KNOWLEDGE AND EXPERIENCE SHARING SYMPOSIUM

Towards Highly Rewarding and Inclusive Flood-based Livelihoods

Significant contributors to food and nutrition security and healthy environment

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MetaMeta/ICRAF

4TH TO 8TH MARCH, 2019

VOI WILDLIFE LODGE, TAITA TAVETA COUNTY, KENYA

Peak discharge: 500 m^3/s

20,000 ha Wadi Mawr scheme in Yemen

Up to 10% sediment concentration

50,000 ha Gash Scheme, Sudan

Flood-Based Livelihood Systems (FBLS) are productive and innovative

Reversing the destructive nature of floods and the huge sediment challenges they bring along into a blessing for:

- Increased cropped area and higher yield: cereals, oil seeds, pulses, trees
- Preserving biodiversity, rehabilitation of degraded environments
- Better groundwater recharge
- Domestic and livestock water supply
- Mitigating climate change impact and variability

There are many reasons to invest in FBLS

- They are staged in remote locations – they can directly benefit flood and drought prone communities
- They are significant: 15 million ha in arid and semi- arid regions in SSA – and another 15 million in Asia and the Middle East
- Much of the potential is still unharnessed – relatively much investment has so far been directed to rain-fed and conventional irrigated agriculture.

The future of FBLS is bright …….

- The flood and drought prone ASAL areas are increasingly becoming important livelihoods hubs.
  - ”Due to population growth and urbanization, farmers, who had enjoyed rain-fed farming systems or places with relative plenty irrigation supply, are being pushed into dryer, more marginal areas where they become increasingly vulnerable to recurrent drought and flooding, and the unpredictability of weather patterns resulting from climate change.” *FAO (2017) Partnering to build resilience, food and nutrition security*

The four categories of FBLS

- **Spate irrigation:** diversion, distribution and management of short duration flood flows from seasonal or ephemeral rivers
- **Flood-spreading weirs:** using a series of weirs to manage and spread floods for rehabilitating degraded land, enhancing ground water recharge
- **Flood plain agriculture:** cultivation of flood plains, using either receding or rising flood water or both
- **Roads for water:** water harvesting from roads for multiple use

Spate irrigation defined

- Ephemeral rivers - short duration floods (last a few hours to a few days)
- Floods carry large quantities of sediment (up to 10%)
- Floods are directly diverted and distributed to cultivable land
- Crops grow on residual soil moisture
- Deep soil profiles with good infiltration, water holding capacity, and hydraulic conductivity are necessary
- Deep rooted crops are preferred

Wadi Mawr spate irrigation in Yemen

Innovative earthen flood diversion bund with porous spillway

Earthen diversion bunds with porous spillway

A breached earthen bund could cause significant damage

Simple interventions can make big difference

Divide wall removed to splash sediments & make weir operational

Soil moisture conservation in flood prone areas - Kajiado County (Celestine Kilongosi)

