Flood-based Farming Systems Significant Contributors to Water & Food Security & healthy ecosystem

Leadership Course in Flood-Based Farming
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Floods could surprise you

Floods bring huge sediments: A blessing, but also a challenge

Annual average field rise: 3 cm

Up to 10% sediment concentration in floodwater

In some fields sediment deposition reaches up to 3 m

Flood-based Farming is an Innovation?

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

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

More reasons why we should invest in FBFS

- They constitute poverty pockets - central to our effort to lift 700 to 800 million people out of poverty and into prosperity.
- They are significant: 15 Million ha in arid and semi- arid regions in SSA - 30 million ha worldwide.
- Much of the potential is still unharnessed - they are orphans left-out between rain-fed and conventional irrigated Agriculture.

Low Human Development Index?

Most countries in Africa

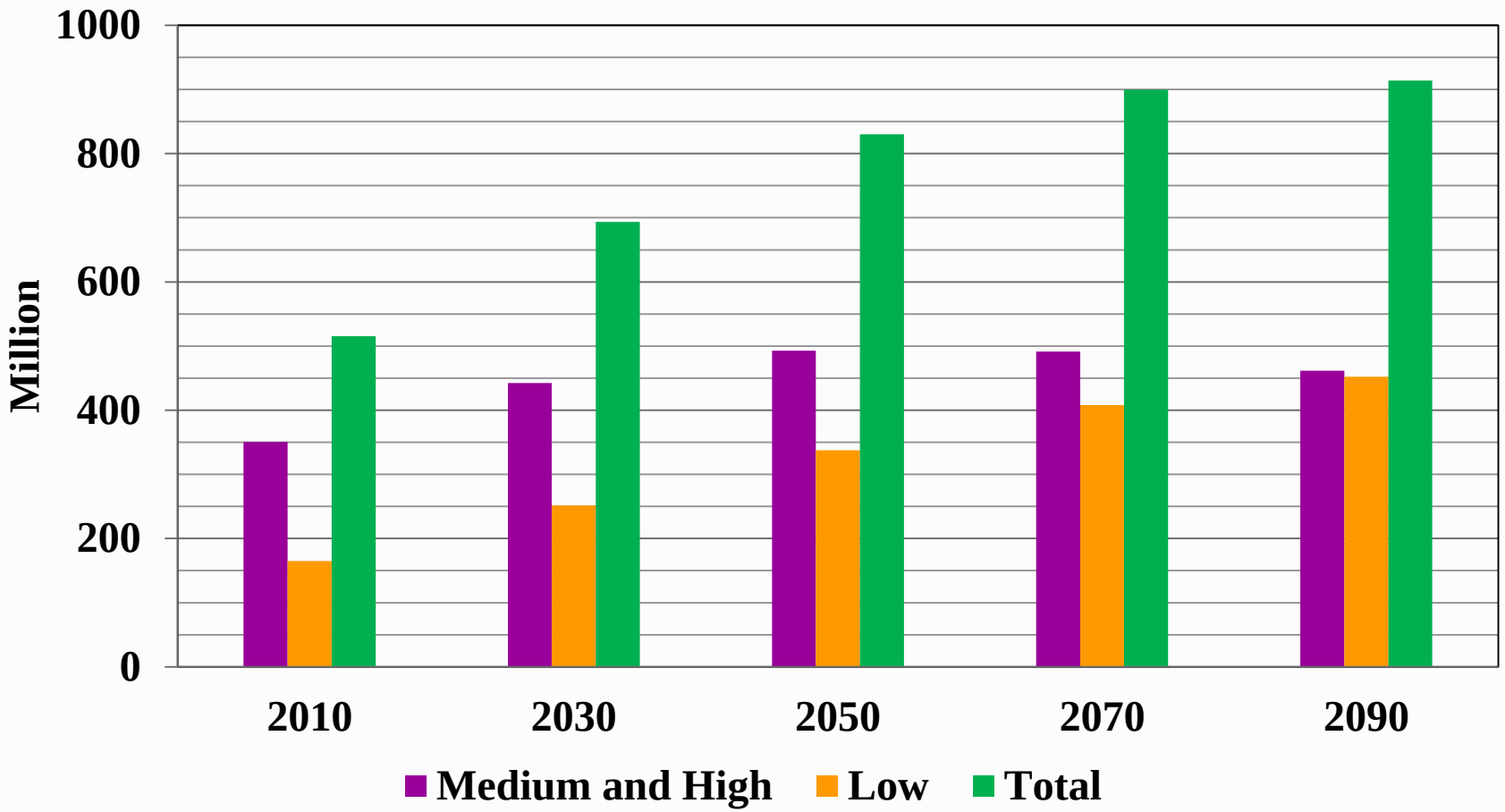
- majority of population is farmer (> 50%)
- low productivity
- lack of inputs and resources to increase productivity
- weak institutional capacity

