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Introduction
Status Report on Agriculture in Karnataka
Role of Government
Key issues and challenges facing Agriculture
Section 1

Introduction
Status Report on Agriculture in Karnataka
Role of Government
Key issues and challenges facing Agriculture
Background to the assignment

• Preparation of a Vision for the Karnataka in light of its current status
• **Study to facilitate objective sectoral allocations in the eleventh plan keeping in view the change in GoI priorities and priorities of the state**
• Project commenced in September 2007
• Analysis of the following Ten sectors
  1. Healthcare
  2. Education – a) School & b) Higher
  3. Social Sector – Woman & Child; SC/ ST/ OBC/ Minorities etc.
  4. **Agriculture and Allied Services**
  5. Rural Development
  6. Irrigation & Flood Control
  7. Industry – Minerals, Construction & Manufacturing
  8. Urban Development
  9. Transport and Infrastructure
  10. Energy
Assignment deliverables

KD 1: Inception Presentation

KD 2: Perspectives, Dimensions and Strategies Paper

KD 3: Macroeconomic Profile & Comparative Analysis

KD 4: Position Papers for various sectors
- Agriculture
- Industry & Minerals
- Irrigation
- Energy
- Transport & Infrastructure
- Rural Development
- Urban Development
- Health Care
- Higher Education
- School Education
- Social Sector

KD 5 & 6: Enabling Strategy Paper
- Cross-Cutting Themes; Development Models and Case Studies
- Sectors

KD 7: Draft Vision
Methodology & consultations

- Both primary and secondary sources
- Primary: Interviews and focus group discussions
- Secondary: Primarily GoK publications & documents, KDR, KHDR
- Framework: Growth Diagnostic Framework used by ADB to analyse the key binding constraints

We are grateful to the following people
- K.V Sarvesh Additional Director of Agriculture, GoK
- HK Chandra Mohan: Additional Director, GoK Agriculture Marketing Department
- Mr. Chiranjeev Singh, IAS (Retd)
- Prof. TN Prakash UAS, Bangalore
- Mr. Gokul Prasad, Dept of Agriculture GoK
- Ms. Rashmi Dept of Agriculture GoK
Section 2

Introduction
Status Report on Agriculture in Karnataka
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Key issues and challenges facing Agriculture
Rural deprivation conjoined to health of Agriculture in the state

Karnataka has registered an average performance in tackling rural poverty.

Poverty ratio lower than that of TN, MAH and the national average, it lags behind the other three states.

Karnataka has lowest poverty line after AP.

Among the number of households with MPCE of less than Rs. 365, Karnataka fares the worst among all comparable states as well as the national average.

This indicates that over 30% of the rural population, i.e., more than 1.02 crore persons in rural Karnataka live on less than Rs.12 per person per day.
Overview of Agriculture

- Agriculture is the main-stay in Karnataka employing 76% of rural and 9.6% of urban population
- Karnataka has 10 Agro-climatic zones
- The state is heavily dependent on rainfall (especially the southwest monsoons). Only 25% of its net sown area is irrigated
- Principal Crops

<table>
<thead>
<tr>
<th>Cereals &amp; Others</th>
<th>Area '000 ha (2006-07)</th>
<th>Pulses</th>
<th>Area '000 ha (2006-07)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jowar</td>
<td>1419</td>
<td>Bengal G</td>
<td>651</td>
</tr>
<tr>
<td>Paddy</td>
<td>1395</td>
<td>Tur</td>
<td>596</td>
</tr>
<tr>
<td>Maize</td>
<td>961</td>
<td>Green G</td>
<td>448</td>
</tr>
<tr>
<td>Ragi</td>
<td>606</td>
<td>Horse G</td>
<td>329</td>
</tr>
<tr>
<td>Bajra</td>
<td>387</td>
<td>Cowpea</td>
<td>128</td>
</tr>
<tr>
<td>Cotton</td>
<td>376</td>
<td>Total</td>
<td>2360</td>
</tr>
<tr>
<td>Wheat</td>
<td>269</td>
<td>Pulses</td>
<td></td>
</tr>
<tr>
<td>Sugarcane</td>
<td>267</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: GoK Department of Agriculture
Overview: Contribution of agriculture to GSDP

