Future options and Decision Support System in Irrigation Management Andhra Pradesh (India)

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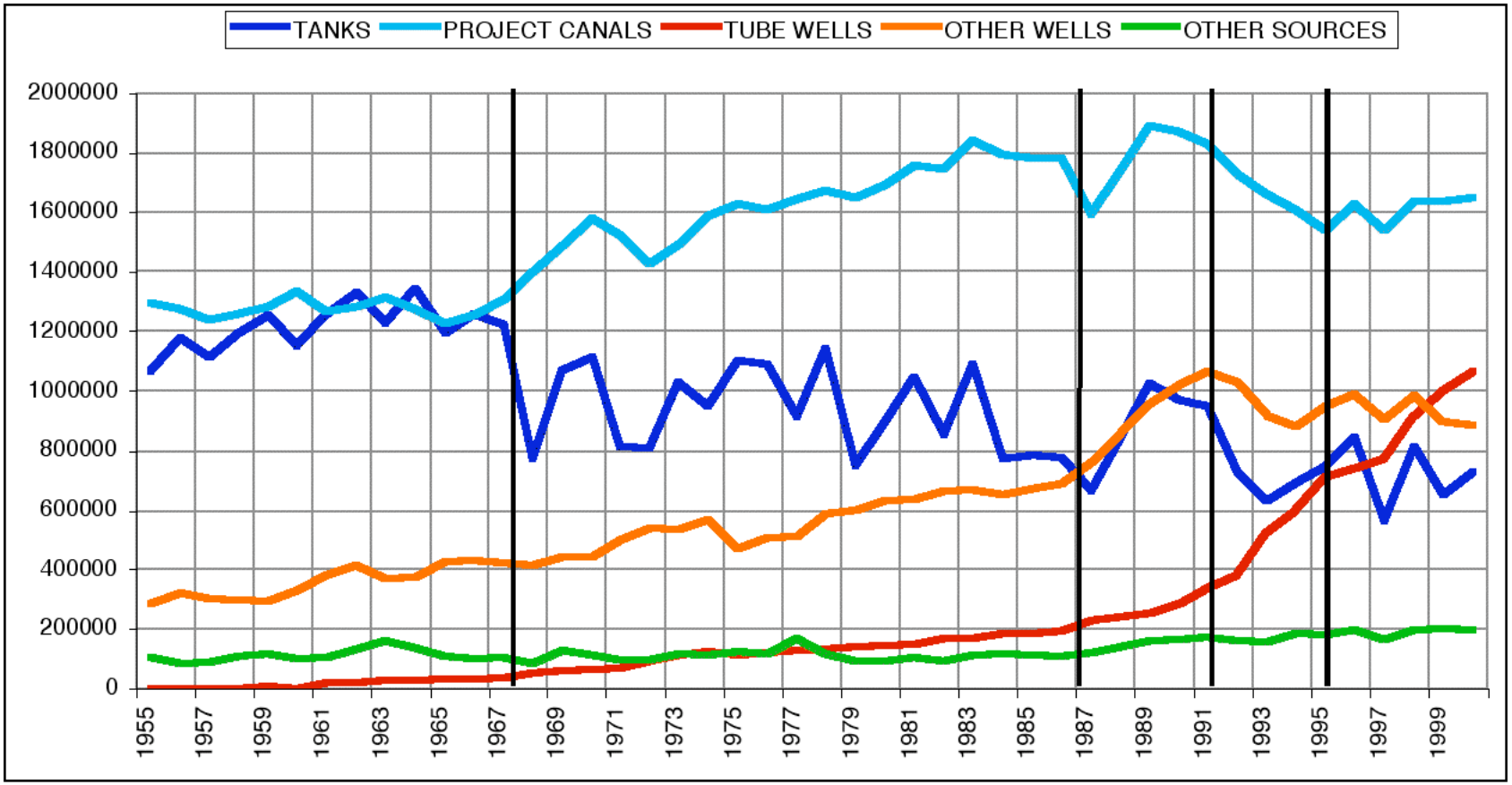
Source wise irrigation

- Up to 1967: Stability,
- 1967 - 1987: Increase in **canals** and **wells**, decrease in **tanks**
- From 1991: Decrease in **canals**, sharp increase in **tube wells**



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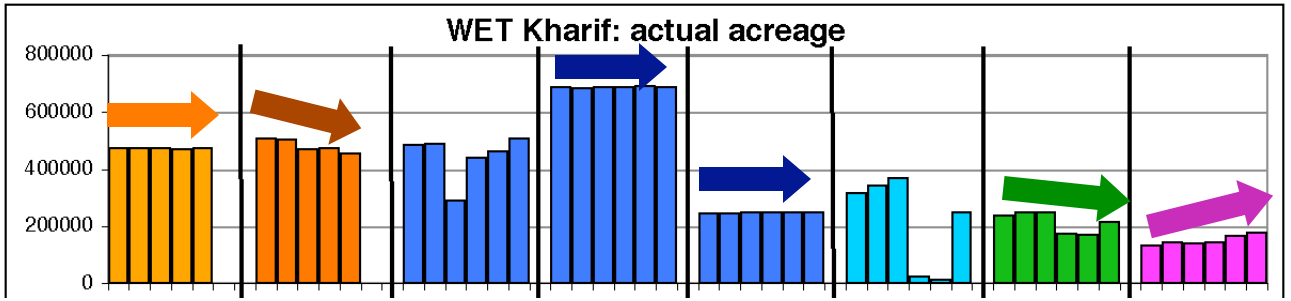
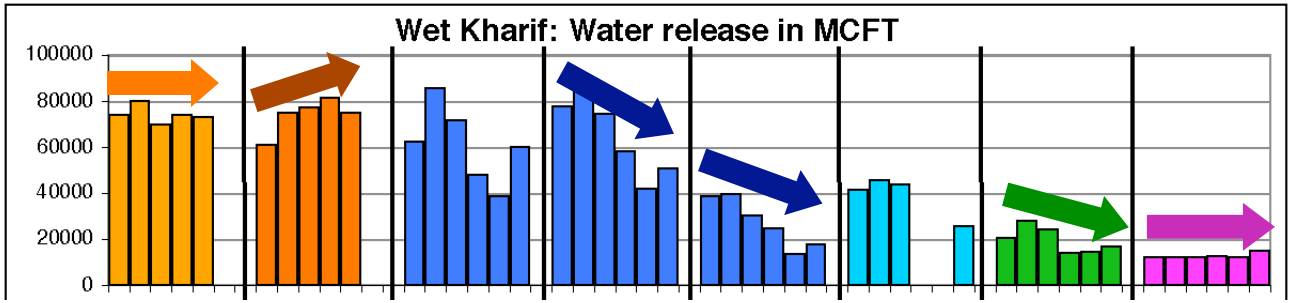
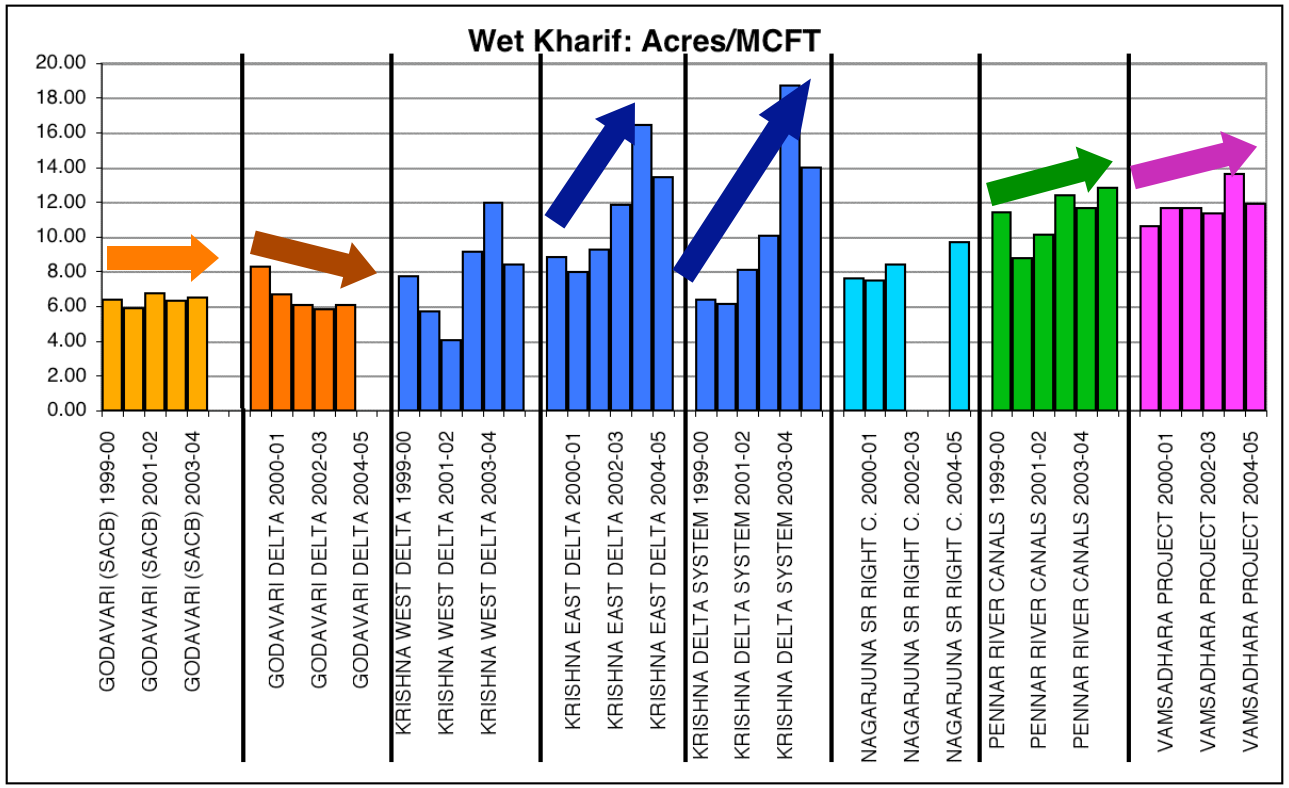
No unique solution