Ridge and mulching increased

Yield of sorghum by 56%

From 5.2 to 8.1 ton/ha

Some bright spots

Spate irrigated areas in Eritrea and Ethiopia

1st harvest : 4 ton/ha

2nd harvest (ratoon): 2 ton/ha

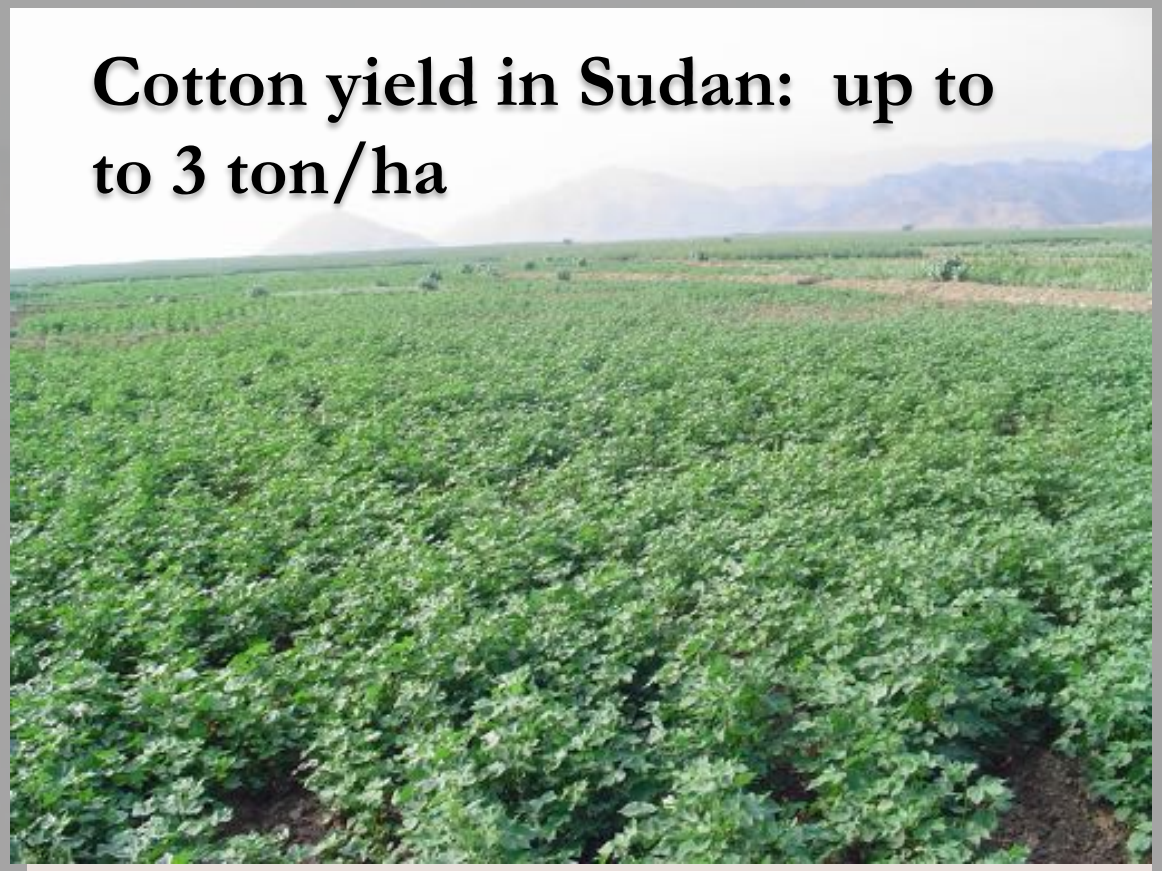
Third crop: water melon

FAO data base: A good sorghum yield under irrigation is 3.5 to 5 ton/ha

Some more bright spots

Highly value crops also flourish under spate irrigation

Oil Seeds yield (Sunflower, Soybeans) in Pakistan : up to 3.5 ton/ha)



FAO data base:
Cotton yield : 3.5 to 5 ton/ha, Oil seeds 2 to 4 ton/ha

Floods major source of drinking and livestock water supply in Gash, Sudan

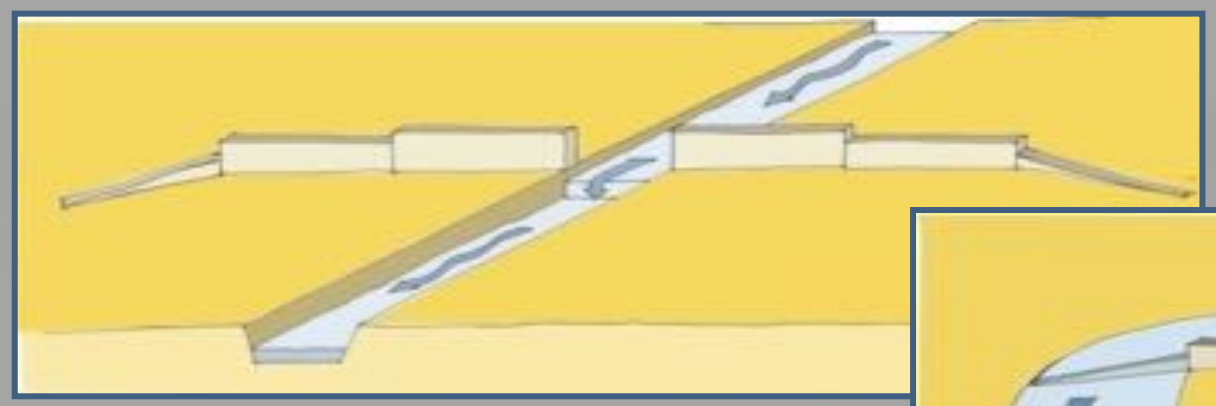
Flood-fed artificial well recharge basins mainly for drinking water supply

