"Irrigation Institution Reform – a Future Course in Nepal"

Madhav Belbase

History of Irrigation in Nepal

Irrigation in Nepal began in Sixth Century BC.

Irrigation systems in mountain terraces were developed 400 years ago.

There are about 20,000 (640,000 ha.) FMISs

Modern irrigation systems development started since 1920.
Irrigation Objectives

Past
- Food production
- Security against starvation in hills and mountains
- Increase in incomes

Now
- Means for economic development with crop diversification
- Employment opportunity

Future
- An essential component of growth, social and economic development, poverty reduction, equity and as links for national integration and unity.
- Irrigation water a tradable commodity in terms of "virtual water" particularly in the form of exported agricultural commodities.

Irrigation Systems in Nepal

Categories
- Surface Irrigation
- NCT Irrigation
- Ground Water

Small < 10 ha in hills
- < 100 ha in Terai

Medium – 10 - 200 ha in hills
- 100 - 2000 ha in Terai

Major < 200 - 500 ha in hills
- < 2000 - 5000 ha in Terai

Large > 500 ha in hills
- > 5000 ha in Terai

Shallow Tubewell
- upto 2.5 ha

Deep Tubewell
- generally 40 ha
Irrigation Systems in Nepal

- **Small** < 10 ha in hills
  < 100 ha in Terai

- **Medium** – 10 - 200 ha in hills
  - 100 - 2000 ha in Terai

- **Major** < 200 - 500 ha in hills
  < 2000 - 5000 ha in Terai

- **Large** > 500 ha in hills
  > 5000 ha in Terai

**Federal Affairs & Local Development Ministry**

- Water Users Association
- Demand driven approach
- Participatory and capital cost sharing (3 to 15%)
- O & M by WUA
- Technical, regional balance, social and environmental consideration

- Technically, economic and environmental consideration
- Food security, regional balance, Employment
- Joint management
- National interest etc.

Irrigation Systems in Nepal

- **Shallow and Deep Tubewell**

  - Water Users Association
  - Demand driven approach
  - Participatory and capital cost sharing (15% to 50%)
  - O & M by WUA
  - Technically viable
  - Development in cluster

- **Micro-Irrigation**

  - Sprinkler, drip, pond, lift etc
  - Demand driven approach
  - Participatory and capital cost sharing (15% to 50%)
  - O & M by WUA
Irrigation Management in Nepal

Small and Medium Irrigation Systems are managed by the beneficiary farmers

Large and Major (>2,000 ha) irrigation systems are under joint management

Management transfer of state developed irrigation systems began in early 1990.

Operation and maintenance costs are to be covered by the ISF collected from the farmers

Irrigation Present Status

<table>
<thead>
<tr>
<th>Area in Lacs</th>
<th>In Percentage of Land Area</th>
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<tbody>
<tr>
<td>Agricultural Land</td>
<td>18</td>
</tr>
<tr>
<td>Irrigation Potential</td>
<td>12</td>
</tr>
<tr>
<td>Irrigated Area</td>
<td>9.3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Area in Lacs</th>
<th>Irrigated Vs Unirrigated Area in Percentage of Agriculture Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigated Area</td>
<td>48</td>
</tr>
<tr>
<td>Unirrigated Area</td>
<td>52</td>
</tr>
</tbody>
</table>
Irrigated Area in ha

- Surface Irrigation: 25%
- Groundwater: 29%
- FMIS intervened: 31%
- FMIS unintervened: 15%

Total irrigated area 13,68,759 ha, Potential 1.76 million ha

Agriculture Vs Irrigation Potential, ha
Irrigation Service Fee in Percentage of Operation and Maintenance Cost

Maintenance Funding Gap

Huge Funding Gap of more than USD 50 Million/a
Policy and Institutional Intervention through proposed Irrigation Act

Policy Interventions in Implementation

Small Irrigation Schemes (single or group owned) with modern technology

Features
- Lift using solar, barsha or other mechanical means hills or STW
- High value crops

Interventions
- No subsidy
- Financing through bank loan with zero interest rate and reasonable pay back period
- Technology and skilled manpower available widely
- Technology, extension and market management through apps
- Cooperative for farm inputs and outputs management
- Role of government facilitations
Policy Interventions in Implementation

Medium and Large Irrigation Scheme and Deep Tubewell

Features

- Conventional Technology
- Commercial farming

Interventions

- Subsidy and execution business as usual
- District level offices / state – responsible for execution
- Irrigation cooperatives for operation and management and farm inputs and outputs management

Policy Interventions in Implementation

Features

- Conventional Technology
- Food security of the nation
- Use of resources and regional Balance

Interventions

- Public Private and Farmers Partnership
- Central Level Project/ Board/ Authority for the project execution
- Joint Management/ Local board for irrigation management

Large Projects, Interbasin water transfer and reservoir projects
Policy Intervention

- Multipurpose irrigation Cooperatives
- Irrigation Management Boards
- Creation of Irrigation Development Fund
- WUA empowered to collect the ISF
- Private Sector Participation
- Declaration of Irrigated Area
- Environmental sustainability

Irrigation Institutional Intervention

<table>
<thead>
<tr>
<th>Irrigation System Management</th>
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<tbody>
<tr>
<td>Large Irrigation Schemes</td>
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<tr>
<td>Small and Medium Irrigation Schemes</td>
</tr>
<tr>
<td>Local Governing Board</td>
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<tr>
<td>Irrigation Cooperatives</td>
</tr>
</tbody>
</table>

Proposed Management Area Coverage '000 ha

- Irrigation Management Board
- Irrigation Cooperatives
- Total Area
Sustainable Irrigation Management Transfer Development and Agriculture Production Model

- **Inputs**
  - Capacity Building
  - Funding – IDF
  - Technical Support – Irrigation Offices

- **Transformation Units**
  - WUA
  - Irrigation Cooperatives
  - Irrigation Management Board

- **Outputs**
  - Sustainable: Development, Management, Operation
  - Irrigation services available to all, accessible, dependable and participative

- **Goals**
  - Increased agriculture productivity and income
  - Irrigation Service Fee

**Cooperative Model**

- General Assembly of WUA
- Executive Committee
- Sub-Committees at Main Canal Level
- Branch Canal Levels
- Irrigation Management Group
- Production Groups

- Coordination & Technology Development Sub-Committee
- Market Promotion and Extension Sub-Committee

- Irrigation Management Sub-Committee
- Saving and Credit Management Sub-Committee
- Agriculture Promotion Sub-Committee

**Increased**
- Agriculture productivity
- Income
- Inputs
- Transformation
- Outputs
- Goals

- Transformation Units
- Outputs
- Goals

- Increased inputs
- Increased productivity
- Increased income
Irrigation Development Fund

Sources

- Government Budget allocation
- Interest
- Donations/Loan

ID Fund

Outlays

- Loan and subsidy (if any) to cooperatives and Irrigation Management Board

Autonomous

Characteristics of Board and Cooperatives

Governance at the Grass-root level

Efficient and Sustainable
Constitution of Irrigation Management Board

**Chairman – Chairman WUA**
- Representative – District Administration Office
- Local Development Officer
- Representative – District Agriculture Office
- Irrigation Officer
- Representatives from Village Councils – up to five
- Elected from WUA - up to five

**Member Secretary – Executive Director**

Constitution of Irrigation Development Fund

**Chairman – Secretary, Ministry of Irrigation**
- Joint Secretary, Ministry of Finance
- Joint Secretary, National Planning Commission
- Director General, Department of Irrigation
- Director General, Department of Agriculture
- Chairman, NFWUAN

**Member Secretary – Executive Director**
Thank you