Water use efficiency for different projects:

- Godaveri: very low and decreasing
- Krishna: low but increasing
- Pennar: high and increasing
- Vamsadhara: high and increasing

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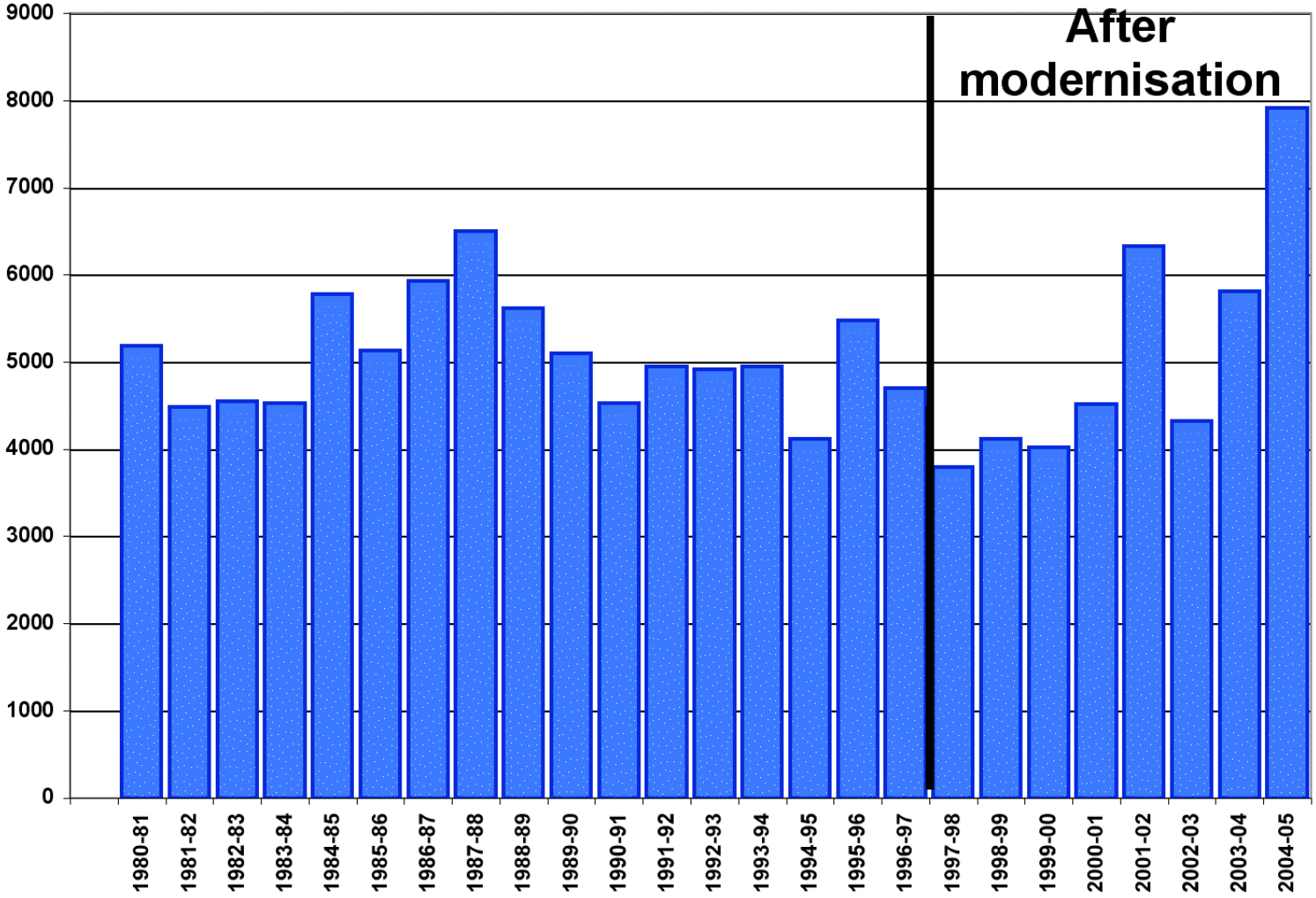
Sustaining Modernisation ?