Medium and high human development index?

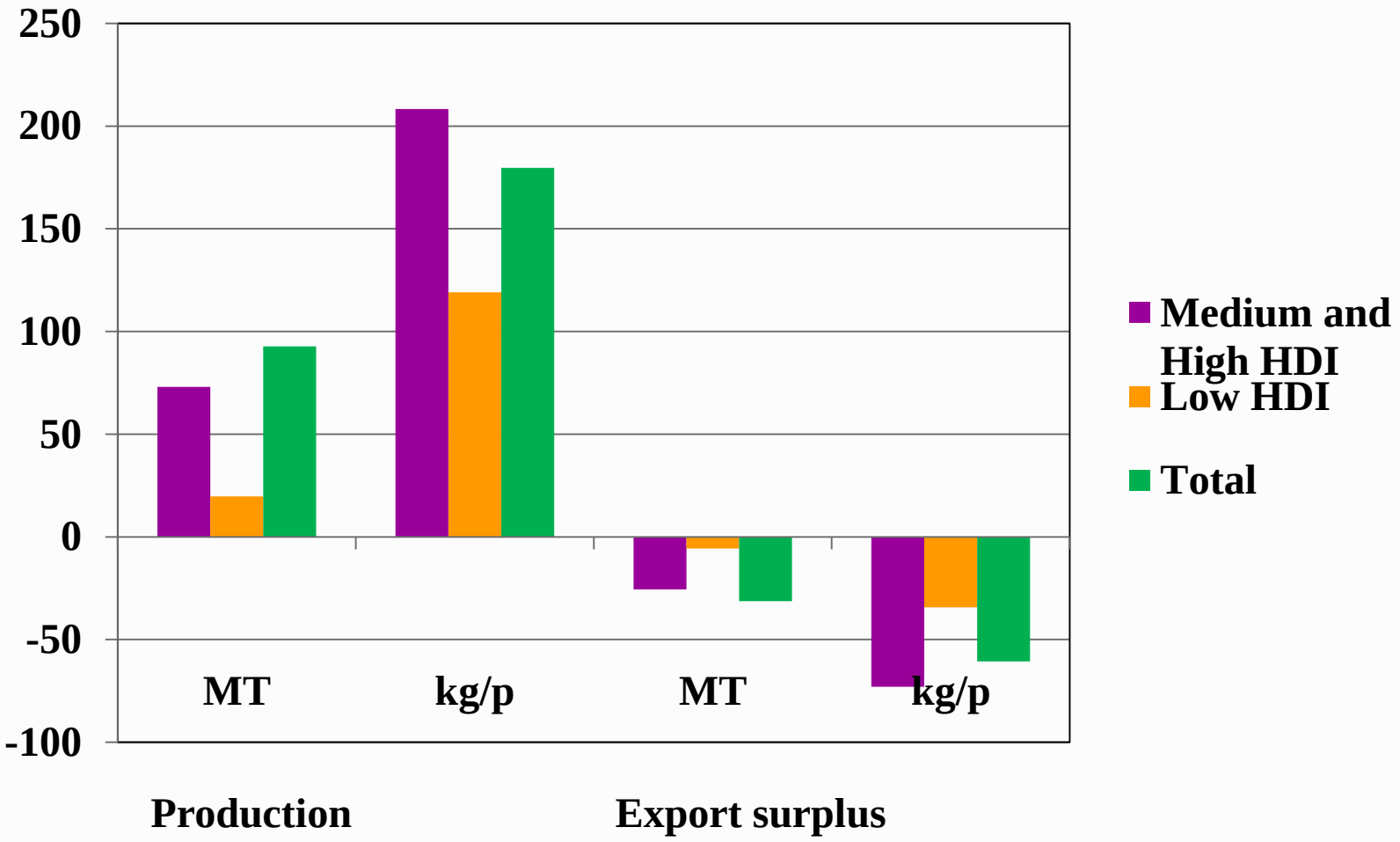
Most countries in Eastern Europe, in Central and South America and in Asia, including Russia, Brazil, China, India, Indonesia, several countries in Africa

