Agriculture in Pakistan: Challenges and Prospects

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Layout of the Presentation

• Putting Agriculture in perspective
• Strategic Issues in Pakistan’s Agriculture
• The Key Challenges
• The Emerging Opportunities
• Renewed Focus
Putting Agriculture in Perspective: Some Basic Facts—Rural Areas

• Poverty in the rural areas is significantly higher than in the urban areas.

• 68% of the Pakistan’s population lives in rural areas.

• 60% of Pakistan’s rural poor are landless.
  – 45% are non-agricultural households
  – 15% are landless agricultural laborers.

• With a little developed Non Farm Sector the overwhelming burden is on the agriculture sector
# Location of the Rural Poor

<table>
<thead>
<tr>
<th>Agro-Climatic Zone</th>
<th>Poverty head count (%)</th>
<th>Poor (%)</th>
<th>Population (%)</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice/Wheat Punjab</td>
<td>38</td>
<td>12</td>
<td>15</td>
<td>0.79</td>
</tr>
<tr>
<td>Mixed Punjab</td>
<td>49</td>
<td>14</td>
<td>13</td>
<td>1.02</td>
</tr>
<tr>
<td><strong>Cotton/Wheat Punjab</strong></td>
<td><strong>56</strong></td>
<td><strong>20</strong></td>
<td><strong>17</strong></td>
<td><strong>1.15</strong></td>
</tr>
<tr>
<td>Low Intensity Punjab</td>
<td>54</td>
<td>11</td>
<td>10</td>
<td>1.12</td>
</tr>
<tr>
<td>Barani Punjab</td>
<td>26</td>
<td>3</td>
<td>6</td>
<td>0.55</td>
</tr>
<tr>
<td><strong>Cotton/Wheat Sindh</strong></td>
<td><strong>57</strong></td>
<td><strong>13</strong></td>
<td><strong>11</strong></td>
<td><strong>1.18</strong></td>
</tr>
<tr>
<td>Rice/Other Sindh</td>
<td>53</td>
<td>9</td>
<td>8</td>
<td>1.10</td>
</tr>
<tr>
<td>NWFP</td>
<td>47</td>
<td>14</td>
<td>14</td>
<td>0.97</td>
</tr>
<tr>
<td>Balochistan</td>
<td>39</td>
<td>4</td>
<td>5</td>
<td>0.81</td>
</tr>
<tr>
<td>Rural Pakistan</td>
<td>48</td>
<td>100</td>
<td>100</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Source: Malik (2005)
Sources of Income and Rural Poverty – Survey Results show that

- The highest incidence of poverty is in the zones that rely the most on crop incomes.
- In the two poorest agro-climatic zones - crop income accounts for:
  - 67.30 percent of total income in cotton wheat Sindh and
  - 64.26 percent of total income in cotton wheat Punjab.
Sources of Income and Rural Poverty (continued)

• On average crop income accounts for only about 50 percent of total rural incomes.
• Due to the unequal distribution of land - increase in crop income serves to exacerbate overall income inequality.
• Within crop income the poor rely mainly on food crops such as wheat
• The well off have more diversified crop production with greater proportion of cash crops.
Historically Diversification has been slow - Share of Different Crops in Total Cropped Area 1990 and 2000 (Agriculture Census Data)

<table>
<thead>
<tr>
<th></th>
<th>All farms</th>
<th>&lt; 0.5 ha</th>
<th>2 to under 5 ha</th>
<th>20 ha and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cropped area</td>
<td>21,340</td>
<td>23,422</td>
<td>297</td>
<td>212</td>
</tr>
<tr>
<td>(000 ha)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grains</td>
<td>58</td>
<td>59</td>
<td>69</td>
<td>73</td>
</tr>
<tr>
<td>Wheat</td>
<td>38</td>
<td>40</td>
<td>41</td>
<td>43</td>
</tr>
<tr>
<td>Cotton</td>
<td>13</td>
<td>14</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Wheat Cotton</td>
<td>51</td>
<td>54</td>
<td>48</td>
<td>49</td>
</tr>
<tr>
<td>Pulses</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Oilseed</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Fodder</td>
<td>13</td>
<td>11</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Vegetables</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Orchards</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Other crops</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Agriculture Census (1990 and 2000)
The List of the challenges to Pakistan’s Agriculture is well known...