- KC Canal acres per MCFT



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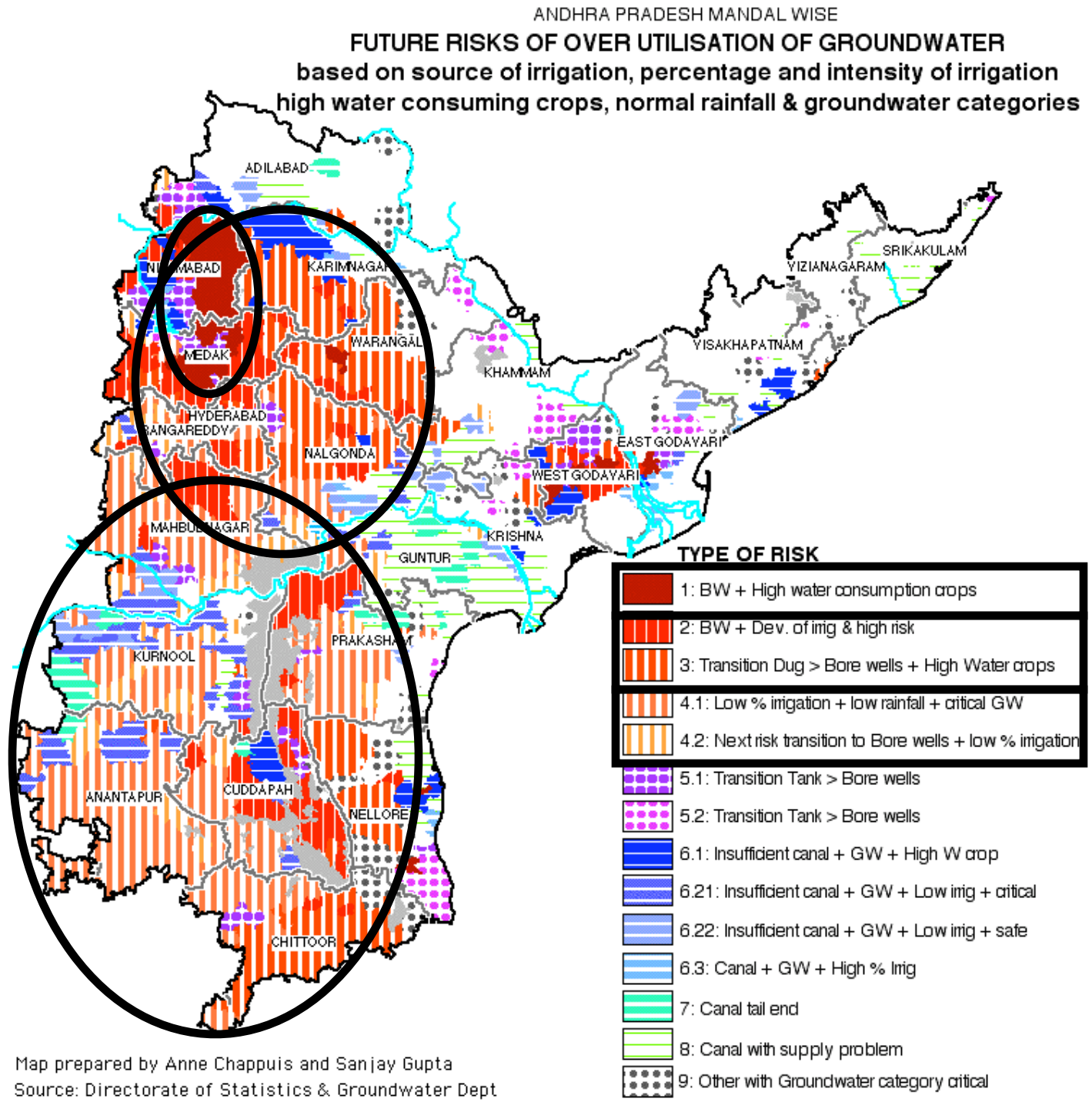
Risk Map



Higher risk in Nizamabad, Irrigation from BoreWells only and for crops with high water consumption

Spreading towards south and east

Next risk increasing use of groundwater in low rainfall area & transition to bore wells

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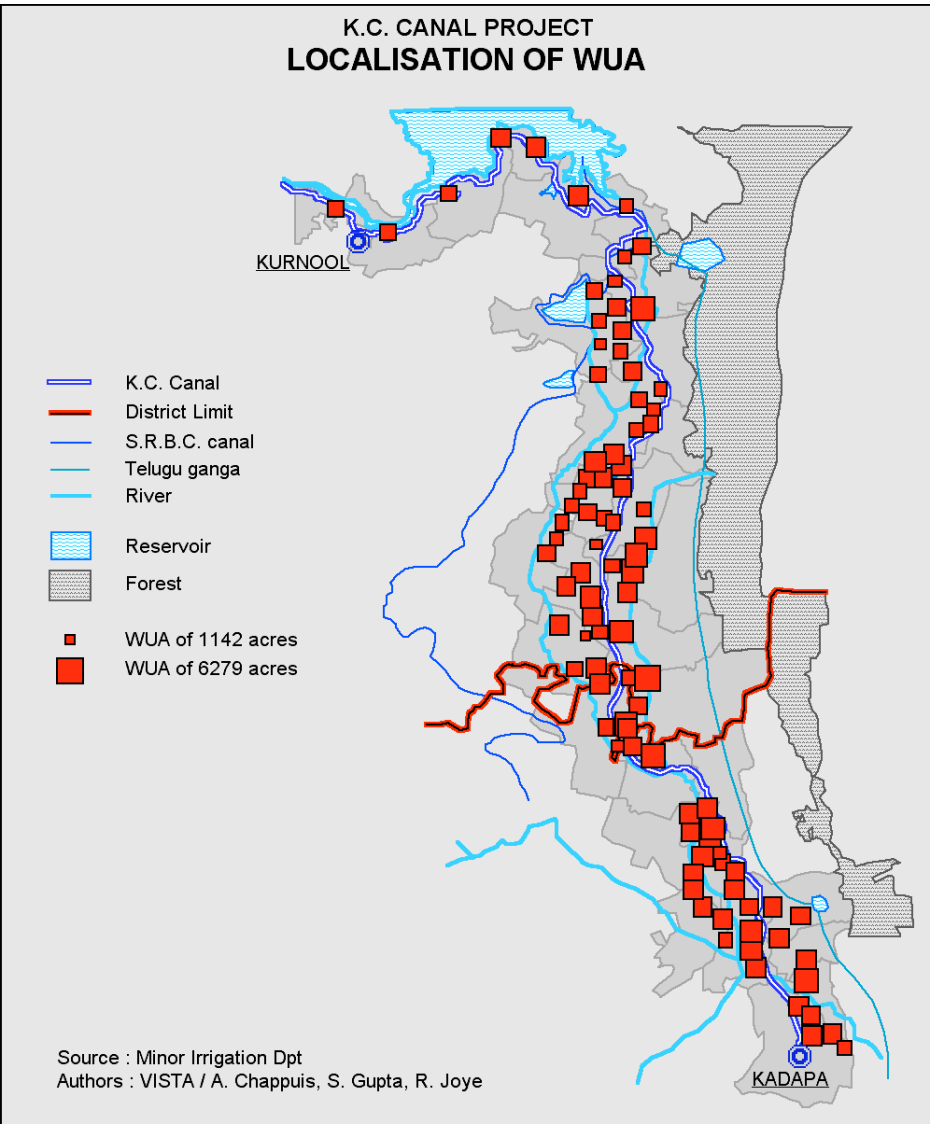
Economic drive in KC canal

