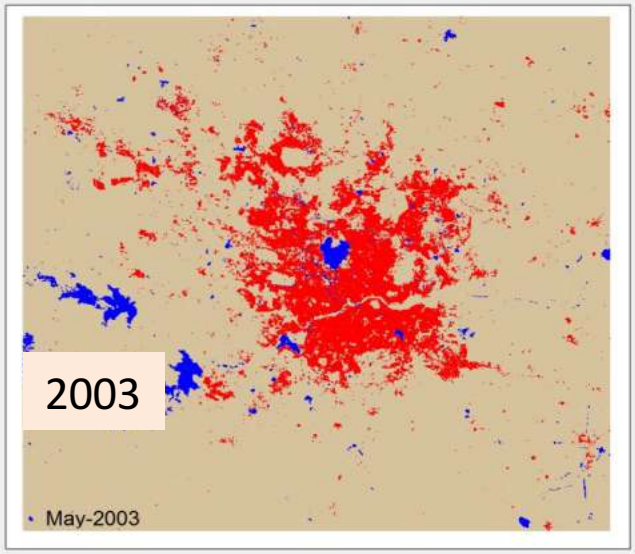
Towards the SDG agenda – need for integration

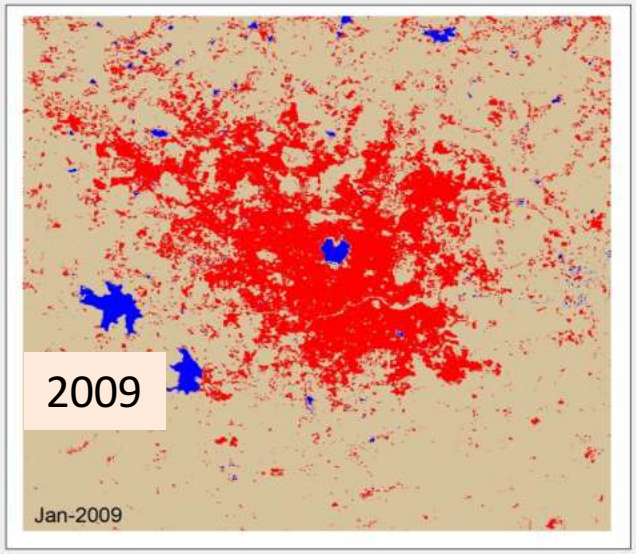
Nexus of Food security, Irrigated agriculture, Water resources

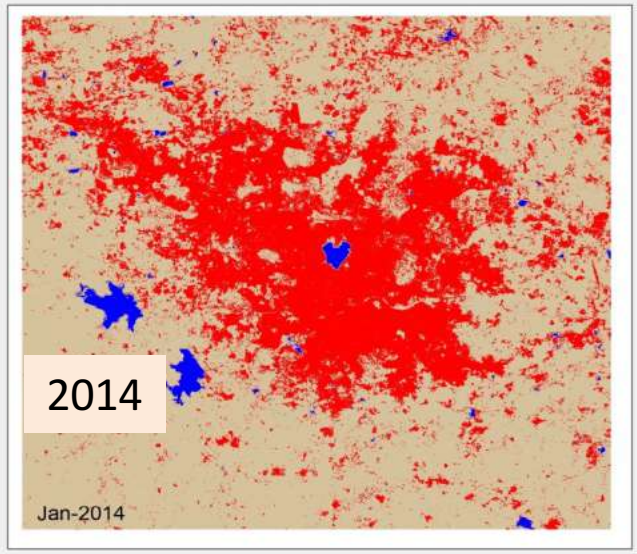
Pilot study in Uganda – *how will the framework of SDG indicators and linkages between them actually deliver on sustainability?*



Rapid urbanization and industrialization: are our conventional development models coping?