- State economy undergoing a significant structural change
- Primary Sector contribution fallen from 52.7% of GSDP (1970-71) to 19.1% of GSDP 2006-07
- Growth rate fallen from 3.92% (1984-1996) to 0.03% (1996-2005)

- Agriculture still contributes the highest among all sub-sectors – Rs 24,500 Cr in 2006-07 (AE)
- Growth rate of agriculture during tenth plan was slowest among major sub-sectors at 1.4%
Contribution of Primary sector to District Domestic Product

- Kodagu is the only district where the primary sector contributes >50% to the DDP
- Large number of districts across state dependent on Agriculture as the economic driver
- Bangalore Urban, DK & Dharwad have very small contribution by Agriculture

Source: KDR 2007
Overview: Employment

- Karnataka’s total working population is 23.5 Million of whom **Agriculture employs over 13 Mn (56%)**
- **Major trend towards marginalisation of labour**
  - Main Cultivators has fallen from 34% in 1991 to 26% in 2001
  - Main Agricultural labourers as a percentage to main workers in the state have also seen a fall since 1991 to 2001 which has fallen from 29% to 16%.
  - Agricultural marginal workers in the state form 24% of total agricultural workers (2001)
  - Total Marginal workers up from 16 lakhs (1991) to 41.7 lakhs (2001) of which Marginal Agricultural workers are 31.4 lakhs
Overview: Employment (Gender Analysis)

In 2001 women constituted 76% of the marginal agricultural cultivators in the state and 73% of marginal agricultural labourers.

- Women main cultivators up by 2.3 lakh (18%).
- Main labourers (both men and women) have reduced significantly by 5.5 lakh (22%) & 6.65 lakh (27%) respectively.

Source: Census data 2001
Overview: Productivity of agriculture

The productivity of the agricultural labour is the lowest among the three sectors.

Output per worker across sub-sectors shows that it is lowest for Agriculture (Rs 21,200 per worker)

Output/worker & share of employment Across sub-sectors

Source: NSSO, Department of Economics & Statistics, GoK
Karnataka and Agricultural Exports

- Exports are an important source of foreign income for the state, which also aid in increasing the real income of farmers.
- The state’s major agricultural exports are coffee and silk.
- Major decline in coffee exports due to the fall in international prices.
- Increase in spices exports holds great potential for the state.

### Agricultural Exports for the period 2000 to 2006 (in Rs. Crs)

![Graph showing agricultural exports for the period 2000 to 2006](image)

Source: Agricultural Policy 2006, GoK

### CAGR for major exports in the state for 2000-06

<table>
<thead>
<tr>
<th>Commodity</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee Products</td>
<td>-7%</td>
</tr>
<tr>
<td>Silk Products</td>
<td>6%</td>
</tr>
<tr>
<td>Cashew &amp; Cashew Kernels</td>
<td>3%</td>
</tr>
<tr>
<td>Agricultural &amp; Processed Food Products</td>
<td>1%</td>
</tr>
<tr>
<td>Spices</td>
<td>17%</td>
</tr>
<tr>
<td>Flowers</td>
<td>4%</td>
</tr>
<tr>
<td>Total Agricultural Exports</td>
<td>1%</td>
</tr>
<tr>
<td>Total State Exports</td>
<td>31%</td>
</tr>
</tbody>
</table>

Source: Agricultural Policy 2006, GoK
Overview: Crop Husbandry

Area

- Cereal cultivation has seen no major change (60% to 50% in 50 years)
- Sugarcane has increased from 0.5% in 1956 to 3.85% in 2003

Yield

- Yield of cereals doubled 582 kg/ha 1956 to 1280 kg/ha in 2003
- Stagnant yield for oilseeds (1956 582 kg/ha to 585 kg/ha in 2003)

Production

- Karnataka was India’s top coarse cereal producer in 2005-06 (6.6 million tonnes), and was ranked second in maize production with 2.7 million tonnes.
Overview: Major Cereals

Area
• Area under jowar production has fallen from 2667 (‘000 ha) in 1956 to 1419 (‘000 ha) in 2006-07.
• Area under maize cultivation has increased from 12 (‘000 ha) in 1956 to 961 (‘000 ha) in 2006-07.