- **Use of a notional G.I.S. as Decision Support System**



- Graphic tools to analyze the situation: even if a detailed G.I.S is not available, it is possible to localize the Water Users Associations (WUAs) and represent them with a square whose size is proportionate to the authorized ayacut (command area).
- 94 WUAs
- 93 000 Ha of irrigated area

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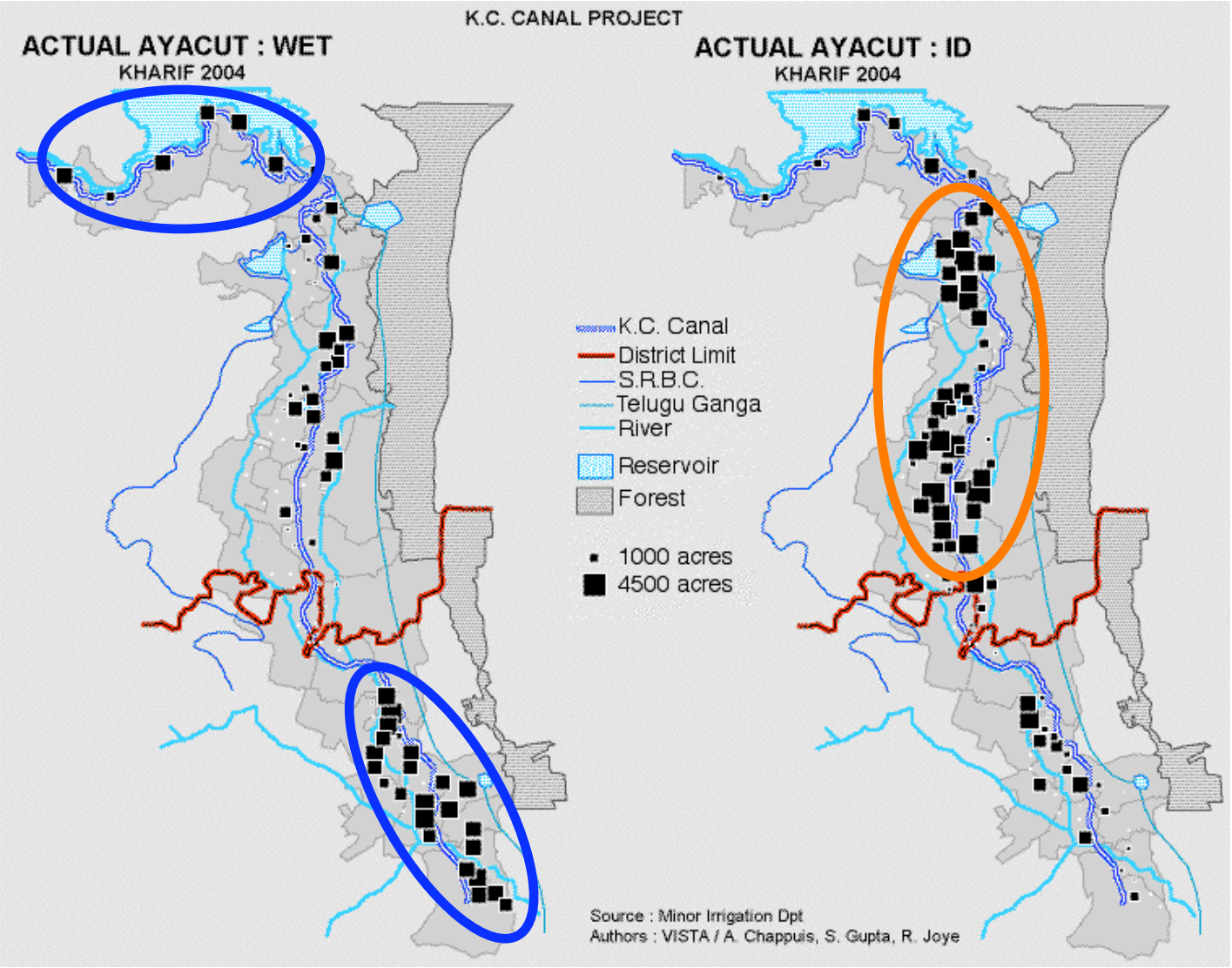
Shift from WET to ID



- The actual **WET** ayacut in Kharif (June to October) 2004, is more in the up-land near the reservoir, and in the tail end, near Kadapa;
- **ID** is more in the central part
- There is no canal irrigation in Rabi (September to March)

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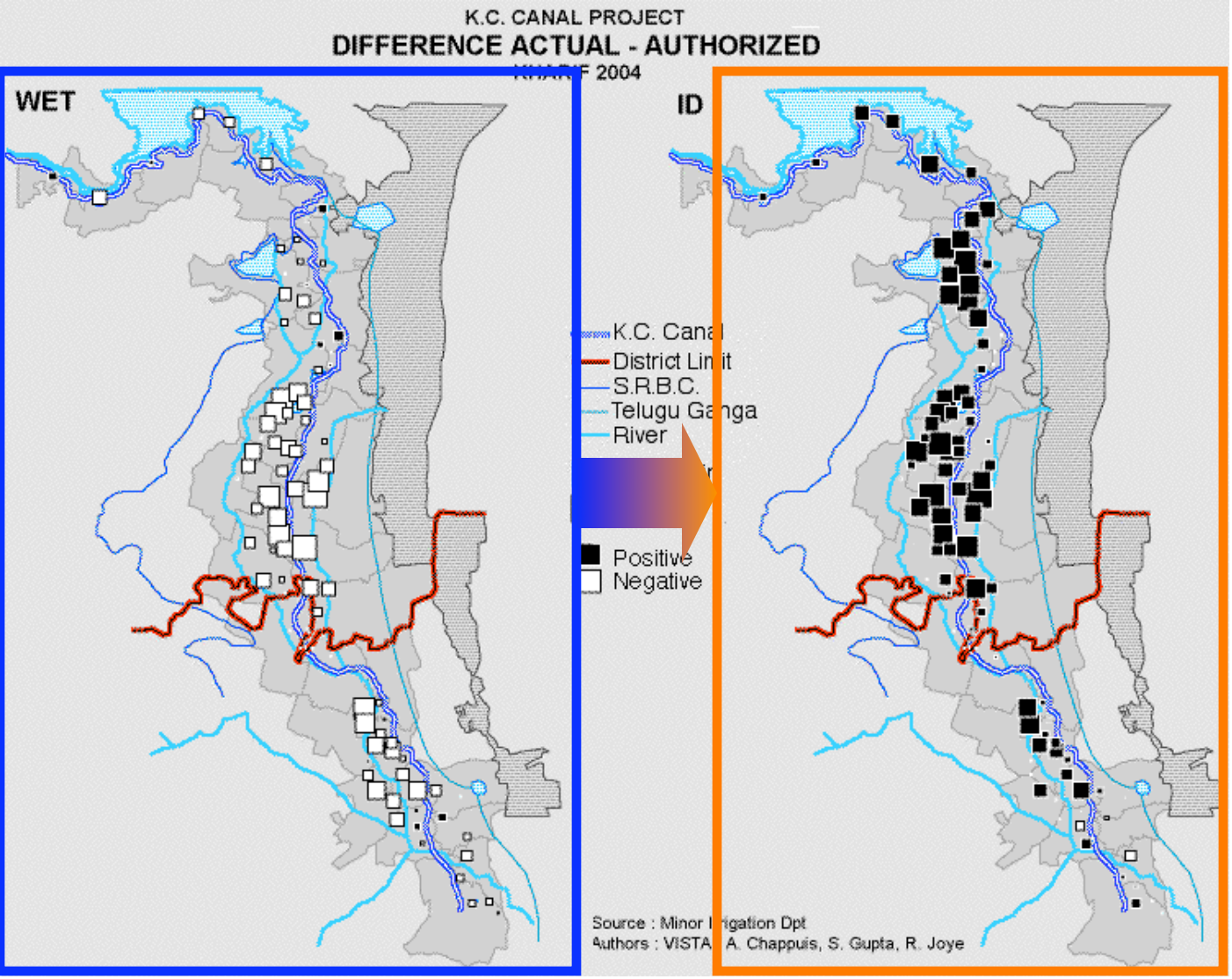
Towards more efficient water use?