Waste and poor water quality risks marginalizing development gains – health, nutrition, emissions

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Peri-urban agriculture – a significant contribution

BBC News Sport Weather Earth Future Shop

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25 November 2014 Last updated at 02:29

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Global importance of urban agriculture 'underestimated'

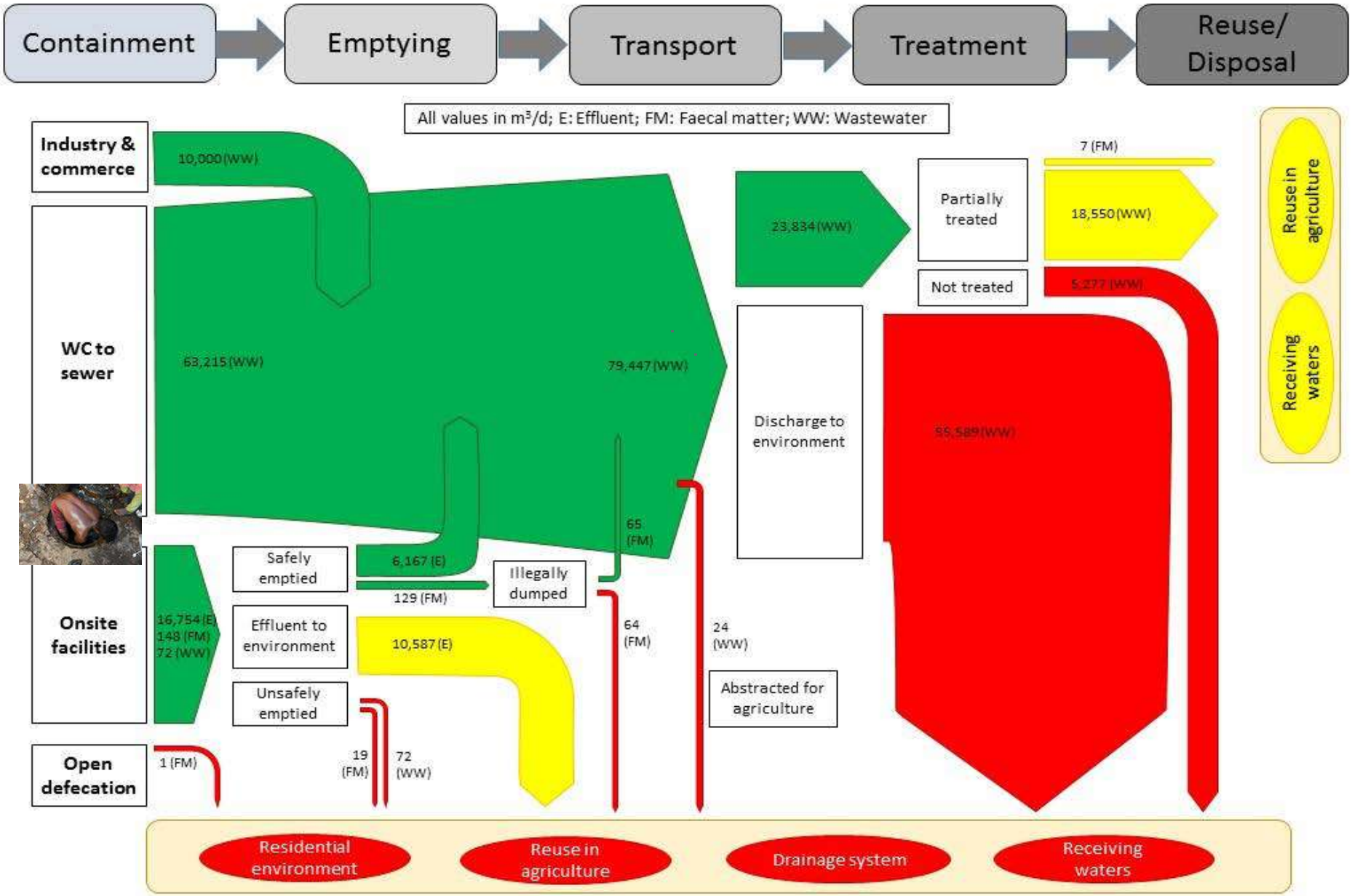
By Mark Kinver
Environment reporter, BBC News

The findings strengthen the need for greater attention to be paid to urban farming by policymakers, the authors suggest

Urban agriculture is playing an increasingly important role in global food security, a study has suggested.

