

# Harnessing Floods for Improved Livelihoods & Ecosystem Services Project

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## Summary Findings, Conclusions and Recommendations

Final Workshop  
From research to impacts: towards a better use of the Gash water  
resources for improved livelihoods

14 to 16 December, 2016  
Kassala, Sudan

# Objectives

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- To optimize the use of floods for agriculture and ecosystem services to support livelihoods in the Gash, Eastern Sudan.
- To identify the main challenges and opportunities for actual implementation of research findings and recommendations

# Research Questions

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- What is the impact of upstream development on downstream water use?
- What is the added value of socio-economics and ecosystems in Gash?
- What is the most 'efficient' use of floods in Gash basin? And what interventions and set of intervention support this?

# Research Components

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- Groundwater management
- Water resources allocations
- Ecosystem services
- Social-issues (gender issues and water management)

# Findings, Conclusions and Recommendations

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Note: all calculations are based on average annual flow of 650 Mm<sup>3</sup>/year

# Water Allocation & Groundwater Research Theme

## Horticulture area ---1

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### *Findings*

- Allocated 90,000 feddans (35,000 in GAS and 55,000 outside) - current utilized, 45,000 feddans (20,000 GAS, 25,000 outside).
- Under best scenario (mesquite control, reducing flow to Gash Die to 8 Mm<sup>3</sup>, efficiency of 80%), a maximum of 61,500 feddans could be irrigated – not the 90,000 feddans

### *Conclusion*

- There is room to cultivate 16,000 feddans more, not the complete allocated.

# Water Allocation & Groundwater Research Theme

## Horticulture Area -- 2

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### *Recommendation*

- Focus on high revenue generation through improving water productivity ( $\$/\text{m}^3$ )
- Awareness creation is important: e.g., exchange visits to neighboring countries experiencing similar groundwater depletion

# Water Allocation & Field Water Management Research Theme

## Gash Agricultural Scheme --1

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### *Findings*

- Under current field water management practice (55% efficiency), a maximum of 8% expansion is possible, i.e 90,000 feddan could be irrigated (1 feddan = 0.42 ha).
- Improving field water management (65% efficiency), could lead to 27% expansion, i.e 104,000 feddan can be irrigated

### *Conclusion*

- There is possibility for expansion (8%, or 27%)
- Expansion to 120,000 feddan (commonly referred value) is not a realistic target