- The difference between actual and authorized irrigation shows a negative picture for **Wet** (less actual than authorized);
- For **ID** it is a reverse picture;
- There is a shift from Wet to ID, to crops such as seed jowar in tie ups with multi-nationals

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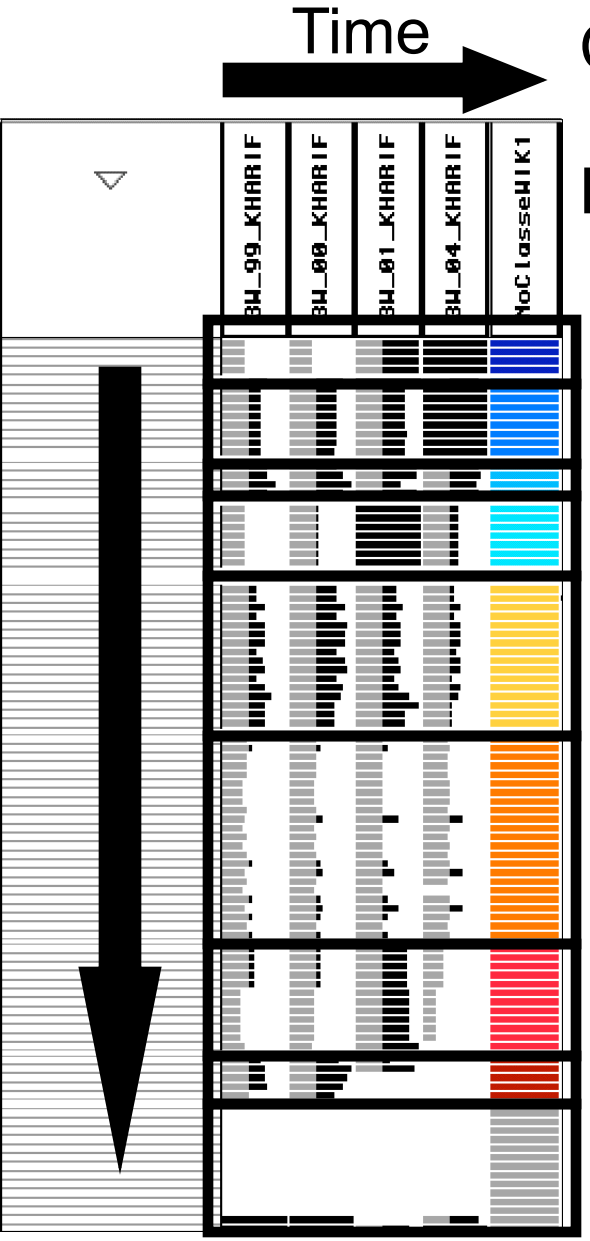
Typology of WUAs



Columns show the acreage/MCFT over time

Each row is a Water Users Association

- 1: from very low to very high efficiency
- 2: very high efficiency & improving
- 3: high efficiency but stable
- 4: high efficiency but best year in 2001
- 5: high efficiency but decreasing
- 6: low efficiency and stable
- 7: low efficiency and best year 2001
- 8: very low efficiency and best year 2000
- 9: no irrigation or error in data

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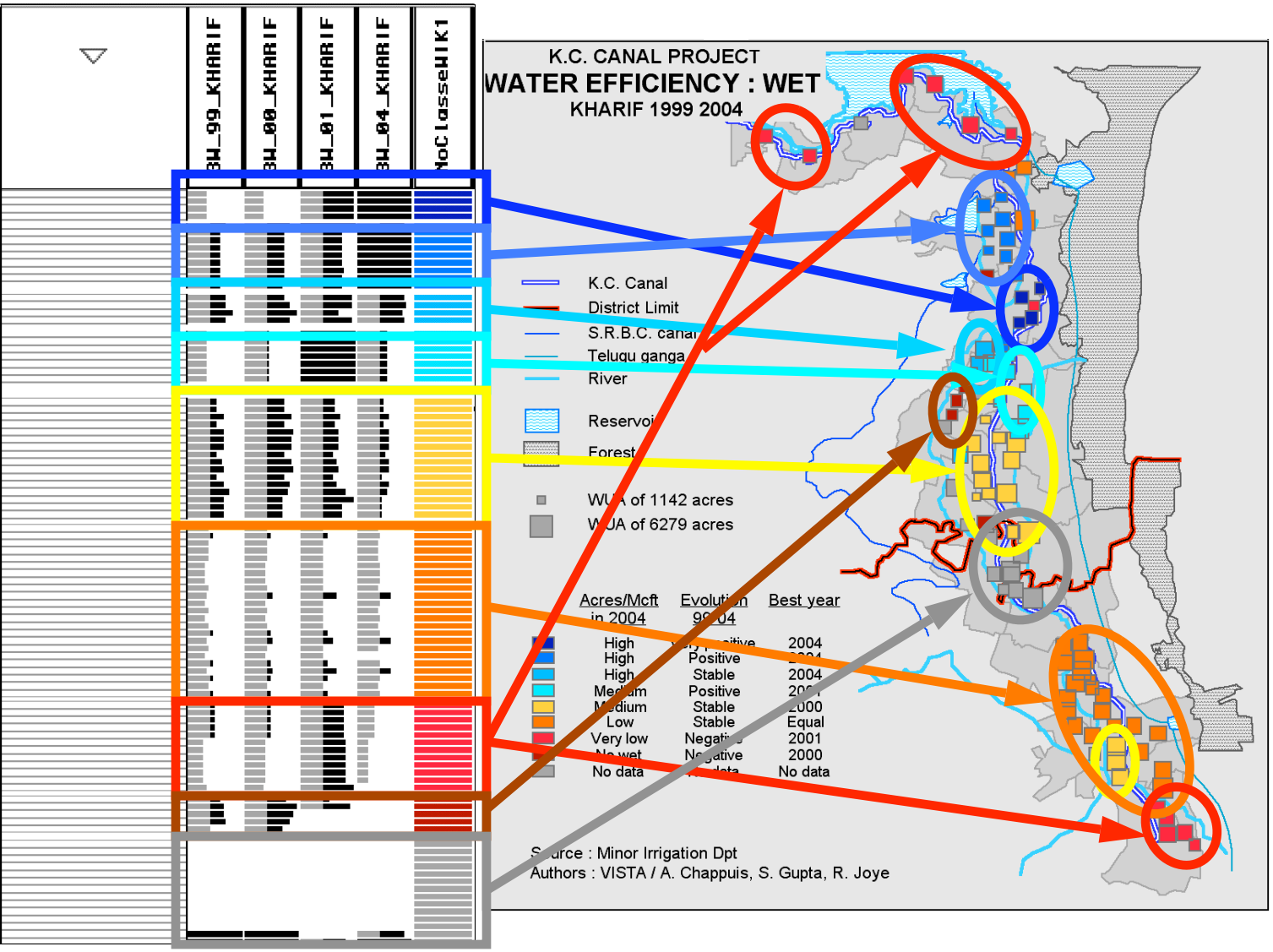
Typology of WUAs



