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Planning land and water investments in support of smallholders livelihoods:

a tool for country level analysis

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Rationale

- Investments in AWM are a key element of rural development and poverty reduction strategies
- Decision makers seeks guidance to understand: i) **where** to invest ii) **who** to benefit? iii) **what** typology of investment is most appropriate?
- Improved understanding of the **livelihood context** allows for better targeting AWM interventions according the different typologies of beneficiaries
- From **supply-driven** (technology) to **demand-driven** (livelihood): AWM solutions should be designed and targeted according to livelihood attitude and priorities
- Potential for **scaling up**: need to identify the context in which specific investment options can be replicated

Scope of the approach

- **Identify priorities and constraints by characterizing and mapping the livelihood context**
  - Define and locate the different farmer typologies, their needs, strategies and attitude
- **Identify and map the areas where water intervention can be the entry point and make the difference**
- **Identify and map interventions to support livelihoods and poverty alleviation**
  - Map biophysically suitable areas for specific interventions where have highest impact on smallholders' livelihoods and reach the maximum number of beneficiaries
  - Match suitable areas with areas with highest livelihood demand
- **Estimate the potential of specific interventions**
  - Quantify potential beneficiaries and extent of application area

Methodology

1. Inception phase

1. Literature review
2. Identification and definition of mapping criteria
3. Data collection

2. Participatory analysis

1. Participatory livelihood mapping and analysis
2. Identification of a range of promising interventions

3. Data and information processing

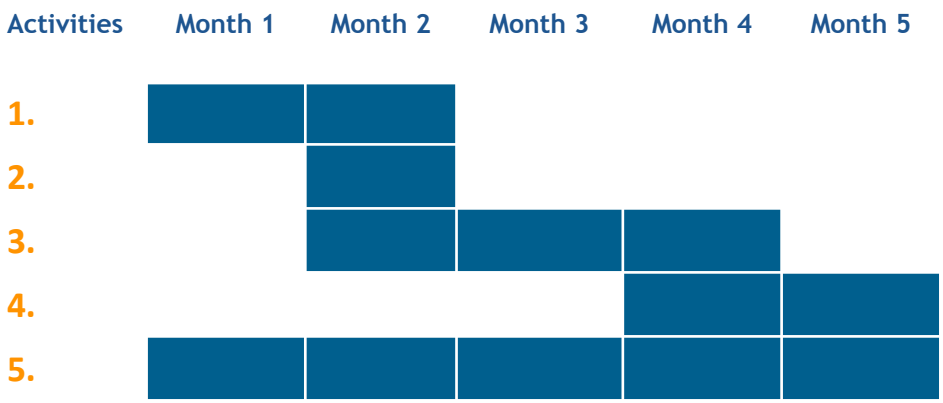
1. Livelihood mapping and analysis
2. Mapping priority areas for interventions
3. Quantifying potential (beneficiaries and areas)

4. Revision and validation

National and local consultations

5. Policy dialogue

Ownership of results, influencing policy agenda



Characterize and map livelihoods:

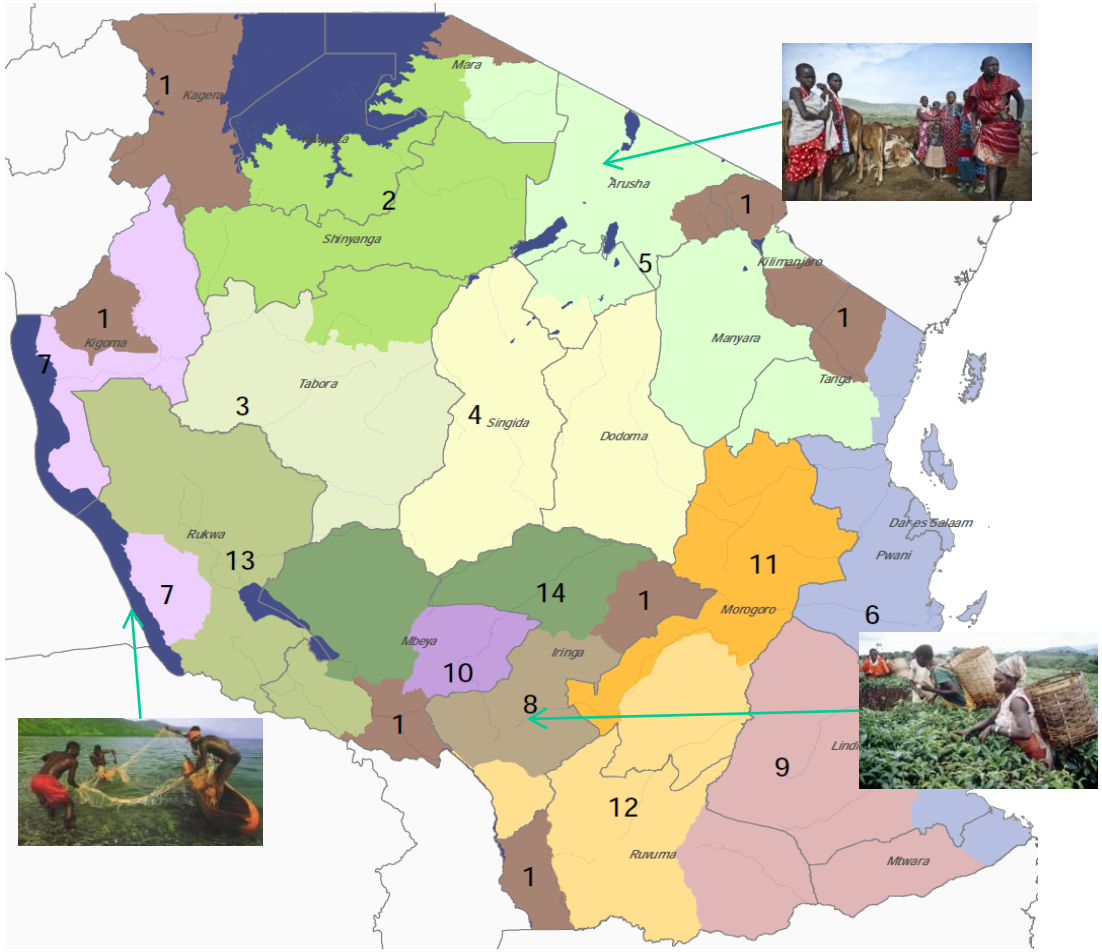
Identify and map priority and constraints

What is a livelihood zone/system?

An area with homogeneous characteristics, where people share similar livelihoods patterns: production, agroecology, constraints, vulnerability, priorities, etc

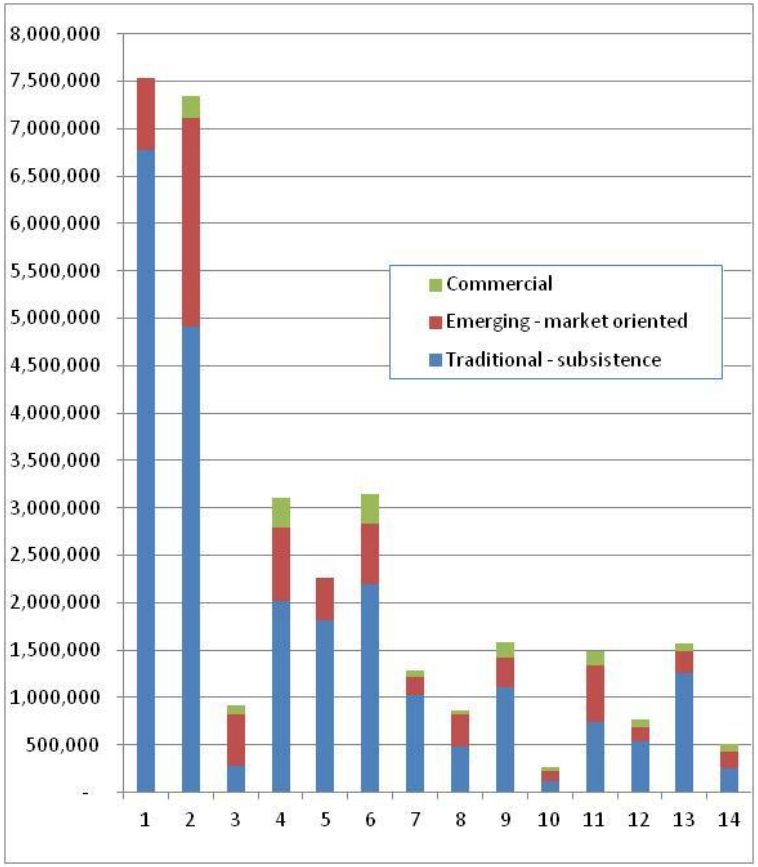
Mapping the livelihood context (Tanzania)