Yield
• The yield for Maize (4.3% p.a. from 1956-2007) and Wheat (2.5%) has barely grown since the green revolution.
• Yield growth p.a. for other cereals has been quite poor in the period; Ragi 0.6%, Bajra 1.1%, Rice 1.2% and Jowar 1.8%
Benchmarking with comparable states and districts on Yield per hectare for food grains and Cropping Intensity

Cropping Intensity
High dependence on monsoons has rendered the state dependent on a single crop. It has one of the lowest cropping intensities in South India.

State-wise cropping intensity

Yield per hectare for food grains
Karnataka performed below the national average for the period 2004-05 with 1388 kg/ha, but it increased to 1776 kg/ha in 2005-06. It is lesser than both TN & AP.

State-wise Yield per Ha of Foodgrains for the period 2004-05 & 2005-06

Source: GoK Department of Agriculture
Agriculture in Karnataka
PricewaterhouseCoopers

Source: GoK Department of Agriculture
January 2008
Slide 18
Overview: Horticulture

- Horticulture is a major area in Karnataka’s agricultural sector.
- In 2002-03 the area under horticulture development was 15.81 lakh hectares (13% states NSA).
- In 2002-03 the output from Karnataka’s horticultural sector was 95.81 lakh tons, (Rs.8405 crores), estimated to be 40% of the total agricultural sector. (Department of Horticulture-Annual Report 2005-06)

Area and production of horticulture crops in Karnataka for 2002-03
Overview: Animal Husbandry

- Animal Husbandry contributes over 3.6% to the GSDP of Karnataka and 16.3% to agricultural sector.
- According to the Department of Animal Husbandry the state stands:
  - 2nd in co-operative milk procurement
  - 3rd in wool production
  - 5th in egg production
  - 6th in meat production
- Milk production in the state has grown by 0.2% in the period 1997-2006.
- Egg production has fluctuated significantly over the same period and is currently at 1997-98 levels.
Benchmarking with comparable states and districts

Benchmarking with comparable states on Milk Production

Milk Production

Milk Processing units & capacity

<table>
<thead>
<tr>
<th>State</th>
<th>No of Processing Units</th>
<th>Capacity (‘000 liters/ per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra (MH)</td>
<td>185</td>
<td>19360</td>
</tr>
<tr>
<td>Gujarat</td>
<td>39</td>
<td>11045</td>
</tr>
<tr>
<td>TN</td>
<td>45</td>
<td>7040</td>
</tr>
<tr>
<td>AP</td>
<td>39</td>
<td>5237</td>
</tr>
<tr>
<td>Karnataka</td>
<td>38</td>
<td>4243</td>
</tr>
<tr>
<td>Kerala</td>
<td>19</td>
<td>898</td>
</tr>
</tbody>
</table>

Source: GoK Department of Agriculture

Source: GoI Ministry of Agriculture: Department of Animal Husbandry, dairying, and fisheries

- Karnataka has among the lowest milk production among the comparable states. Production was 4022 thousand tonnes in 2005-06
- AP (6.9%), GUJ (4.4%), TN (3.8%) and MAH (3.4%) have grown faster than KAR.
- Karnataka has 38 dairy processing units and capacity of processing 4243 (‘000 liters/ per day).
Section 3

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Role of Government

Trends in total investments

- **9th** plan: Rs. 970.5 cr (4.1% of total plan) allocated. Rs 769.5 Cr (3.2% of total plan) spent
  - Crop Husbandry 17%
  - Animal Husbandry 15%
  - Agri research 14%
- **10th** plan: Rs. 1,613 crores (3.7% of total plan) allocated. Rs 2,464 crores (4.3% of total plan) spent
  - Crop husbandry 34%
  - Soil & Water mgmt 26%
  - Co-operation 12%
- Mismatch between allocation and expenditure
- **The main challenge in rejuvenation of agriculture lies in making agriculture a viable and sustainable eco-friendly source of income**

Source: Economic Survey 2006-07

**Planned outlays and anticipated expenditure for the ninth and tenth plan. (Rs in Crs)**

Source: Department of Economics & Statistics, GoK
Section 5

Introduction
Status Report on Agriculture in Karnataka
Benchmarking with comparable states
Role of Government
Key issues and challenges facing Agriculture
1. Stagnant Yield
2. Increasing input costs
3. Inadequate post harvest facilities
4. Poor research and extension services
5. Support to farmers
Key issues and challenges facing Agriculture