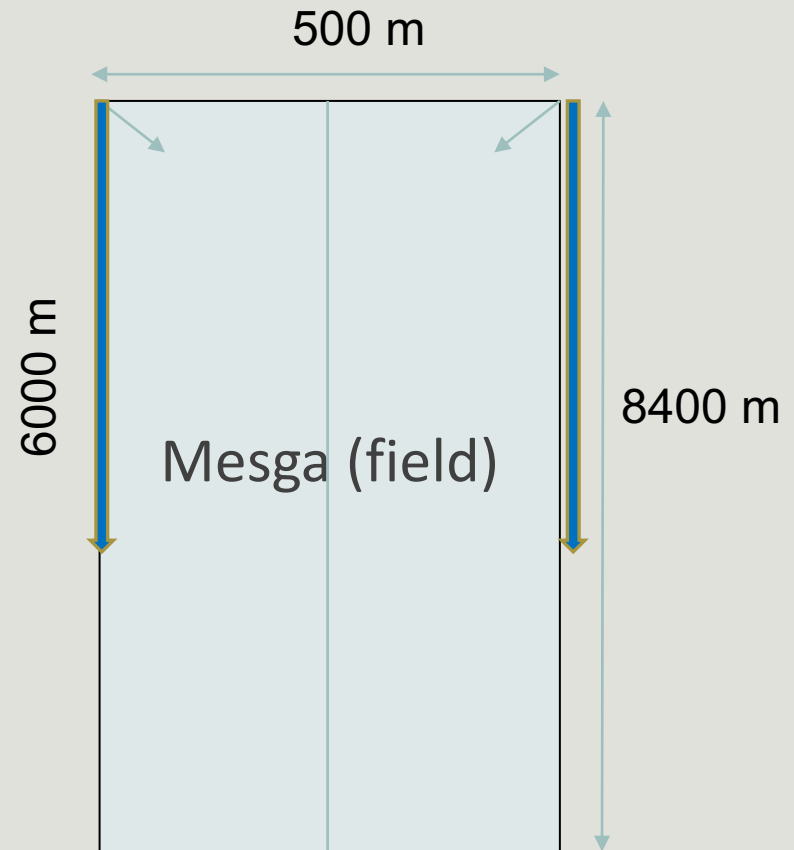


# Water Allocation & Field Water Management Research Theme

## Gash Agricultural Scheme --2

### *Recommendation*

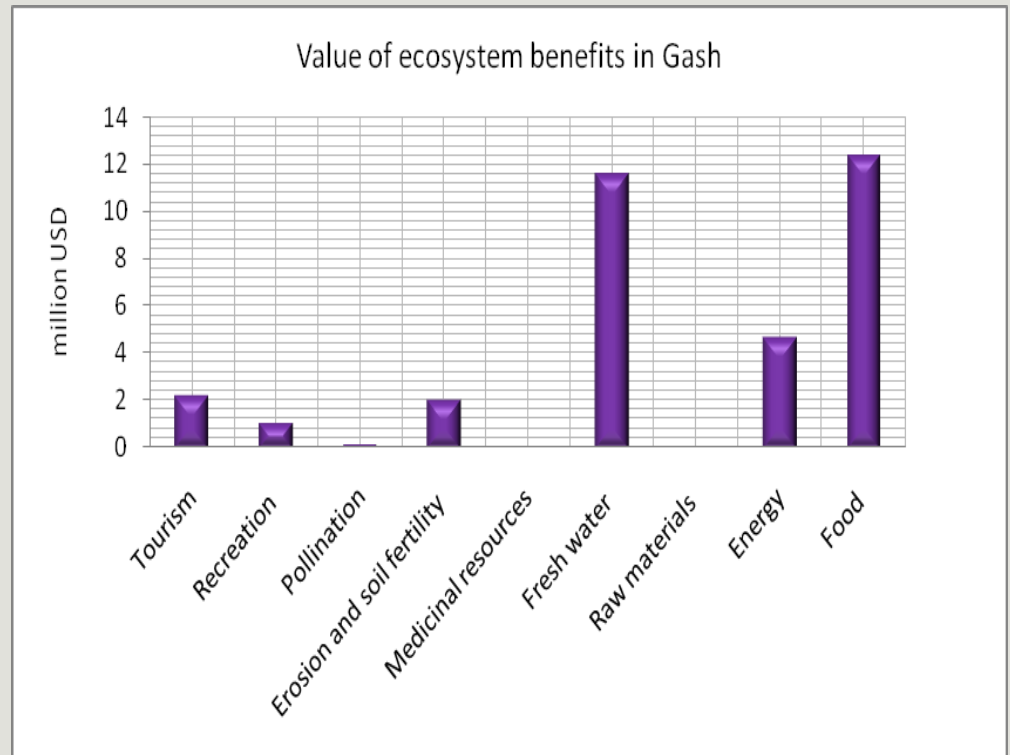
- Divide the Mesgha (field) vertically into two parts of 500 feddan each - to be tested at pilots
- Introduce field channels covering at least  $\frac{2}{3}$  of the field length on both sides - to be tested at pilots



# Ecosystem Services Research Theme ---1

## *Findings*

- Next to agriculture and horticulture, there are many more benefit streams that have received little attention (forests, grazing land, tourism, etc.)



## Ecosystem Services Research Theme --2

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### *Conclusion*

- Gash is the only major source of water: Investment in one of the benefit streams, without analyzing implications on the others, will not lead to optimal use of Gash river flow

### *Recommendation*

- IWRM approach is required for developing interventions that result in equitable, efficient and sustainable use of Gash River flow

## Ecosystem Services and Water Allocation Research Theme

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### *Findings for Gash Die*

- Gash Die experiences severe drought conditions - due to lack of water harvesting system and network, it has not benefited during wet seasons
- Under average Gash River flow analyses, 8 Mm<sup>3</sup> could be channeled to Gash Die without negatively affecting the other major benefit streams
- This amount sufficiently meets the domestic and livestock water demands as well as regenerating drought tolerant and multipurpose trees in about 5000 feddans

### *Recommendations*

- Rehabilitate the water harvesting system - canal network and reservoirs

## Panel Discussion

# From Research to Action: Challenges and Recommendations

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# Challenges, Limitations - 1

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## *Poor research set-up and results*

- Research does not look at issues from multiple angles and implications on multiples uses and users
- Sometimes research is too ambitious and not focused - ends up making general recommendations
- Some research recommendations do not fit the local context – priority issues; technical, financial, institutional capacities

## Challenges, Limitations - 2

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- Fragmented institutions with little coordination and not clearly defined responsibilities - research is falling victim to the ‘Tragedy of the Commons’ theory
- Some donors do not give attention for research - they would like to make interventions quickly - they focus on consultancy services for quick advice
- Some government institutions do not take research seriously - they do not identify it as important aspect of development programs
- There is insufficient local capacity – specially in the irrigation engineering sector

## Recommendation - 1

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### *1. Establish a body that coordinates research and development programs in Gash*

- This is preferred to be politically neutral and could perhaps be named ‘The Friends of Gash’
- Its membership need to be representative: key technical experts, main beneficiaries and their traditional organizations, key local institutions and research and development partners



## Recommendation - 2

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### *2. The Ministry of Water Resources, Irrigation and Electricity (MoWRIE) need to strengthen Irrigation Sector in Gash*

#### *Possible options*

1. Establish Operation and Maintenance (O&M) unit responsible for the irrigation system in the Gash Agricultural Scheme (GAS)
  2. Modify and strengthen the responsibilities of GRTU (Gash River Training Unit) to also include O & M of the irrigation system in GAS
- Establish the most suitable institutional links between the MoWRIE and the GAS

## Recommendation - 3

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### *3. Focus on solution-oriented research embedded in the local-context*

- To ensure that the research is conducted in full partnership with all relevant bodies including the grass roots & beneficiaries organizations, community leaders, potential donors, implementing government & private organizations. These institutions should collectively:
  - Agree on the priority problem and define the research questions
  - Support the researcher work
  - Debate and endorse the findings and recommendations

## Recommendation - 4

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### *4. Donors should not ignore local research*

- Consultancy service can not and does not replace research and vice versa. Research plays a supportive role because it provides the knowledge and information required by consultants to base their valuable advice

## Recommendation - 5

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*5. In situations where the need for new research is demonstrated, donors should allocate sufficient budget from the investment fund to undertake solution-oriented research*

## Recommendation - 6

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*6. We have to develop the capacity and change the attitude of all government authorities (policy and decision makers) to respect research and accept the findings of the research.*