Related Stories

Need to look at waste differently

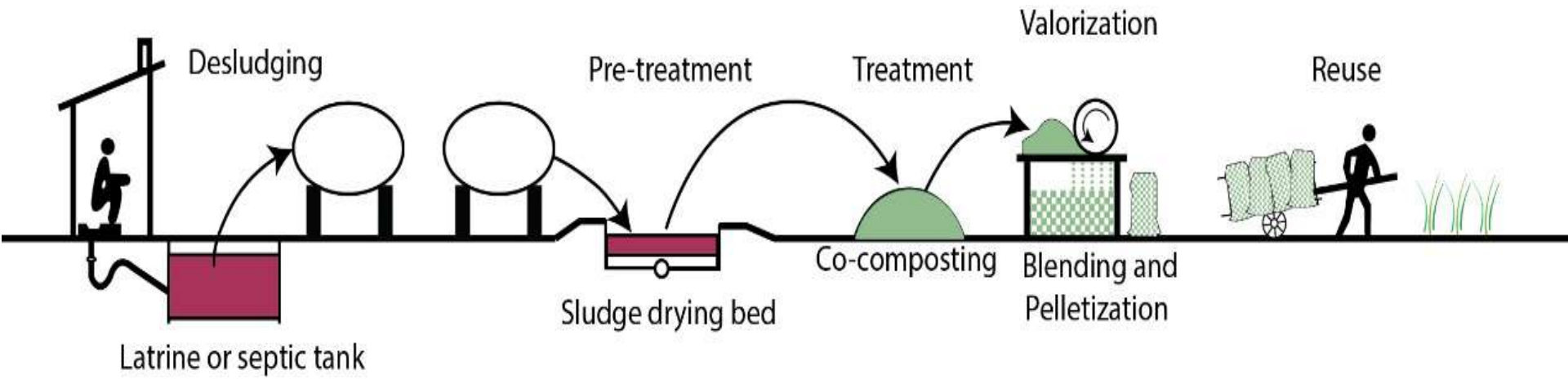


Kathmandu Valley

Heather Purshouse, Grattan Maslin; IWMI, unpublished

WASTE: Exploring business models to recover nutrients - the circular economy

Fecal Sludge Management and Agricultural Reuse



Dimensions of Climate Smart Agriculture

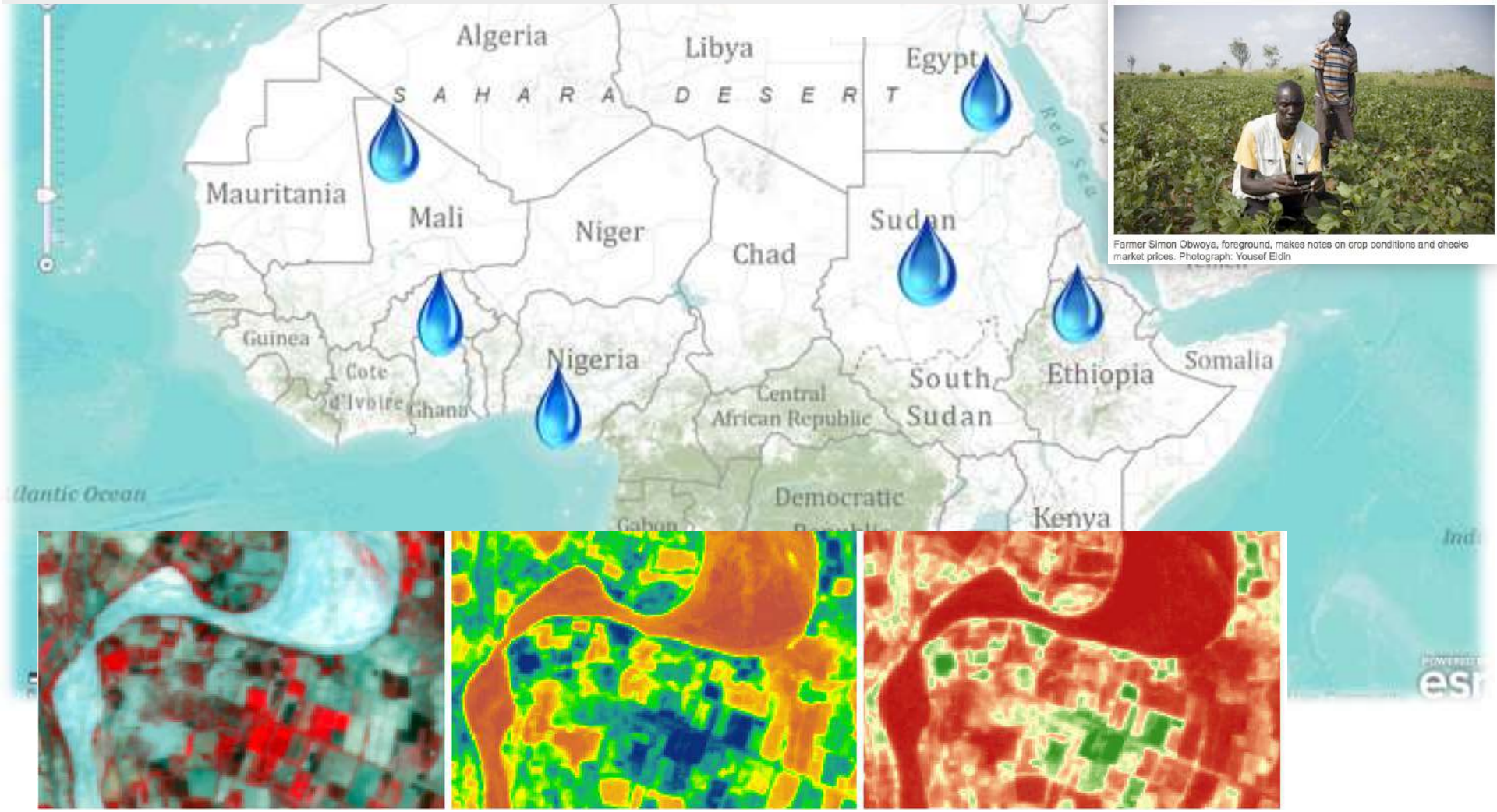
- Sustainably increasing agricultural productivity and incomes
- Adapting and building resilience to climate change
- Reducing and/or removing greenhouse gas emission, where possible.