Key Issues identified using the Growth Diagnostic Framework

Agricultural Incomes

Agricultural Price
- Input Price
  - Fertilizer
    - Price
    - Quality
    - Quantity
  - Seeds & Implements
    - Price
    - Quality
    - Quantity
  - Credit
    - Access
    - Interest rate
- Output Price
  - Price fluctuations
    - Market Boom
    - Market Crash
  - Post harvest Infrastructure
    - Market
    - After harvest facilities
    - Storage
    - Transportation
- Subsidies

Agricultural Production
- Net Sown Area
  - Soil Quality
    - Monsoons
    - Fragmentation
    - Irrigation
  - Soil, Seed Quality
    - NSA Monsoons
    - Irrigation
  - Soil & Irrigation
    - Extension programs
- Productivity
- Water/Irrigation
  - Water table
  - Quality
  - Monsoons
  - Irrigation reach
  - Power
- Agri Extension Services
- Soil Quality
- Crop Mix

January 2008
PricewaterhouseCoopers
Key issues and challenges facing Agriculture

Key Issue 1: Stagnant yield

Major crop in the state have seen low yields and a fall in area.

Agricultural trends for key crops in Karnataka

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jowar</td>
<td>15.39</td>
<td>0.74</td>
<td>-2%</td>
<td>-3%</td>
</tr>
<tr>
<td>Rice</td>
<td>13.13</td>
<td>2.69</td>
<td>-2%</td>
<td>1%</td>
</tr>
<tr>
<td>Maize</td>
<td>9.1</td>
<td>2.29</td>
<td>5%</td>
<td>-5%</td>
</tr>
<tr>
<td>Ragi</td>
<td>7.08</td>
<td>1.16</td>
<td>-6%</td>
<td>-7%</td>
</tr>
<tr>
<td>Bajra</td>
<td>3.71</td>
<td>0.56</td>
<td>-4%</td>
<td>-5%</td>
</tr>
<tr>
<td>Cotton</td>
<td>3.7</td>
<td>1.12</td>
<td>-6%</td>
<td>-5%</td>
</tr>
<tr>
<td>Wheat</td>
<td>2.4</td>
<td>0.62</td>
<td>-2%</td>
<td>-7%</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>2.1</td>
<td>76</td>
<td>-11%</td>
<td>-5%</td>
</tr>
</tbody>
</table>

Source: Calculations based on data from the Karnataka Economic survey 2006-07

Food grain requirements of the state increasing significantly:

• Increasing world food prices
• Protect the poor against increasing prices and align crops with local food habits.

<table>
<thead>
<tr>
<th>Crop</th>
<th>1956</th>
<th>2006</th>
<th>% ch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (lakh ha)</td>
<td>72.6</td>
<td>74.4</td>
<td>2.4%</td>
</tr>
<tr>
<td>Yield (kg/ha)</td>
<td>523</td>
<td>1358</td>
<td>160%</td>
</tr>
<tr>
<td>Population (cr)</td>
<td>2.15</td>
<td>5.66</td>
<td>162%</td>
</tr>
</tbody>
</table>

Karnataka’s food grain actual v/s projected (1996-97 to 2015-2016): (lakh tonnes)

Source: GoK: Dept of Agriculture

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Key issues and challenges facing Agriculture

Key Issue 1: Stagnant Yield

Increased Fragmentation – Average size of holdings decreased from 1.95 to 1.63 hectares (1991-2006)

- Fragmentation known to decrease productivity due to lack of economies of scale and the depletion of soil fertility
- Marginal and small farmers holdings are on average 0.83 ha and account for 72.9% of the total number of holdings while occupying only 34.4% of the total area.
- Economic size land holding is 2.56 ha, where as Karnataka’s average land holding has fallen to 1.63 ha which is below an economically viable size as ascertained by the DoA.
Key Issue 1: Stagnant Yield

Soil Degradation affecting most of the land in the state

- According to the state’s Land Use Board Karnataka has nearly 98% of its area affected by some signs of soil erosion
- Increase in human interventions such as mining, logging, urbanisation have impacted soil quality