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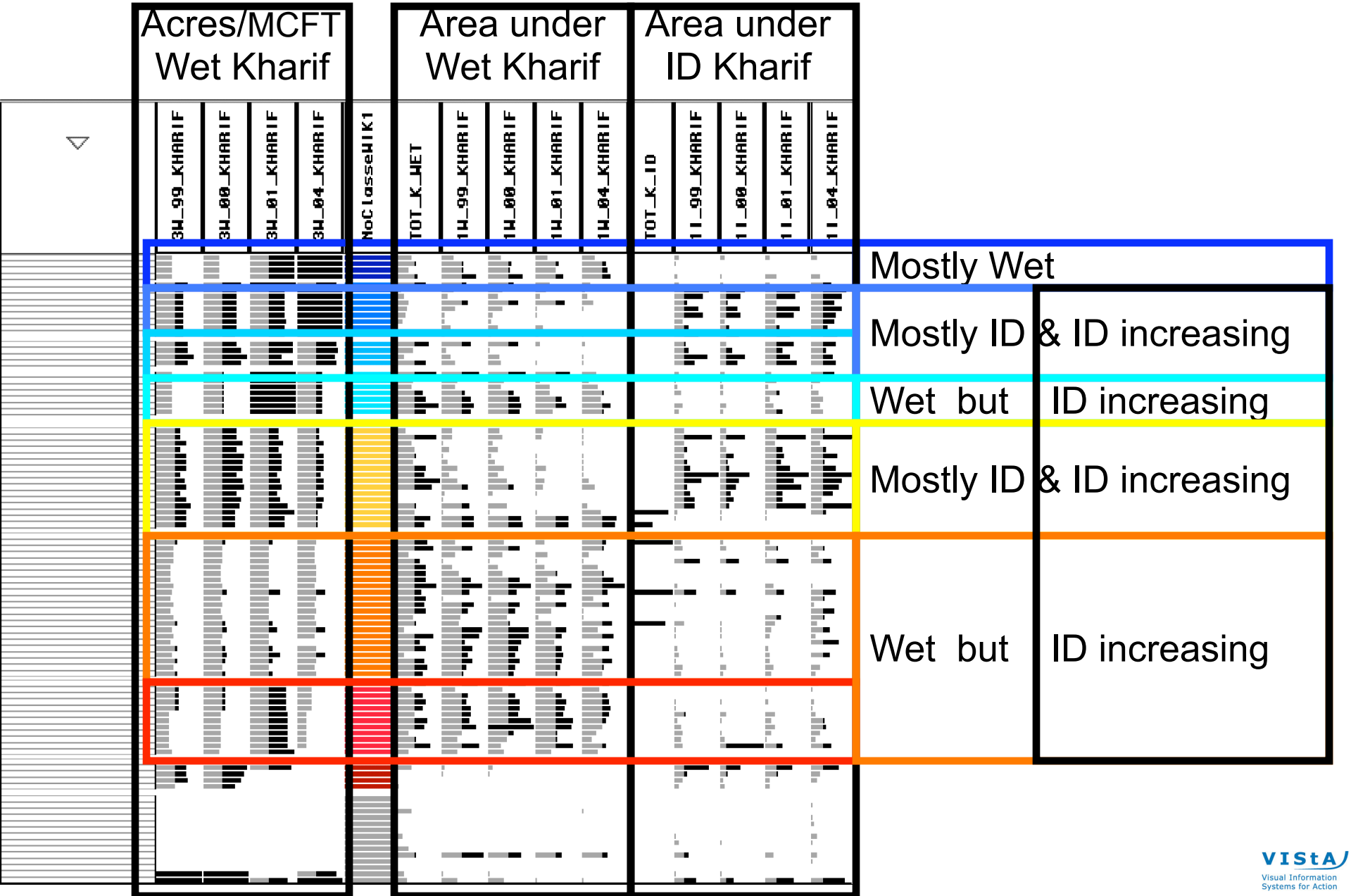
Typology and trend in Wet & ID



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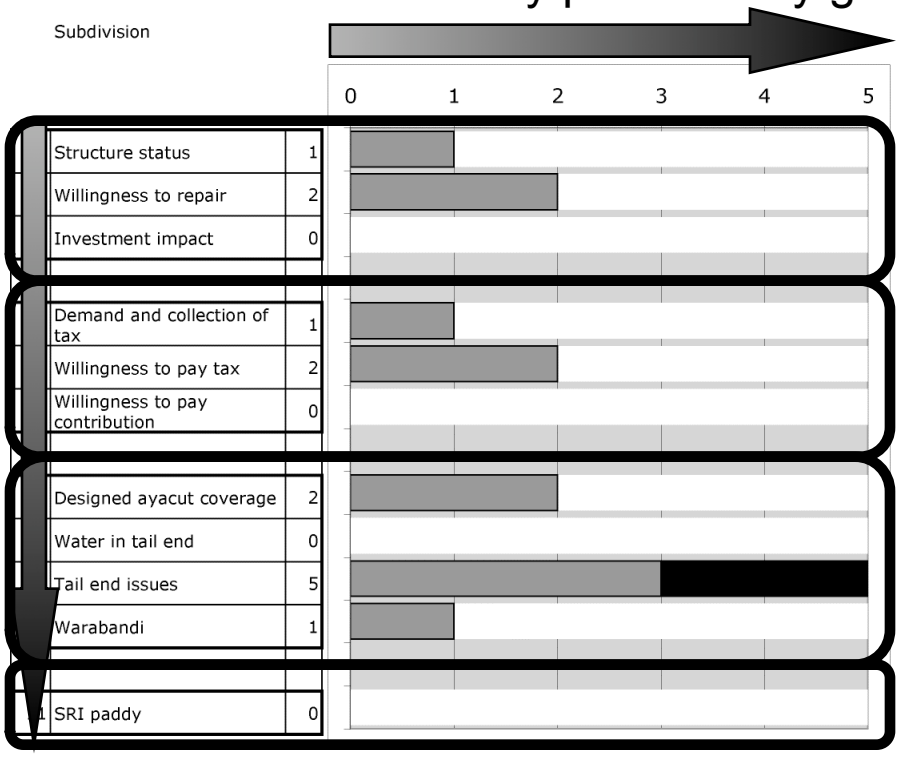
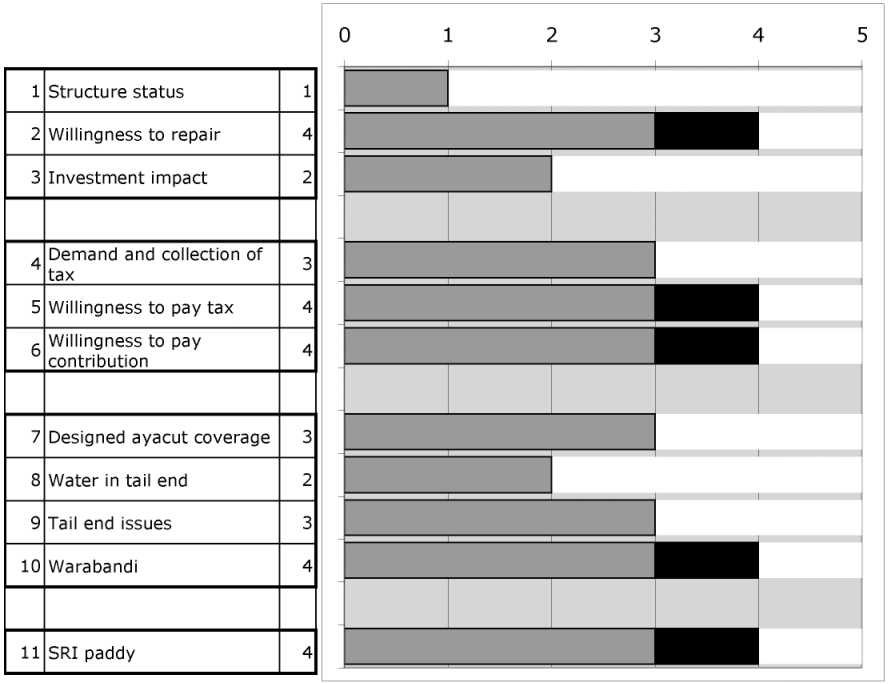
Self monitoring by WUAs