"different people in different places have different needs"



1: Coffe-banana humid highlands
2: Cotton-paddy rice-cattle midlands
3: Tobacco-cotton-miombo woodland zone
4: Semiarid sorghum-livestock zone
5: Pastoral zone
6: Tree crops-fishing coastal zone
7: Lake Tanganyika zone
8: Tree plantations with crops-pyrethrum and tea
9: Maize-cassava-cashew-simsim southern zone
10: Rice zone
11: Sisal-sugar cane 'tle zone
12: Maize-tobacco southern highlands
13: Rice-maize unimodal zone
14: Rice-maize bimodal zone

Typology of rural population



Livelihood context - livelihood zones attribute table

"What are the priorities for rural people?"

Zone	Name - major production systems	Main constraints for development	Water-related constraints and potential
1	Coffee-banana humid zone	Soil fertility, low producers price	Water is plenty. Irrigation is not common. But exceptionally high in Moshi rural and Hai. Irrigation infrastructure is poor and can be improved.
2	Cotton-paddy-cattle zone	Erratic rainfalls, land scarcity, lack of technology	Water is the limiting to crops production in this zone and without water most other agricultural practices applied to crops do not result in significant increase in yield. Water for livestock is also a problem.
3	Tobacco-cotton zone	Low rainfall, tsetse, poor accessibility	Water is very important for agricultural production. Irrigation potential of this zone is limited. There are no perennial rivers and no ground water aquifers with yields sufficient for more than a small area. Rainwater harvesting techniques is the only method
4	Semiarid sorghum livestock zone	Irregular rainfall, tsetse, declining soil fertility	Though irrigation farming is not common in this zone, it's potentiality is high. It is desirable and feasible. Water harvesting techniques can be used.
5	Pastoral zone	Dry lands, animal health, lack of watering facilities	This zone is not well endowed with large potential areas for irrigation. What exist are areas suitable for medium and small scale irrigation. Simanjiro district has the largest land under irrigation. Kiteto district has no potential areas suitable for irrigation. Spring, shallow wells ,gravity pump schemes, hand pump schemes are common.
6	….	….	….

