Flood based farming and rain water harvesting

Water Harvesting

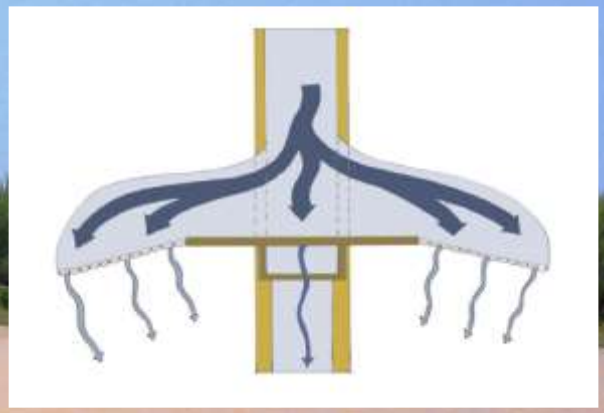
The large potential: some key figures

- *Food production has to increase with **60%** from 2005-2050*
- *Fibre production with **81%** in same period*
- *Rain-fed agriculture is now **83%** of land area and **58%** of food production*
- ***75%** of increased food production can come from rain-fed agriculture*
- *Potential productivity increases are highest in flood based farming and rain-fed agriculture, esp. in SSA: even with low additional inputs they can more than **double***
- *It is one of the great opportunities for future food security*

- *From WBCSD Report:*
- ***In the top of 10 co-optimizing solutions***
- *Intense water storage (moisture, groundwater, surface water)*
- *Agronomic measures*

Spate irrigation and flood based farming, Eritrea

Niger: flood water spreading, sand dam, bed stabilizer and road crossing




Spain
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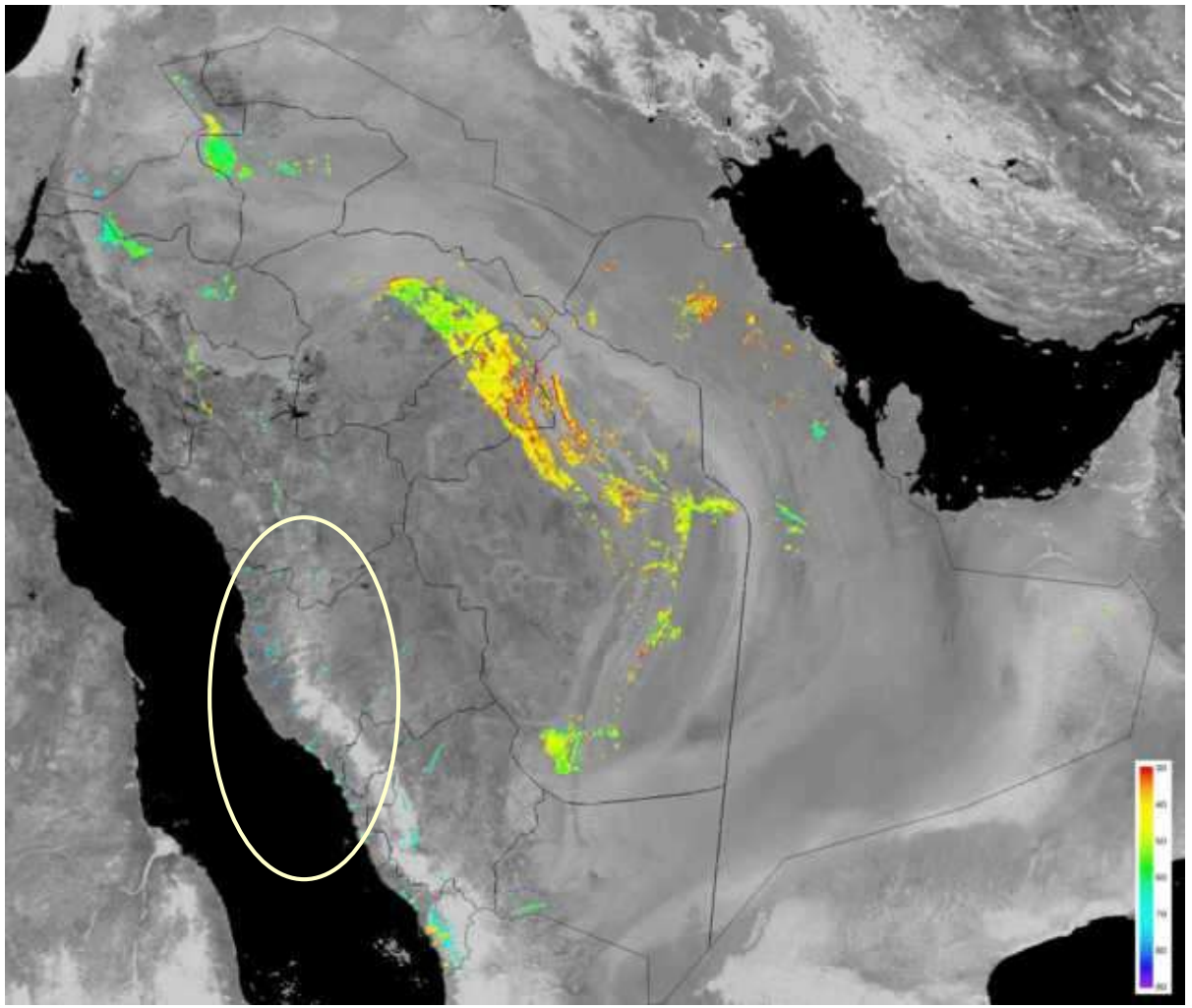
Greece
Türkiye
Turkey
Turkmenistan
Tunisia
Morocco
Iraq
Iran
Afghanistan
Pakistan
Algeria
Libya
Egypt
Saudi
Arabia
Mauritania
Mali
Niger
Chad
Sudan
Eritrea
Yemen
Nigeria
Ethiopia
Somalia