Performance from very poor to very good



District
Division
Subdivision

WUA code
Name of tank
Capacity in mcft



- Indicators have been reorganised according to progression steps,
- And regrouped thematically
- Self monitoring by community

Simple graphs to compare our situation with best, worst, district average

Black indicates that we are ahead

White indicates that we are lagging behind

We know where to focus our efforts:

Structure status and water in tail end.

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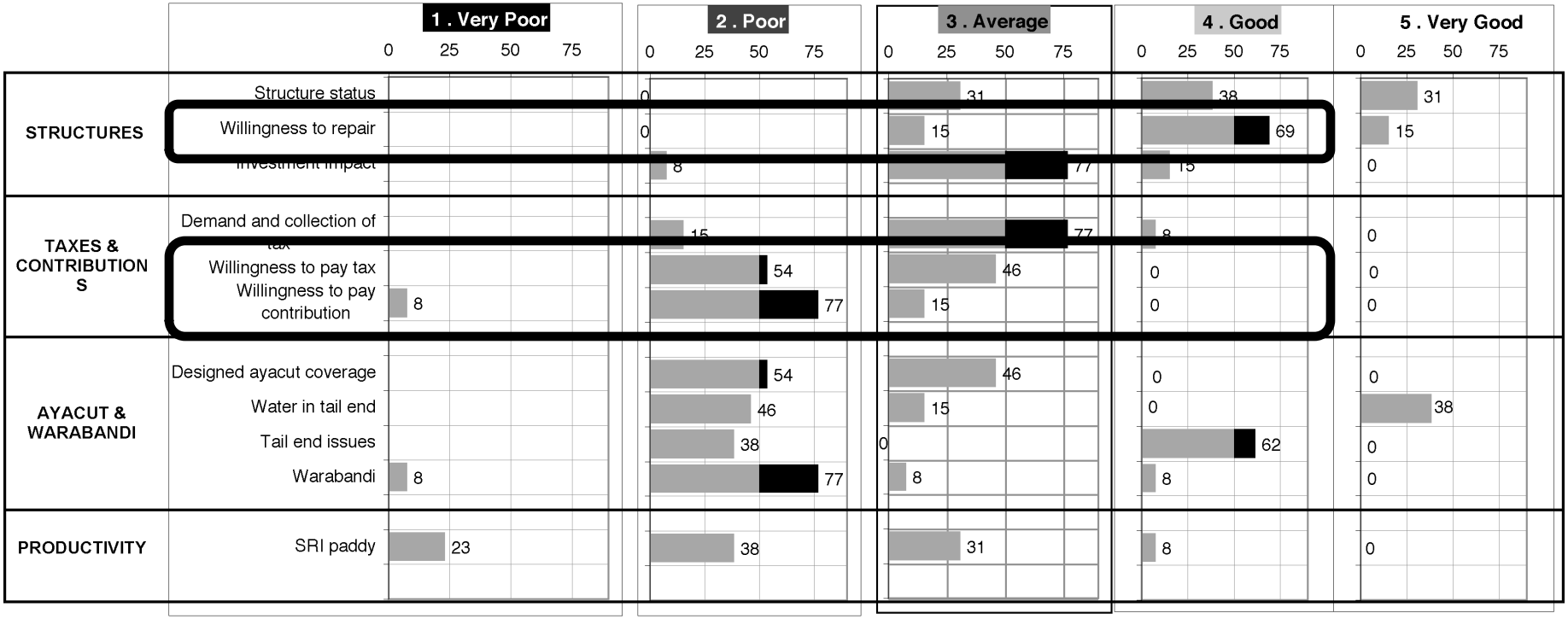
Progress management



WUAs willing to repair …

… but not to pay

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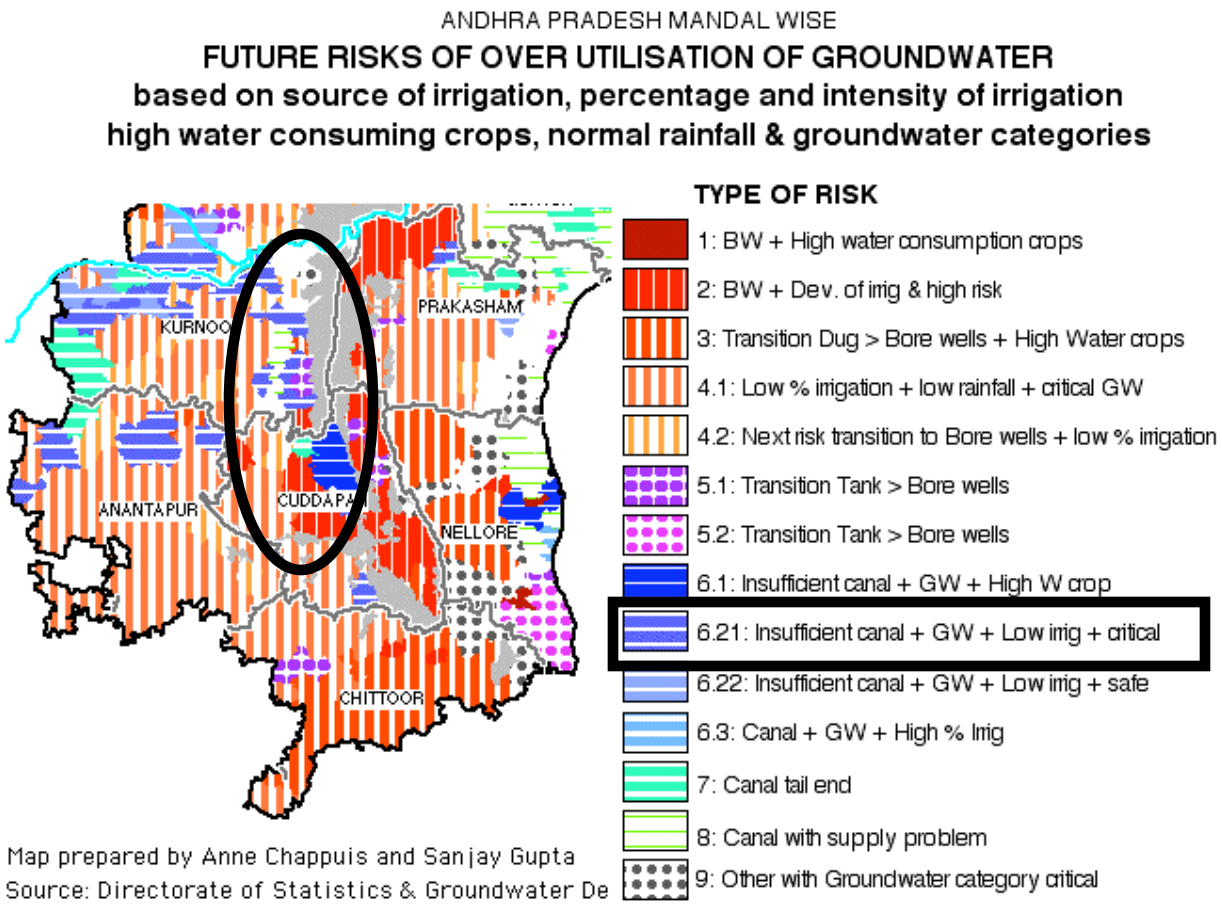
Risk map and conjunctive use of different sources