1. flat (low) yields and large yield gap;
2. low productivity of water;
3. non-reliability of water services;
4. under-performance of rural factor markets and extension services;
5. under-investment in research and technology development

Issues Identified in PRSP 1 in 2003
The Recommended Strategic Interventions are also well articulated

- abolish restrictions on the import and export of all agricultural commodities - including wheat
- but follow the policy of support prices for wheat and indicative prices for other crops like sugarcane, cotton, and rice
- improve rural infrastructure and education provision including agriculture extension services;
- crop maximization program – capacity building for small farmers
Strategic Interventions are well articulated …

- policy regime to remove market imperfections, increase productivity and farmers’ profitability, and foster exports
  – corporate farming
- agriculture credit reform
- scaling up of diversification into new, higher value crops including technology adoption and adaptation;
- use of new and more efficient irrigation technology.
- focus on livestock and especially dairy
Some of the Critical Challenges to Leveraging Agriculture for Poverty Reduction in Pakistan

1. Issues connected to Land
2. Issues connected to Water
3. Thin Markets and Weak Institutions
4. Globalization – the need to be competitive and associated issues of quality and standards
5. Disconnect between policy and implementation
Some Exciting Opportunities in Pakistan’s Agriculture

• Globalization offers opportunities to enhance farm incomes manifold if competitiveness, quality and other standards can be met

• Three exciting high potential opportunities
  – Diversification to Tunnel Farming of vegetables
  – The Citrus Revolution in Bhalwal/Sargodha
  – The White (Dairy/Milk) Revolution
The Challenges
Land: the Number of Small Farms is Increasing

Size of Farm Distribution (Agriculture Census Data)

1960

- < 5: 3.3%
- 5 to < 12.5: 23.8%
- 12.5 to < 25: 44.3%
- 25 to < 50: 9.0%
- 50 to < 150: 19.0%
- > 150: 0.5%

2000

- < 5: 3.9%
- 5 to < 12.5: 28.2%
- 12.5 to < 25: 57.7%
- 25 to < 50: 8.8%
- 50 to < 150: 0.2%
- > 150: 1.2%
LAND

• Small farm size and poverty restricts the ability to take risks and diversify
• Issues connected to Land Titling/Records tie up a large proportion of the rural population in litigation and unproductive activity
• Land titling issues also exclude farmers from access to credit markets etc.
WATER: Some Estimates indicate that Requirements will **Outstrip** Availability by 2015

<table>
<thead>
<tr>
<th>Water resources available to meet future needs</th>
<th>MAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual flow to the sea</td>
<td>38.0 (93% in Kharif)</td>
</tr>
<tr>
<td>Additional ground water</td>
<td>1-2</td>
</tr>
<tr>
<td>Saving from water conservation</td>
<td>5-10</td>
</tr>
<tr>
<td>Estimated total</td>
<td>44-50</td>
</tr>
</tbody>
</table>

**Projected incremental water requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>MAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental flow requirements</td>
<td>10</td>
</tr>
<tr>
<td>Urban domestic and industrial demand</td>
<td>9</td>
</tr>
<tr>
<td>Accord deficit</td>
<td>11</td>
</tr>
<tr>
<td>Increase in irrigation water demand</td>
<td>5-30</td>
</tr>
<tr>
<td>System losses</td>
<td>5-10</td>
</tr>
<tr>
<td>Estimated total</td>
<td>40-70</td>
</tr>
</tbody>
</table>
WATER - Irrigation

• **Total irrigated area increased by 80 percent between 1960 and 2005**, from 10.4 to 18.8 million hectares, mainly due to an expansion in tube well irrigation.

• **Nearly 80 percent of Pakistan’s cropped area is irrigated.**
  – 37 percent of irrigated land was irrigated solely with canal water
  – 41 percent with canal and tube well water
  – 18 percent solely with tube well water (2004-05 data).
  – About 60 percent of irrigated water available at farm head is provided by canal water; 40 percent is supplied by groundwater.

• **Current patterns of water use are resulting in significant environmental degradation**
  – Losses of soil fertility due to soil salinity and erosion are estimated at Rs 70 bn/year (1.5% of GDP; 6.8% of agricultural GDP in 2004-05)

• **Inefficiencies in water allocation reduce crop productivity at both head end (due to over-use of water and water logging) and tail end (due to water shortages)**

• **Total availability of water in the Indus river basin has declined**
  – Additional storage could help increase availability of water in dry season (rabi), but will not be available for at least ten years
Improving Water Use Efficiency

- Improved water delivery and increased efficiency of water use are the most promising approaches in the short to medium term
  - Better water management through establishment of water users’ associations or other institutional mechanisms
  - Canal lining
  - Adoption of water saving technology at farm level
- Changing current crop mix can improve water use efficiency
  - Rationalizing water charges could facilitate these changes
  - But Programs may be needed to ease the transition of farmers and processors
Globalization – Offers challenges as well as opportunities

1. Globalization – the need to be competitive and meet issues of quality and standards and aggressive niche market development

2. When Domestic Markets are thin and supporting Institutions are weak
The Disconnect between Policy and Implementation

- Absence of M&E – feedback and dissemination
- Need for a holistic approach
- Structural Disconnects and lack of capacity at the implementation level
- Budgeting and Expenditure Reform Issues
1. Taking Advantage of the Potential from Globalization

• If SPS standards, quality requirements and competitive niche markets can be developed domestic farm incomes can (potentially) increase manifolds
2. TUNNEL FARMING: Yields gap between tunnel farmers and traditional vegetable growers