Irrigation efficiency (consumption/supply) for all irrigated areas in Saudi Arabia averaged for the period 1975 to 2005. The wheat belt with (badly managed) centre pivot irrigation systems have an efficiency of 40%. The highest efficiencies (70%) are obtained at the spate irrigation systems along the Red Sea coast!

Saudi Arabia: Irrigation efficiency can be high



Source: WaterWatch

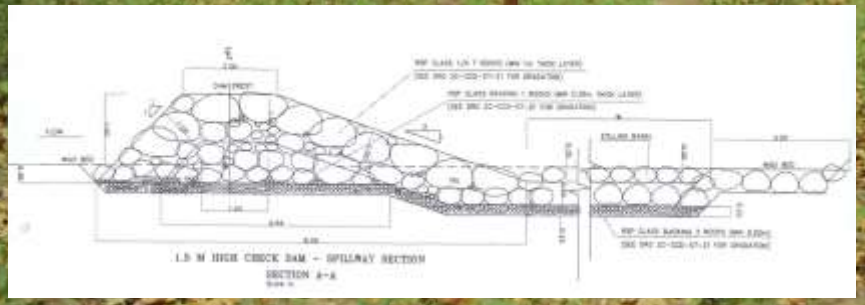
Comparing..

Perennial irrigation (dam based)	**Spate irrigation**
Secure supplies – provided dam has reasonable catchment and manageable sedimentation	Insecure supplies unless combined with groundwater irrigation
In shallow dams high evaporative losses, in deep reservoirs not too much	Water storage in soil profile/ shallow aquifer – low evaporation losses
Investment costs per m3 stored is high	Investment cost per m3 stored is low (if there is a fresh water aquifer)
Sedimentation may cause siltation (and prevents recharge)	Sedimentation contributes to fertility
Can store peak flows	Cannot utilize all peak flows, but shallow reservoirs may be added within command area

Niger: getting it right: the art of the Zai

Treating a landscape in one year, Tigray


Traditional biological treatment, Tigray - Ethiopia



Cascade Checkdams, Yemen

Warping dam, China

Floodwater spreading and sowbug, Iran

Water retention weir, Maharastra (India)

ETHIOPIA:
Infiltration Trenches From Road Drainage

Knowing is not enough
we must apply

Willing is not enough
we must do