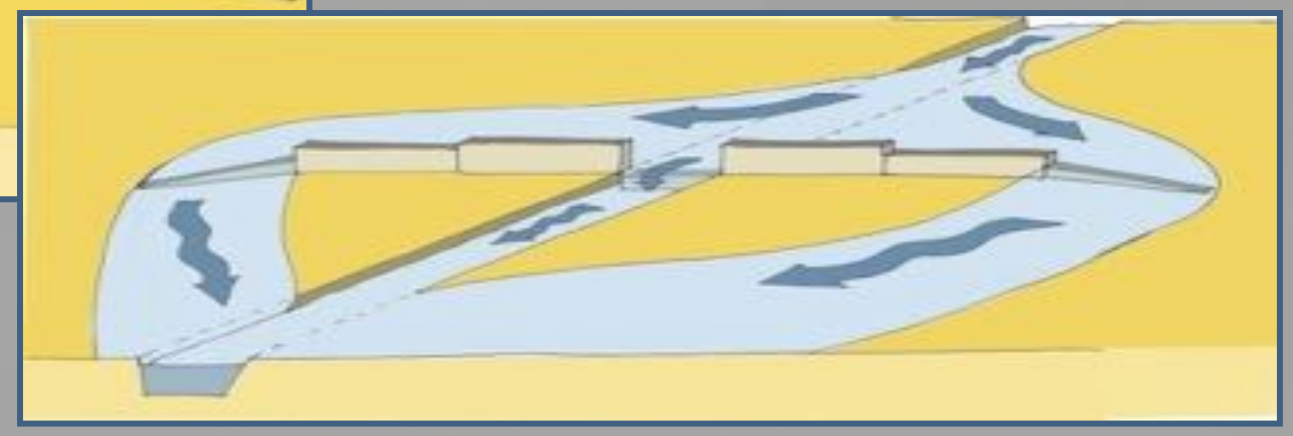
Flood-fed reservoirs for both human and livestock consumption

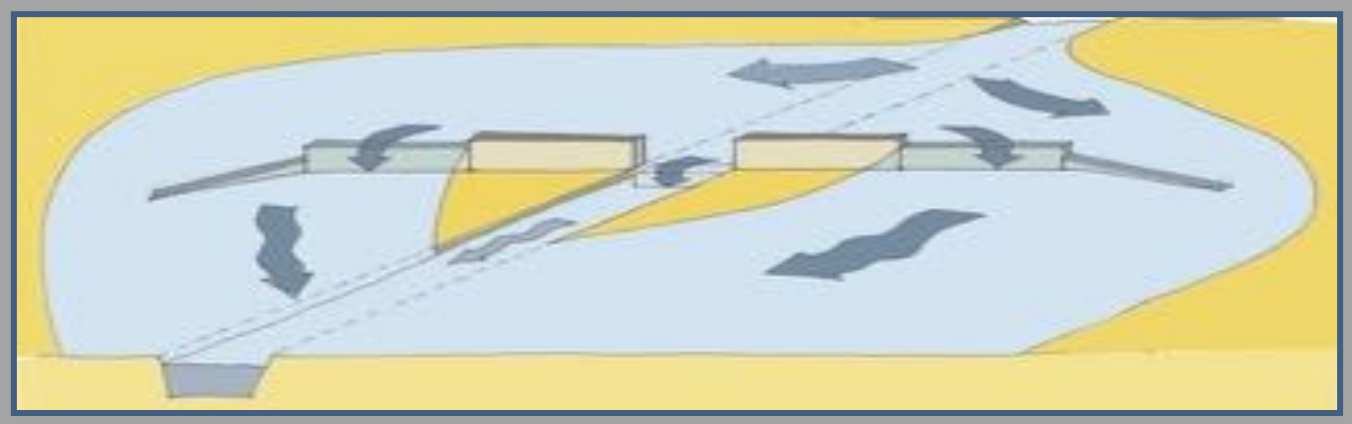
Floodwater spreading weir (Giz, Dieter Nill) - Niger

Rehabilitate degraded land, improve groundwater recharge and agricultural productivity

Floodwater spreading weir - the principle







Changes in arable land, yield and production in 11 rehabilitated valleys in Niger (Betifor, 2010)

Element	Situation before flood spreading weirs	Situation after-wards	Difference	Growth factor
Area under cultivation (ha)	2,847 ha	8,132 ha	5,285 ha	**2.9**
Yield (kg/ha)	333 kg/ha	675 kg/ha	342 kg/ha	**2.0**
Production (t)	**948 t**	**5,489 t**	**4,143 t**	**5.8**