<table>
<thead>
<tr>
<th>Yield (tones/acre)</th>
<th>Cucumber</th>
<th>Tomato</th>
<th>Sweet Pepper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median tunnel farmer</td>
<td>40</td>
<td>38</td>
<td>25</td>
</tr>
<tr>
<td>Median control group</td>
<td>7</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Ratio tunnel : control</td>
<td>5.9</td>
<td>1.7</td>
<td>3.9</td>
</tr>
</tbody>
</table>
2. TUNNEL FARMING: Fantastic Returns (median net returns Rs/acre)

<table>
<thead>
<tr>
<th></th>
<th>Cucumber</th>
<th>Tomato</th>
<th>Sweet Pepper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median tunnel farmer</td>
<td>253,083</td>
<td>226,630</td>
<td>179,231</td>
</tr>
<tr>
<td>Median control group</td>
<td>42,339</td>
<td>41,843</td>
<td>10,562</td>
</tr>
<tr>
<td>Ratio tunnel:control</td>
<td>6.0</td>
<td>5.4</td>
<td>17.0</td>
</tr>
</tbody>
</table>
2. TUNNEL FARMING: Characteristics of Tunnel farmers

- Very highly educated, high levels of exposure, including international travel
- High degree of commercial orientation, including other farm and non-farm commercial interests
- Non-credit constrained
- Technical sophistication and sound knowledge of agriculture
- Innovative approach, willingness to experiment
- Location of farms sufficiently far away from main cities to take advantage of lower labor costs
### 3. KINNO PROCESSING:
**Comparison of Prices Received and Revenues Earned by Farmers**

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>KPF farmers</th>
<th>KPF advantage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Citrus Prices Received</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Rs/40 kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td>192</td>
<td>312</td>
<td></td>
</tr>
<tr>
<td><strong>Citrus Revenues</strong> (Rs/acre)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td>Rs 22,999</td>
<td>Rs 27,551</td>
<td>19.8</td>
</tr>
</tbody>
</table>
3. KINNO PROCESSING:
Comparison Summary – Farmers selling to Kinnoo Processing Factories and Others

Control group: farmers selling through traditional channels

- **Similarities**
  - Age, family size, citrus growing experience

- **Differences**
  - **Education**: KPF farmers have 40% more schooling
  - **Citrus area**: KPF farmers have 63% operational area under citrus vs 50% for control group
  - **Water quality**: Only 10% KPF farmers reported bad groundwater quality vs. 40% in control group
3. Exports of High-Valued Products such as Kinnoos

- A coherent strategy to meet SPS (Sanitary and Phyto-Sanitary) standards imposed by importing countries would:
  - Better define roles of agencies/institutions involved in SPS management
  - Strengthen technical capacity for risk assessment
  - Re-institutionalize early warning and surveillance systems for pest, diseases and contaminants
4. Livestock and Dairy

- Livestock accounts for about 50 percent of agricultural GDP
- Livestock is more evenly distributed than are land and access to water
  - *Livestock growth is pro-poor*
- Veterinary services and milk marketing are major constraints
- Halla Dairy Experience provides some exciting lessons
4. WHITE REVOLUTION – The *Idara-e-Kissan* (IK) “Hala Dairy” Experience

Sources of Productivity Differences

<table>
<thead>
<tr>
<th>Service</th>
<th>Access to service (%)</th>
<th>Average service usage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IK members</td>
<td>Non-members</td>
</tr>
<tr>
<td>Artificial insemination</td>
<td>28</td>
<td>6</td>
</tr>
<tr>
<td>Vaccination</td>
<td>83</td>
<td>72</td>
</tr>
<tr>
<td>Animal health treatment</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>LS extension</td>
<td>56</td>
<td>0</td>
</tr>
<tr>
<td>Loans/advances</td>
<td>78</td>
<td>39</td>
</tr>
</tbody>
</table>
4. WHITE REVOLUTION – The Idara-e-Kissan “Hala Dairy” Experience – KEY LESSONS

- Livestock productivity improvement can be achieved by working through Community Based Organizations
- Incentive compatibility and accountability are main factors responsible for success (e.g. self employed staff and oversight by farmers org)
- Government has a role to play in providing public goods
  - Breed improvement
  - Fodder productivity
  - Extension
Re-emphasizing the Key Policy Priorities for leveraging Agriculture for rural poverty reduction

1. Address the **disconnect** between policy and implementation - build capacity at the devolved local level esp. for extension and outreach
   - Build M&E capacity and use Evaluative evidence to bridge the disconnect between policy and implementation

2. Make policy sensitive to regional disparities

3. **Address the Land Issue** – especially land records, titling and judicial reform re. land

4. **Focus on improving water use efficiency**

5. Make Trade Liberalization really **Work** for the Poor – institutional reform, governance reform, judicial reforms (contract farming), vertical coordination

6. Take a holistic view to improve the Rural Investment Climate and simultaneously develop the Non-Farm Sector
Thank you so much