FAO, 2013

Improving productivity of soils and quantifying carbon capture

- Continent wide initiative on **Africa Soil Information Service** (**ICRAF**)
- One acre fund to provide services to 180,000 farmers in Eastern Africa; India planning to support 3M soil analyses over 3 years
- 4 per 1000 initiative signed at COP21 to increase global soil carbon stocks **(CIAT)**
- Potential for 265 million tCO_2 per year up to 2030 to be harnessed (through cropland management, grazing land management and the restoration of degraded lands). (FAO, 2012: 23).

Piloting spatial data based information systems for smallholders

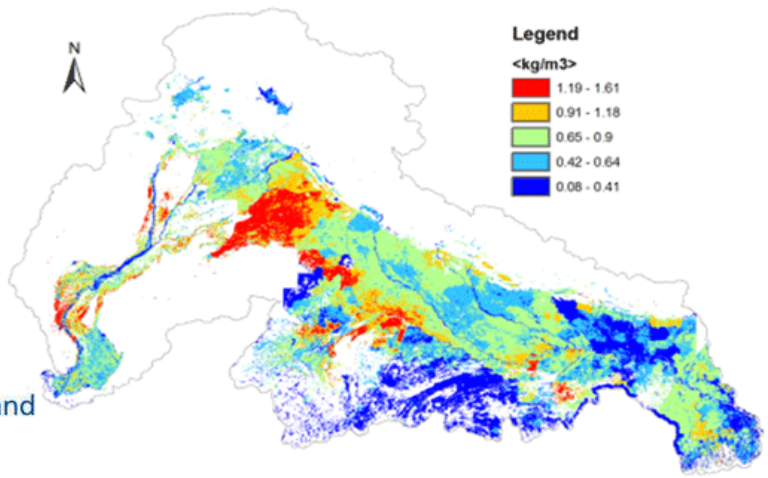


Farmer Simon Obwoya, foreground, makes notes on crop conditions and checks market prices. Photograph: Yousef Eldin

Water accounting plus – understanding the status of water resources

www.wateraccounting.org

- Based on remote sensing and global hydrological models to better understand state of water resources, issues and challenges/opportunities
- Contextualizes water accounting by including sustainability and ecosystem services dimensions
- Allows users to understand impacts and trade-offs of different interventions