In KC canal area, **parallel use of groundwater is leading to depletion** of the water table which has been classified as critical.

Conjunctive use of canal and wells should be planned **and managed** so as to replenish the water table.

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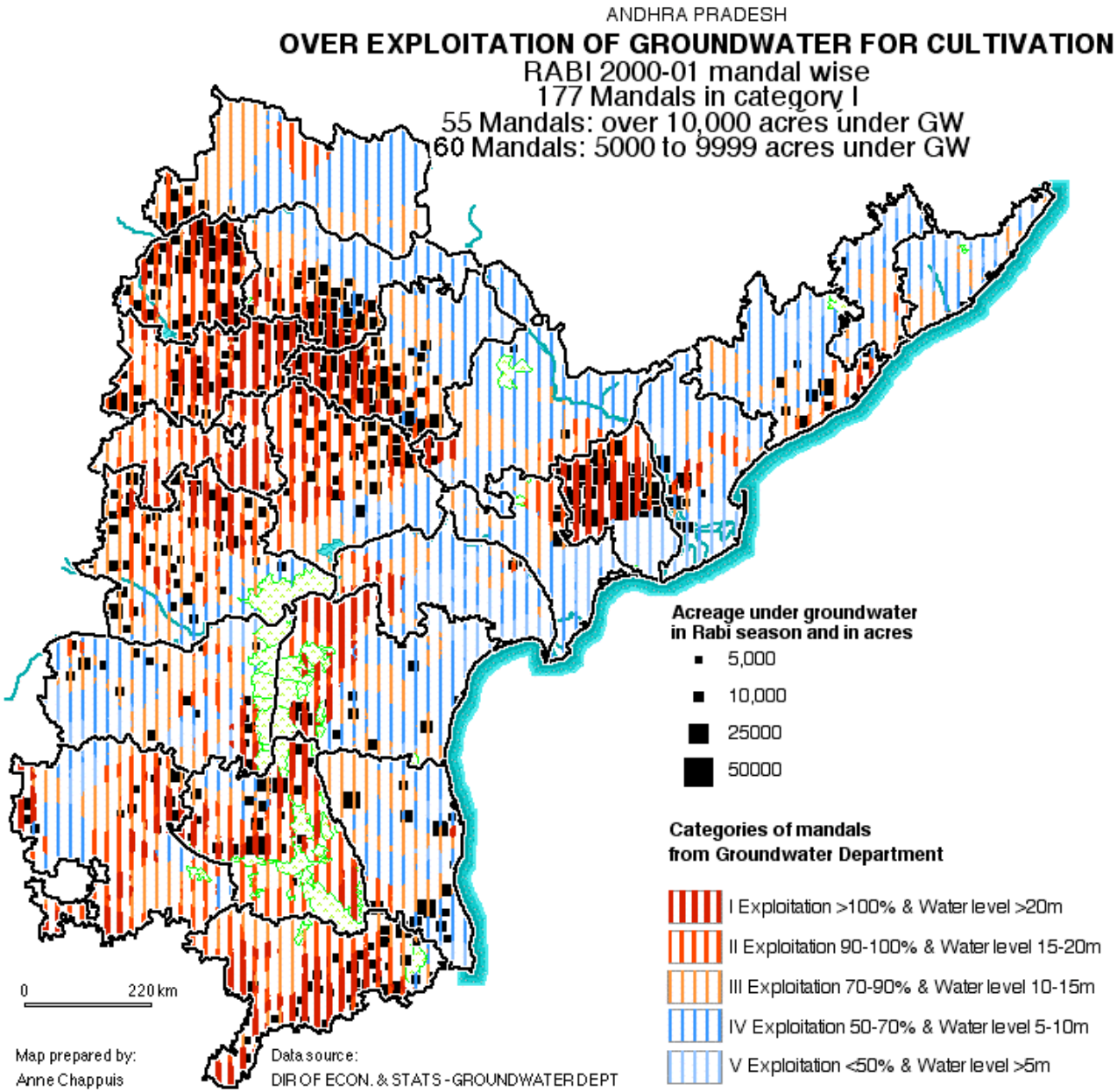
Future issues



- Water has a cost, even with free electricity;
- Increasing use of groundwater is not sustainable; both for quantity as well as quality
- Lower levels of water tables mean higher pumping cost;
- The poorest farmers are excluded.

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Government Initiatives

- **Andhra Pradesh Farmers' Management of Irrigation Systems act (APFMIS)**
  - Act of 1997 for operation and maintenance of surface water irrigation system through community effort
  - Forward looking legislation
- **Andhra Pradesh WAter Land and Trees Act (APWALTA)**
  - Regulatory Act for controlling the exploitation of ground water by individual
- **State Water Vision**
- **The BIG question How to implement???**

Water Users Associations

- **Analysis in livelihood framework**
  - Natural capital
  - Human capital
  - Social capital (Project and distributory committees, Conflict resolution in chain of tanks)
  - Physical capital (includes market, and access)
  - Financial capital
- **Institutional building and support mechanism for ownership**
  - NGO networks, Federations
- **Village level structures**
- **Management Issues**

Who decides?

- **GOVERNMENT**
  - The Maharashtra lesson: The revolt against the government's move to increase the tax rate

- **FARMERS**
  - The Maharashtra lesson AGAIN from SOPPECOM (NGO)
    - Volumetric supply
    - Higher rate of tax collection and compliance
    - Trading

Future Options

- **Issues**
  - Water as commodity
  - Sectoral distribution
  - Engineers as managers
  - Operational guidelines
  - Short term gain and long term term plans
- **Step by step**
  - Policy - supporting efficient water use, incentives and disincentives
  - Network
  - Capacity building
  - Farmers cooperatives