Measuring performance of irrigation management

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Method and Tools
Rapid Appraisal Procedure (RAP)

RAPID
- a few days to 2 weeks

APPRAISAL
- combination of data from office and field
- technical, managerial, socio-economic and institutional: hardware and software

PROCEDURE
- holistic overview of performance
- Systematic and standardized
Irrigation systems studied

- Total 56 irrigation systems
  - East Asia, Latin America, Near East, North Africa, South Asia, Europe
  - 16 systems from IPTRID study (1997-98)
  - 40 systems audited by FAO (2002-2010)
- Command areas from 10,000 ha to over 400,000 ha
- Crops: 4 groups
  - Basic commodities/cereals except rice
  - Rice +
  - Paddy 2
  - Cash crops
RAP Results from 56 large scale irrigation systems
Dealing with USD value

FAO International Commodity Price (ICP $)

ICP value is calculated multiplying agriculture productions by “virtual dollar values” which are different for each product but same for all countries and does not change in time. Therefore the ICP allows comparison between countries and over time.

No significant difference except for the systems studied before 2000 and those where subsidies have distorting effect.
Land productivity (ICPD/ha)

Median = 1450 ICPD/ha
# Improvements in Productivity in Dez, Iran

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Year 1999</th>
<th>Year 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod. $/ha</td>
<td>930</td>
<td>2573</td>
</tr>
<tr>
<td>Prod. Water $/m³</td>
<td>0.024</td>
<td>0.086</td>
</tr>
<tr>
<td>Prod. Staff K$/ha</td>
<td>123</td>
<td>432</td>
</tr>
<tr>
<td>Prod. Staff ha/staff</td>
<td>115</td>
<td>168</td>
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</tbody>
</table>
Productivity for other uses of Water

- Crops
- Animals
- Domestic & Industry (incl tourism)
- Fish
- Homestead garden & natural vegetation
- Drainage, Flood control, transport, environment
- Power

Share of Value/Benefits

- Crops
- Animals
- Domestic & Industry (incl tourism)
- Fish
- Homestead garden & natural vegetation
- Drainage, Flood control, transport, environment
- Power
Internal Indicators

Score from **0 to 4**
0 is lowest and 4 is highest
<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPLOYEE</td>
<td>0.7</td>
<td>3.4</td>
<td>1.7</td>
</tr>
<tr>
<td>BUDGET</td>
<td>0.0</td>
<td>4.0</td>
<td>1.2</td>
</tr>
<tr>
<td>WUA</td>
<td>0.0</td>
<td>3.7</td>
<td>1.0</td>
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<tr>
<td>SOCIAL ORDER</td>
<td>0.5</td>
<td>4.0</td>
<td>1.8</td>
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</tbody>
</table>
Employee versus water delivery service

- Water delivery service at the most downstream point in the system operated by a paid employee
- Employees

$R^2 = 0.5$
Water Users Association Size versus strength

![Graph showing the relationship between WUA size and strength. The graph includes data points and a trend line.](image-url)
Actual water delivery service at the most downstream point in the system operated by a paid employee

Social Order in the main system

R² = 0.541
Conclusion - lessons for reforms

- Productivity of land and water is highly variable (0.78 and 1.47). The range is narrow for IPTRID set (0.68 and 0.72).
- Variation in WDS to farmers is also visible (CV = 0.4).
- WUA are not strong!
- Strength of WUA has little influence on performance of canal operation and on water delivery services.
- There seems to be a relation between size of the WUA and its strength (multivariable analysis - 20 variables).
- Social order, Employees and budget are important for good performance!
- Huge potential for improvement in management performance.
THANK YOU