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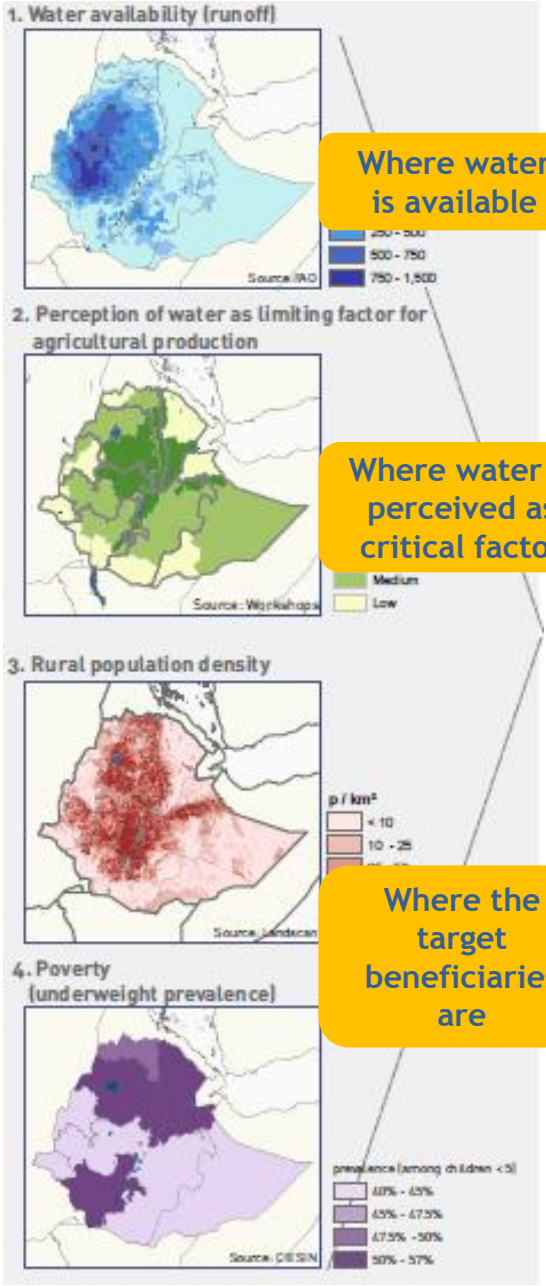
Application of the tool for planning Ag Water interventions

The role of water for improving livelihoods

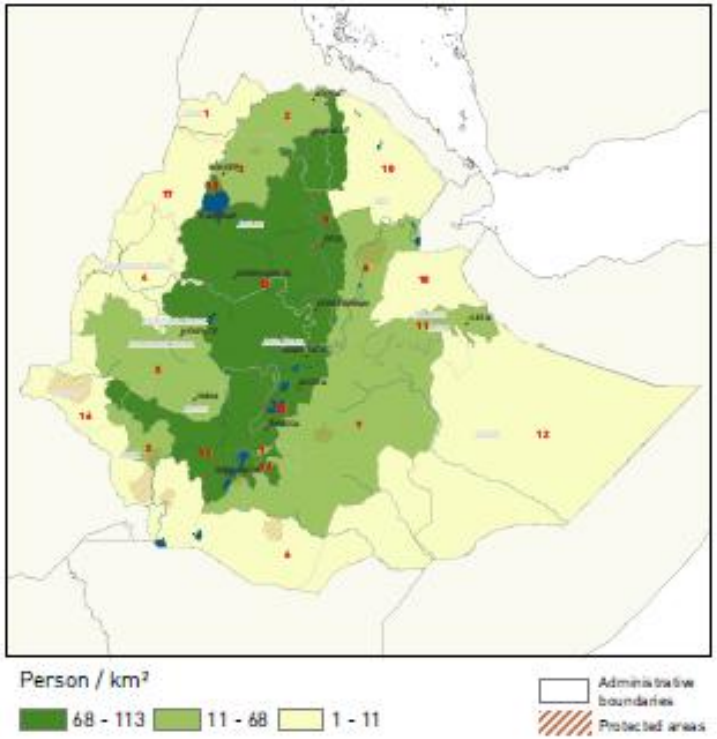
Where to invest for max impact on rural livelihoods (Ethiopia)