- growing economy driving farmers from their land to urban areas
- increasing demand, increase in production
- increase in farm sizes, mechanization
- higher-value crops to make a living on a relatively small plot
- part-time farming, in combination with a job in industry or service sector

Population in Countries with (Flood) Spate Irrigation



Cereal data in Countries with (Flood) Spate Irrigation

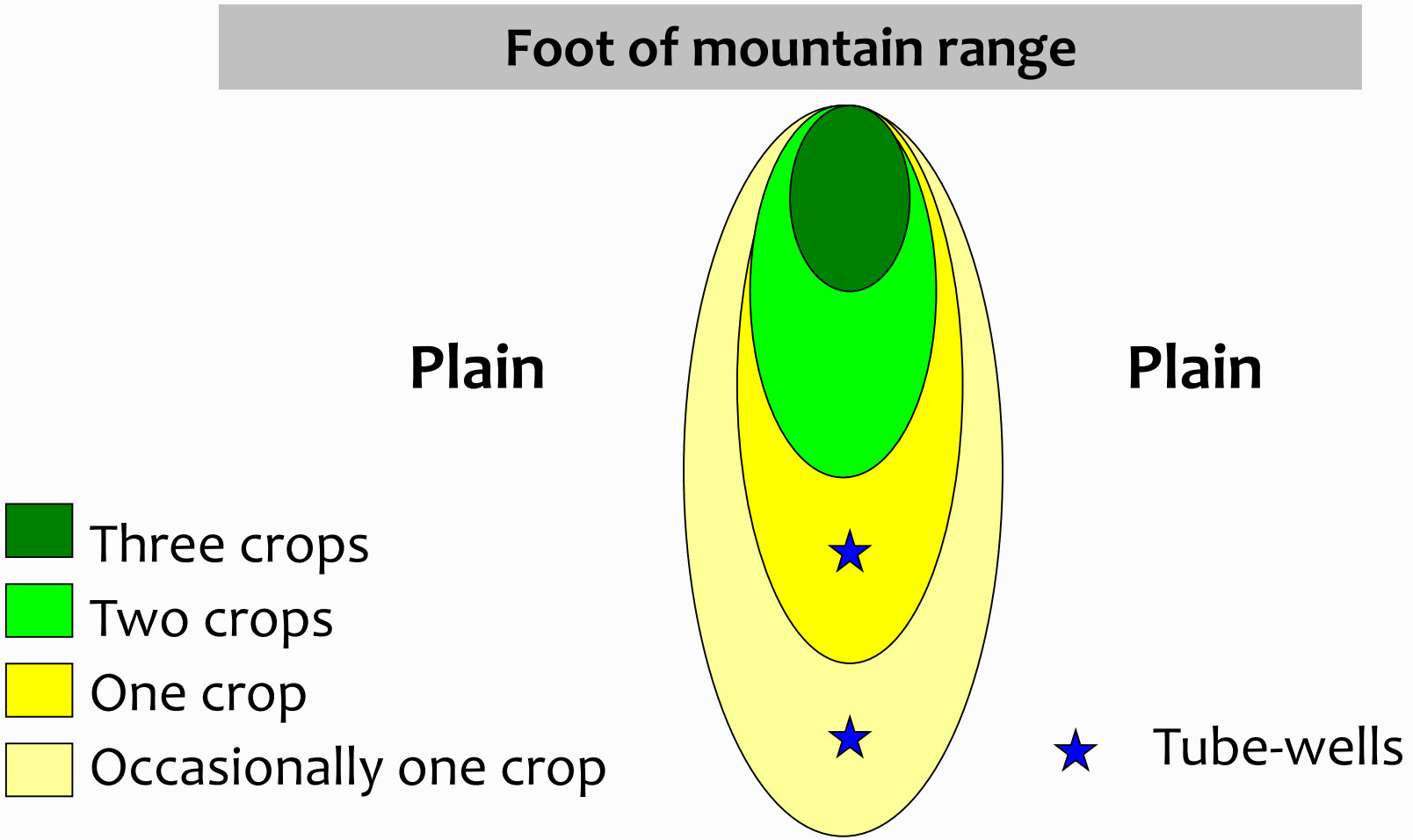


Methods of Flood-based Farming

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

Spate Irrigation Methods

Characteristics of spate irrigation scheme

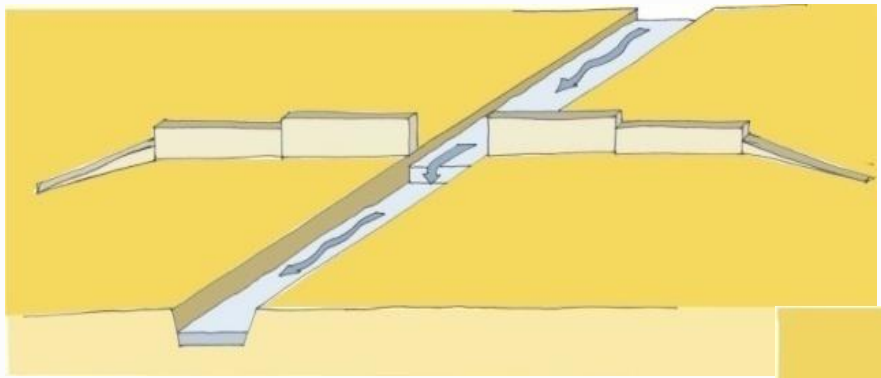


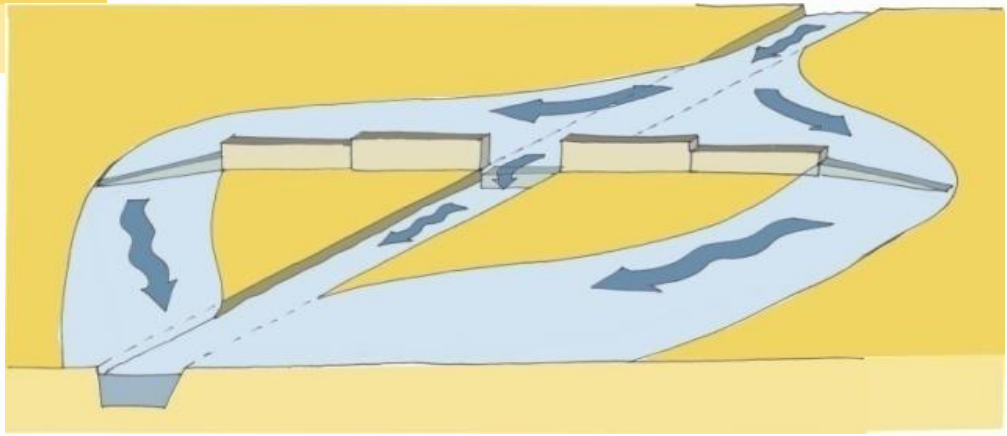
Flood-plain agriculture - recession

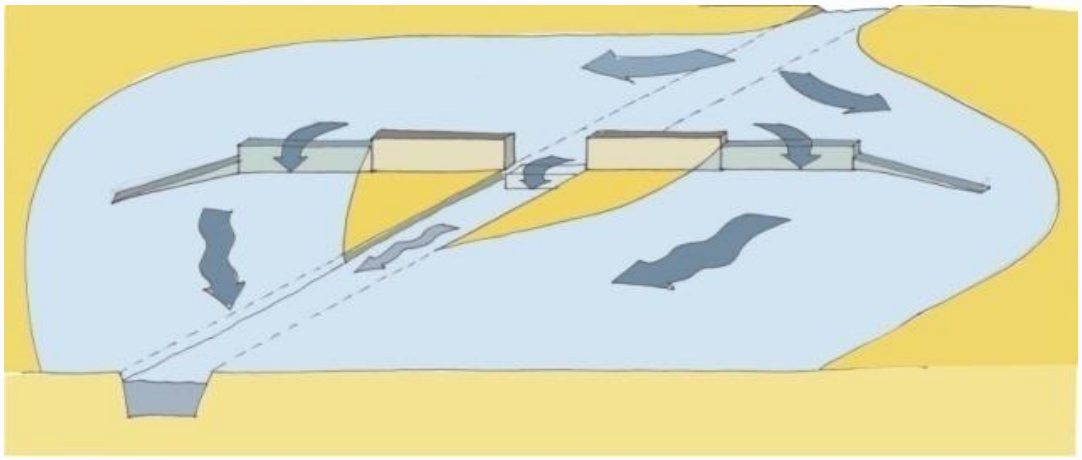