- **2 to 3 times harvest per year of pumpkin, tomato, sweet potato, onion**
- **Groundwater level increased by 8.5 m in 5 years**

Appreciate full report at: https://www.giz.de/fachexpertise/downloads/giz2013-en-water-spreading-weirs.pdf

Flood plain agriculture – flood recession

Flood recession Agriculture in North West Ethiopia

Chick pea - yield

- Rain-fed: 400 to 600 Kg/ha
- Flood-recession: 2 ton/ha
- FAO data base: 2 to 3 ton/ha

Flood plain agriculture – flood rise

- Deep water rice that grow in flooded conditions: water > 50 cm deep for at least a month
- More than 100 million people in South and Southeast Asia rely on deep-water rice for their sustenance
- Adaptation strategy: advanced elongation ability

Harvesting floods from roads

Flood-Based Livelihoods Network Foundation

"Floods are not always a hazard. They may also sustain aquatic life and riverine biodiversity, recharge aquifers, enrich soils and in some of the world's poorest areas they are the main source of irrigation."

Global Water Partnership (2000) 'Toward water security: a framework for action'

NEWS

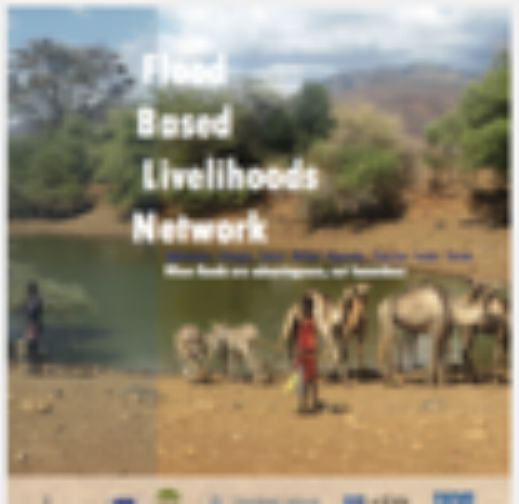
www.spate-irrigation.org

- Read our latests newsflash here
- Practical note no. 38 The Use of Trees and Shrubs in Spate Irrigation Areas is now available
- From the 4th till the 8th of March the knowledge and experience sharing symposium on FBLS will take place in Voi, Kenya. For more information and subscription, click here.

Join the Network

THE FLOOD-BASED LIVELIHOODS NETWORK

is a network of spate irrigation professionals and practitioners. The network stimulates the development of programmes of implementation that improve the livelihoods of those in spate irrigation areas, exchanges experiences and good practices, helps upgrade training, identify priority fields for improvement and research and development.
Read more...



Newsflash February 2019

Flood-based rice farming in Ahero

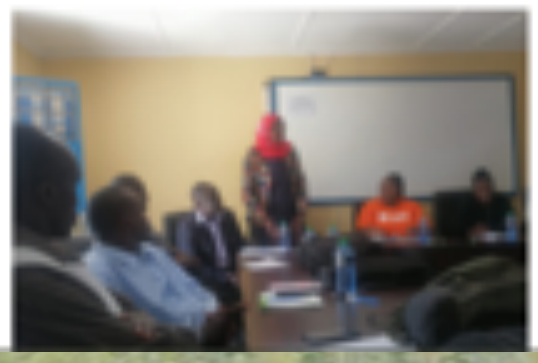
In Ahero (Kenya) over 1000 farmers practice flood-based rice farming and are fully dependent on floodwater. This video gives an overview of their practices and innovations.

Staff training on FBFS and rainwater harvesting

FBLN Malawi trained 42 extension workers from government departments and NGOs in the Shire Valley (Chikwawa and Nsanje Districts). The training took place the 21st and 22nd of January and covered FBFS and rainwater harvesting. Through FBFS the Shire Valley could potentially be the bread basket for the country.Participants visited some farmers practicing FBFS in the area. Communities associate floods with short term benefits in form of relief items e.g. blankets, cooking oil, clothes. However further probing and discussions revealed that FBFS form the basis their food production systems. There is need for more awareness raising on FBFS and changing of attitudes towards floods. Strategies have been drawn to set up demonstration sites and farmer field schools.