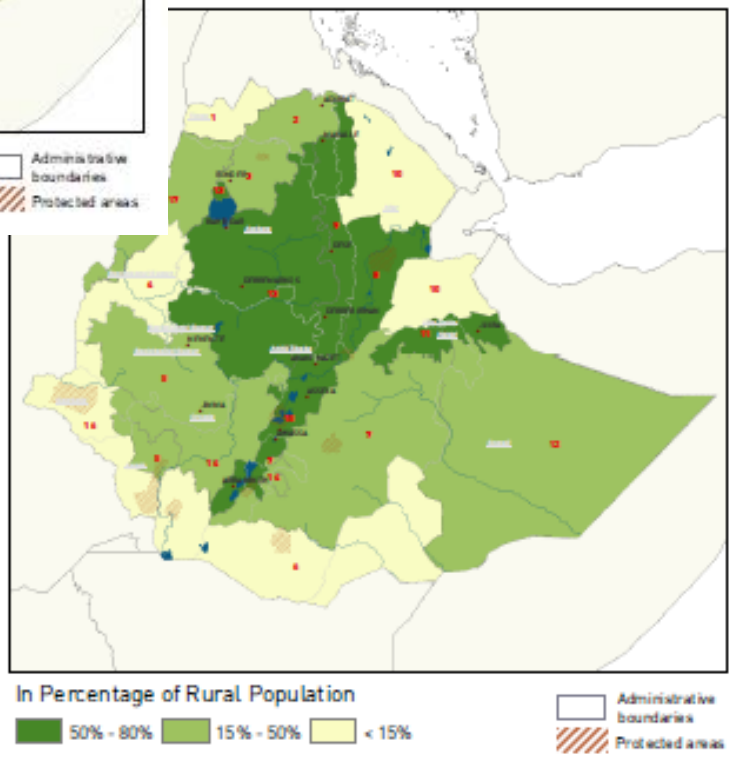
Where water is available

Where water i perceived as critical factor

Where the target beneficiaries are



Potential beneficiaries



Ethiopia: Where to invest for maximum impact on rural livelihoods

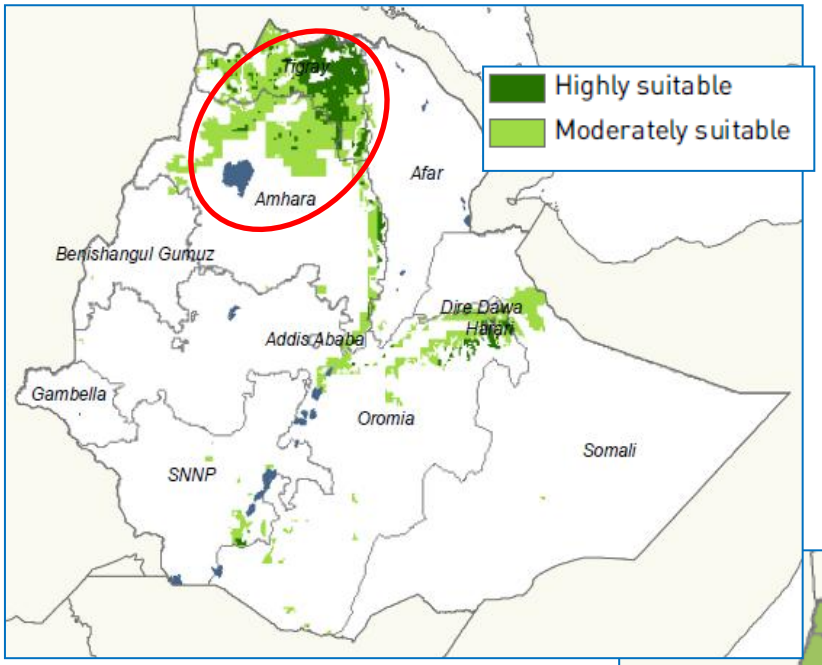
Livelihood zone		Water availability: IRWR/cp ($m^3/p/y$)	Rural population			Perception of water as limiting factor for agricultural production	Potential beneficiaries	
No	Name		Total (,000)	Density (p/km^2)	% poor (underweight)		Person (,000)	in % of rural population
1	Lowland mixed - Sesame livelihood system	1,085	522	30	48.4	low	78	15%
2	Northern mixed midlands livelihood system	406	2,397	112	48.0	medium	1,199	50%
3	Northern cereal pulse mixed livelihood system	1,286	2,194	100	51.5	medium	1,097	50%
4	North West lowland Sorghum/Sesame mixed livelihood system	16,379	729	19	43.4	low	109	15%
5	Western Coffee/Maize livelihood system	3,822	7,262	97	44.2	high	3,631	50%
6	Southern pastoral livelihood system	2,517	1,601	13	44.9	low	240	15%
7	Eastern highland mixed livelihood system	1,379	7,371	56	43.5	medium	3,686	50%
8	Awash pastoral/agricultural system	787	889	25	50.4	high	705	79%
9	Meher/Belg transition livelihood system	492	4,318	117	50.6	high	2,705	63%
10	North-Eastern pastoral livelihood system	843	814	10	50.3	low	122	15%
11	Eastern Chat/Sorghum highland mixed livelihood system	184	3,809	179	42.2	high	1,173	31%
12	"Ogaden" pastoral livelihood system	1,178	2,612	12	43.2	medium	1,306	50%
13	Highland mixed -Teff livelihood system	2,069	17,294	137	48.2	high	13,835	80%
14	Horticultural (Enset/cereal) mixed livelihood complex	994	9,166	187	51.1	medium	4,583	50%
15	Rift Valley livelihood system	468	5,391	186	46.0	high	3,278	61%
16	Gambella agro-pastoral livelihood system	6,645	470	10	43.8	low	70	15%
17	Northern pastoral livelihood systems	6,223	951	22	49.0	medium	475	50%

