Flood based farming and rain 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
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...

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<thead>
<tr>
<th>Perennial irrigation (dam based)</th>
<th>Spate irrigation</th>
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<tbody>
<tr>
<td>Secure supplies – provided dam has reasonable catchment and manageable sedimentation</td>
<td>Insecure supplies unless combined with groundwater irrigation</td>
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<tr>
<td>In shallow dams high evaporative losses, in deep reservoirs not too much</td>
<td>Water storage in soil profile/shallow aquifer – low evaporation losses</td>
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<td>Investment costs per m3 stored is high</td>
<td>Investment cost per m3 stored is low (if there is a fresh water aquifer)</td>
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<td>Sedimentation may cause siltation (and prevents recharge)</td>
<td>Sedimentation contributes to fertility</td>
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<td>Can store peak flows</td>
<td>Cannot utilize all peak flows, but shallow reservoirs may be added within command area</td>
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Niger: getting it right: the art of the Zai
Ethiopia - Tigray

• Picture of process
• Work done
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