Flood-plain agriculture – flood rise

- 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

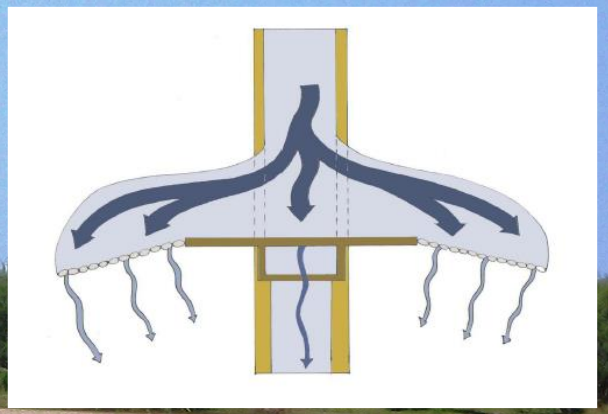
Floodwater spreading weir







Niger: Floodwater spreading weir = Roads (Giz, Dieter Nill)



Harvesting floodwater from roads

We should invest – FBFS are productive?

Chick pea - yield

- Rainfed: 400 to 600 Kg/ha - rain fed
- Irrigated: 2000 - 5200 kg/ha -

Fogera Flood plain - Flood recession:
North West Ethiopia, East of Lake Tana

We should invest – FBFS are productive

First harvest :
4 ton/ha

Second harvest (ratoon):
2 ton/ha

Third crop:
water melon

Wadi Mawr Scheme, Yemen

Preserving biodiversity & providing livelihood

Spate systems are Depositories of local biodiversity - Natural species of vegetation are often of considerable value and may provide additional source of income to local communities

We should invest in FBFS: Gash river fed reservoir in Sudan Flood is the only source

We should invest in FBFS: Gash river fed wells in Sudan Flood is the only source

We should invest in FBFS: Cotton production in Toker, Sudan

Flood spreading weir: Niger we should invest n FBFS: Gash, Sudan)

Rehabilitate degraded land, improve groundwater recharge and agricultural productivity

Preventing landscape degradation

Economic benefits: Harvesting water from roads

	USD/km	% annual damage	% caused by water	Water damage USD/year
High way	1,250,000	6	30	22,500
Feeder road	180,000	10	35	5700
Gravel road	40,000	20	40	3200

Investment:

Water harvesting structures: USD 5,000-10,000/km

Modification to road design: USD 8,000-80,000/km

Return - benefit

Pay back in reduced road damage 1-4 years

Reduced erosion and flooding ++++

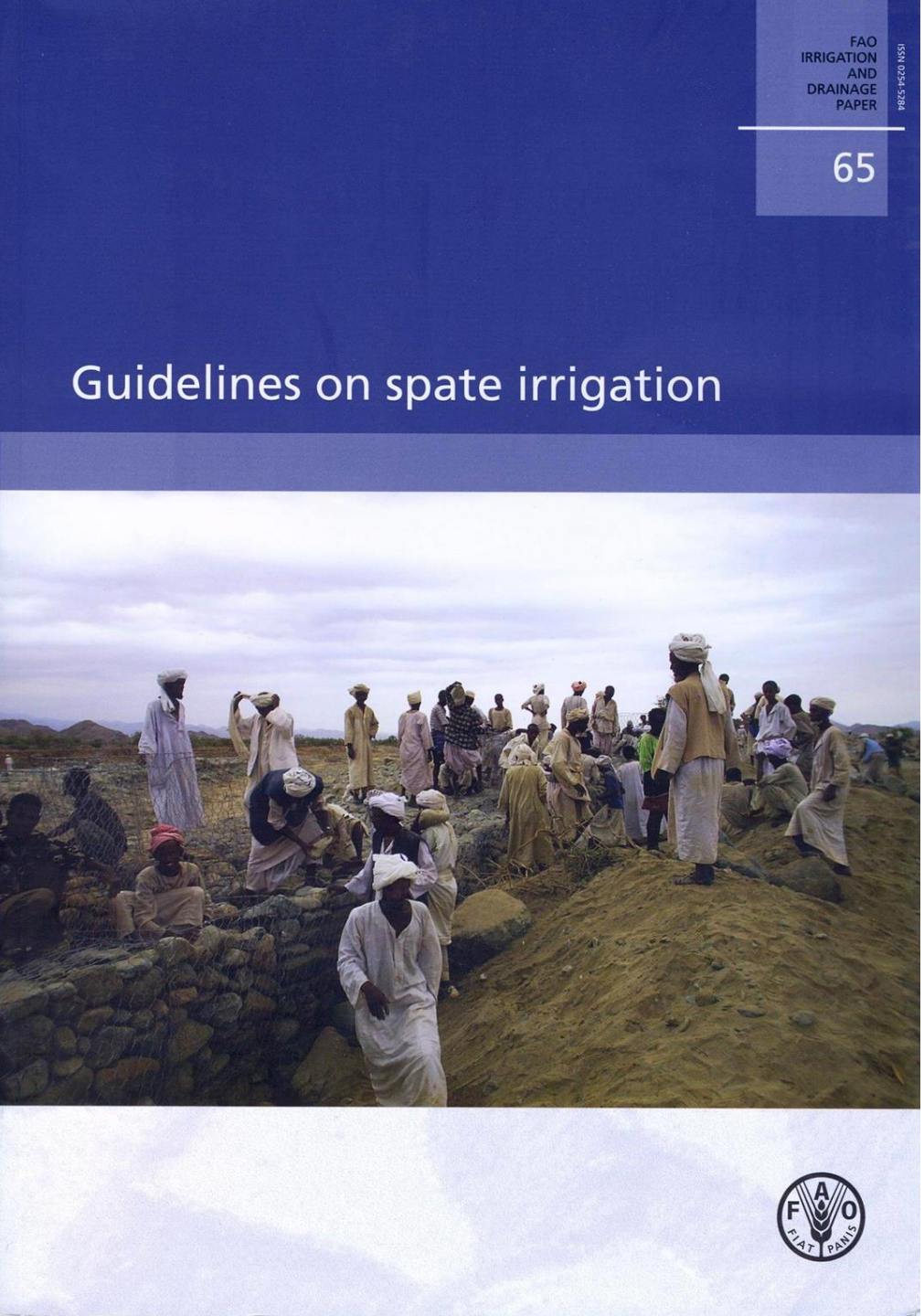
Water harvesting benefits ++++

The need for overflow structures

No overflow control structures

Open field intake with stop blocks

Orifice with settling basin for sloping fields



FAO GUIDELINES ON SPATE IRRIGATION

More detailed Design guidelines are under preparation

www.spate-irrigation.org

Spate Irrigation Network

Home/ What is Spate Irrigation?/ News/ Guidelines/ Partners/ Contact / Spate Irrigation Network/ Library/ Links/ Spate Irrigation Community

"Floods are not always a hazard. They may also sustain aquatic life and riverine biodiversity, recharge aquifers, enrich soilds 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 & Recent Additions

Events

- 15 September 2011: Summer course "Spate Irrigation and Water Management Under Drought and Water Scarcity" in Delft from 5 to 16 September 2011. Read more...

Highlights

- Download the Overview Paper Spate Irrigation: Spate Irrigation in the Horn of Africa: Status and Potential

THE SPATE IRRIGATION 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


Thank you!