Which interventions and where?

*Matching technologies and approaches (**supply**) with livelihood needs (**demand**)*

Small Reservoirs (Ethiopia)

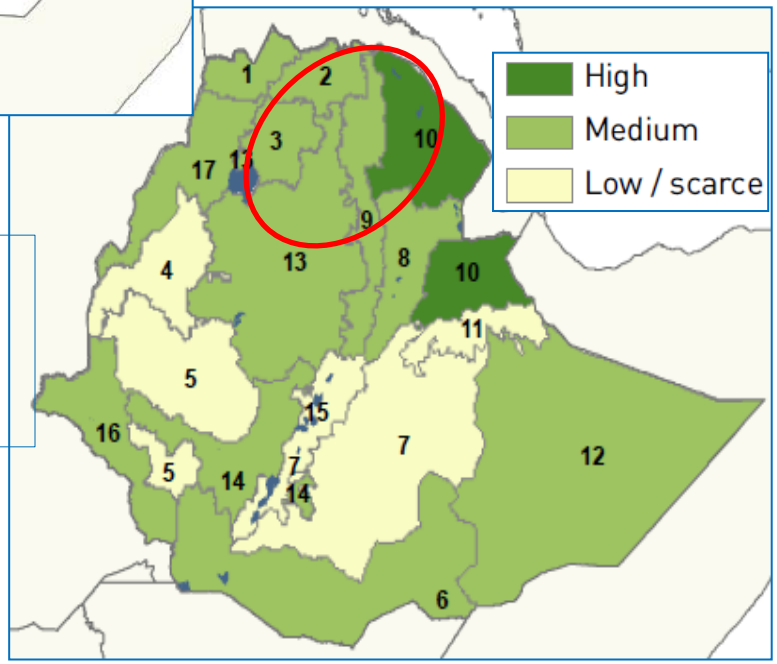
Biophysical suitability



Biophysical criteria

1. Aridity Index
2. Topography
3. Livestock density

Livelihood-based demand

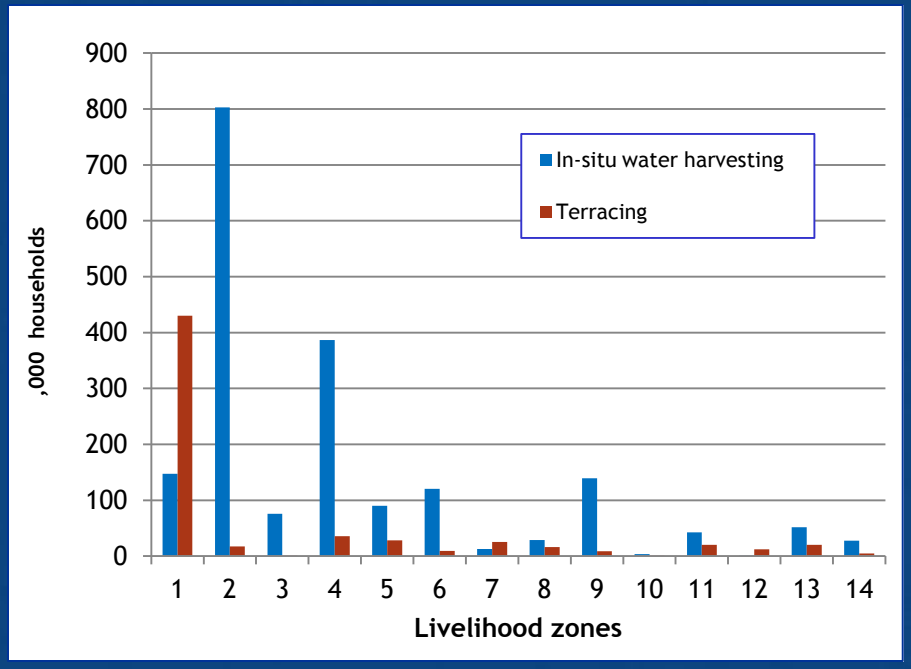


Demand criteria

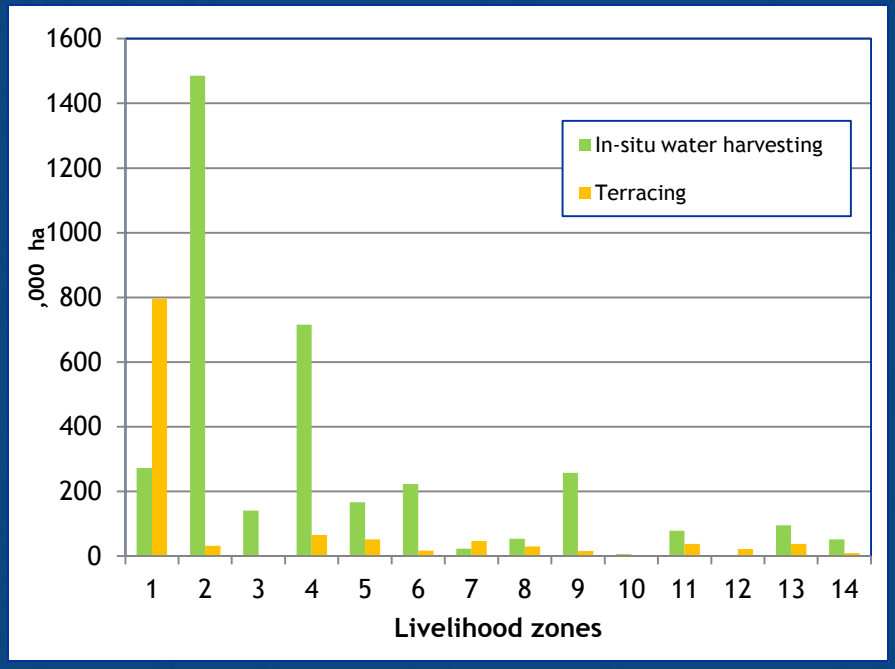
1. Farmers typology
2. Prevalence of poverty

Quantifying the potential
(Tanzania)

Potential beneficiaries (,000 households)



Potential application area (,000 ha)



Piloting and future developments

Pilot countries:

- **Completed:** Burkina Faso, Ethiopia, Ghana, Tanzania, Zambia India (Madhya Pradesh, West Bengal)
- **On-going:** India (Jharkhand) , Sri Lanka, Cambodia, China (Hunon province) and Bangladesh.
- **In stand-by:** Sahel Region

Next developments:

- **Economic demand and performance:**
  - Development of **economic module** to evaluate economic performance of investment options (cost/benefits) **(In Pipeline)**
- **Data collection:**
  - Explore use of the tool as a **survey sampling** framework, and improve data quality through existing **field data** collection initiatives.
  - **Integrate** and **harmonize** primary data with secondary data and expert opinions/consultations
- Application to **different fields:** the approach offers opportunities much beyond the AWM sphere.

Thank you!

For more information:

http://www.fao.org/nr/water/projects_agwatermanagement.html