Field Day on FBLS in Kajiado, Kenya

The Ministry of Agriculture – State Department of Irrigation, is the key institution having collaborating arrangement with ICRAF, and by extension – The FBLS Programme that aspires to cross fertilize knowledge between Africa and South Asia. One of the key areas of focus for the Kenyan Chapter of the FBLS Programme is to map potential sites within the country. The field day was thus organized to convene Kajiado farmers in a bid to sensitize them on the FBLS potential in their county, get them to ground-truth, ascertain and approve the mapping result and expound to them – the opportunities they can tap through enterprises such as Sorghum and Calotropis that can tolerate the twin challenges of flood inundation and cyclic droughts. About 35 farmers attended the field day on the 31st of January and participated in discussions and presentations made by ICRAF, SDI officials and a Lecturer from Jomo Kenyantta University of Agriculture and Technology. Participants were amazed to know that it is possible to grow Sorghum under spate irrigation for animal feed and grains for human consumption as well as beer production. This was evidenced by the



Strengthened farmers' outreach

Farmers from Ethiopia, Sudan and Yemen exchanged experience in the Gash Scheme in Sudan

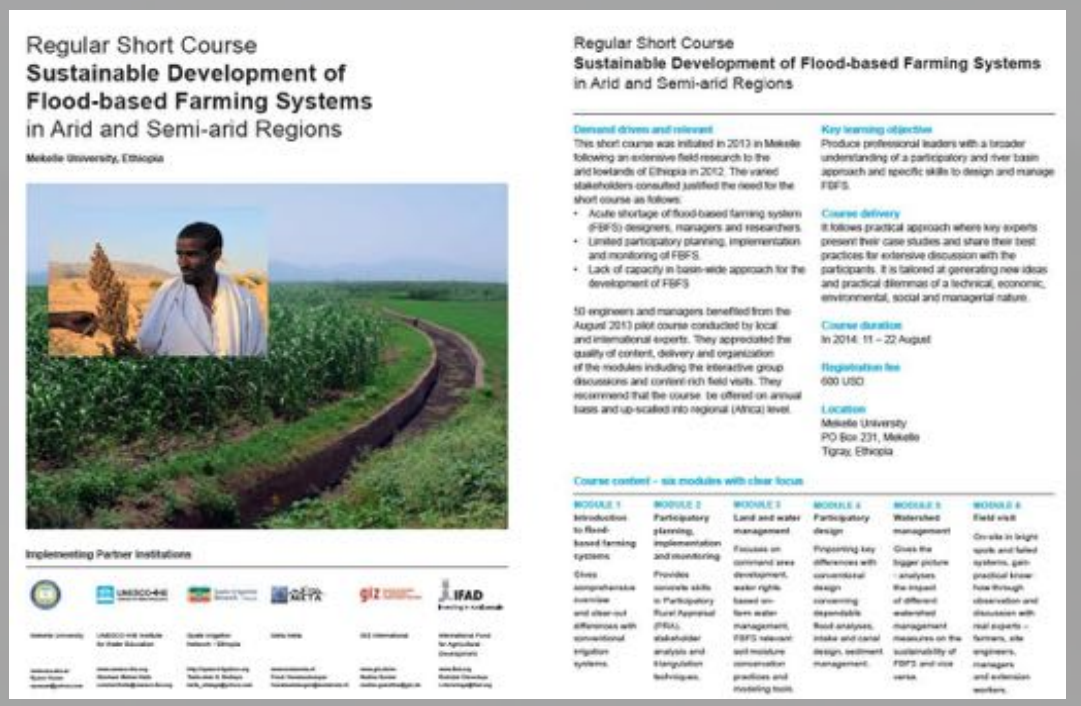
Investing in local champions

Model practitioner from Sudan

Model Farmer from Ethiopia

Local political leader (Pakistan)

Regional and international leadership courses



- Regional course in Ethiopia has run for the 7th time in 2018
- The Intentional FBLS course is being organized for the 3rd time - to be an annual event in Kenya

Consultative workshop to identify priority investment areas in FBLS - 12 and 13 March at Voi, Kenya

Two objectives

- Identify the priority areas of investment and the varied fronts of targeted support required to harness the potential of FBLS
- Prepare a working list of such investments along with indicative technical capacity and financial requirements

Four discussion sessions followed by investment defining groups

- Background paper: unlocking the potential - targeted investment in FBLS
- Synthesis of this week (4 to 8 March) knowledge and experience sharing symposium
- Examples of successful targeted investment programmes
- Donors perspectives

Global Resilience Partnership:
“Floods are not always a hazard. They may also sustain aquatic life and riverine biodiversity, recharge aquifers, enrich soils and in some of the world’s poorest areas they are the main source of irrigation.”