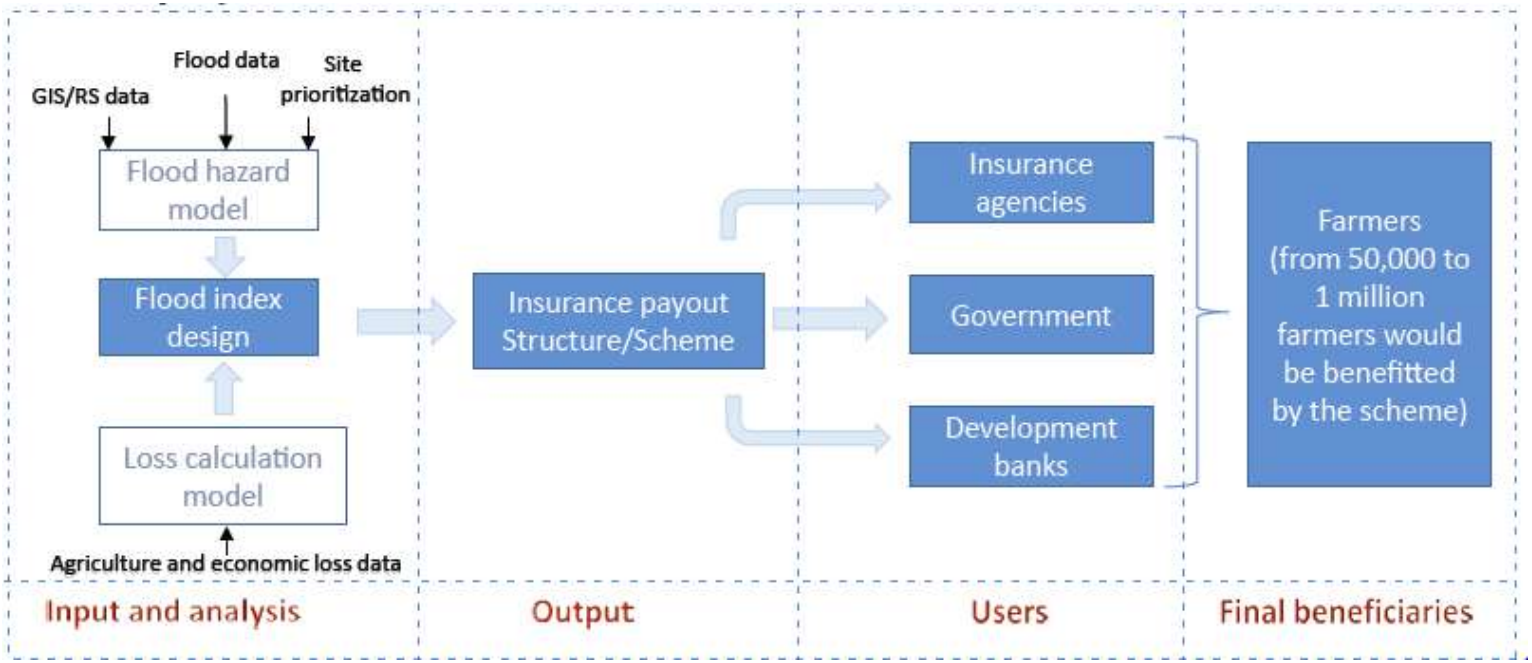


UNESCO-IHE Institute for Water Education

IWMI International Water Management Institute

CGIAR RESEARCH PROGRAM ON Water, Land and Ecosystems

Index-based flood insurance – partnership with the insurance industry



If the solutions proposed by the project are scaled up, by 2025, approximately 1 million farmers will have agricultural flood insurance, creating new and different types of jobs supported by strong public-private-partnership business models and delivering INR 10 billion in flood protection.

Project partners

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE IFPRI

INSTITUTE OF WATER MODELLING IWMI

MCII

irpi

BAJAJ Allianz

Some reflections

- Small scale irrigation continues to grow in SSA but slowly
- SSI has potential for wider benefits beyond yields and income if climate resilience, health, nutrition, and gender considerations are actively promoted,
- Needs support for input and output markets, credit, insurance, timely information, institutional and regulatory reform
- Need to assess the basin/aquifer scale consequences of expanding CSA solutions
- Reinforce farmers own adaptation strategies with innovations in science and technology (crop varieties and livestock breeds, efficient water storage and management, ecosystem based approaches, etc.)

Source: IPCC AR5

Overcoming barriers

- Identify institutional home to support small scale and supplementary irrigation technologies and support services (often falls between agriculture and irrigation/water agencies)
- Clarifying the business model and incentive structures (smallholder, PPP, …)
- Remove gender disparities in regulatory and administrative processes
- Improving access to credit
- Raise awareness and build capacity of f women) and agency staff

CGIAR Water, Land and Ecosystems Research Program

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