<table>
<thead>
<tr>
<th>Zones</th>
<th>Soil Depth (&lt;50 cm)</th>
<th>% of the zonal area affected</th>
<th>Soil gr/st (&gt;35% gr + Rocky land)</th>
<th>% of the zonal area affected</th>
<th>Soil Erosion (severely eroded)</th>
<th>% of the zonal area affected</th>
<th>Slope (&gt;15-30%)</th>
<th>% of the zonal area affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.49</td>
<td>40</td>
<td>1.89</td>
<td>22</td>
<td>1.89</td>
<td>22</td>
<td>NIL</td>
<td>11.23</td>
</tr>
<tr>
<td>2</td>
<td>3.41</td>
<td>19</td>
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<td>13</td>
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<td>4</td>
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<td>7.14</td>
<td>36</td>
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<tr>
<td>5</td>
<td>0.08</td>
<td>&lt;1</td>
<td>7.81</td>
<td>43</td>
<td>1.32</td>
<td>7</td>
<td>0.56</td>
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<td>6</td>
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<td>3.4</td>
<td>22</td>
<td>0.59</td>
<td>4</td>
<td>0.52</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>18</td>
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<td>25</td>
<td>1.39</td>
<td>8</td>
<td>0.76</td>
<td>3</td>
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<tr>
<td>8</td>
<td>3.78</td>
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<td>2.63</td>
<td>23</td>
<td>1.85</td>
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<td>10.14</td>
<td>45</td>
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<td>6</td>
<td>5.07</td>
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<tr>
<td>10</td>
<td>33.23</td>
<td>52.94</td>
<td>27.8</td>
<td>20.98</td>
<td>11</td>
<td>11.23</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

Source: Perspective Land Use Plan for Karnataka, 2002
Key issues and challenges facing Agriculture

Key Issue 1: Stagnant Yield

Water-shed Management – significant area remains to be treated
- 75% of the state is rain fed
- With limitation in Net Sown Area and Irrigation facilities, improvements in water-shed management is essential.
- 30% of the area has been treated where as 70% still remains untreated

Source: Agriculture and Horticulture Annual Report 2005-06
Key issues and challenges facing Agriculture

Key Issue 2: Increasing input costs

Cost of Cultivation (C2)

C2 = All actual expenses in cash and kind incurred in production by owner + interest on value of owned capital assets (excluding land) and + imputed value of family labour.

As can be seen, cost of cultivation is higher than the MSP

The state has over 60% of farmers currently indebted. Indebtedness is perpetuated by increasing input costs.
Key issues and challenges facing Agriculture

Key Issue 2: Increasing input costs

Both Price and Usage of Fertiliser has been steadily increasing

Improper use of fertiliser adds to recurring costs


<table>
<thead>
<tr>
<th>Fertilizer MRP (amount in Rs. per MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Ind. DAP</td>
</tr>
<tr>
<td>Imp. DAP</td>
</tr>
<tr>
<td>MOP</td>
</tr>
<tr>
<td>0.435023</td>
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<td>0.60294</td>
</tr>
<tr>
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</tr>
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<td>0.63559</td>
</tr>
<tr>
<td>0.680556</td>
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<td>0.847222</td>
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<tr>
<td>0.974306</td>
</tr>
<tr>
<td>1.186111</td>
</tr>
</tbody>
</table>

Source: GoK Department of Agriculture

Agriculture in Karnataka
PricewaterhouseCoopers

Source: Govt Department of Fertilizers.
January 2008
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Key issues and challenges facing Agriculture

Key Issue 2: Increasing input costs

Seeds

The state annually requires 38.1 lakh quintals of various seeds and 6.4 lakh quintals of Certified: Quality seeds according to the replacement norms.

The state seed firms are focused on certified seeds of high volume, low yield segment primarily in groundnut, ragi, paddy & sunflower.

Private companies are major players in the high value hybrid sectors of Maize, Bajra, Jowar & Cotton.

Seed replacement rates are increasing rapidly and need to be focused upon.

Karnataka’s Proposed Seed Replacement Rates for major crops (2007-08 TO 2011-12 (%))

Percentage supplied by government and private agencies.

Source: GoK Department of Agriculture

Source: Karnataka Development Report
Key issues and challenges facing Agriculture

Key issue 3: Inadequate Post harvest facilities

- According to NABARD app., 6% of food grains and 25-30% of horticulture products are lost in the state due to the lack of proper infrastructure facilities.
- There are 263 markets in North Karnataka where as 229 in South Karnataka. Of this, there are 145 APMCs functioning in the state.
- Graph above shows inadequacy in basic infrastructure in markets.
- There is also lack of critical functionaries who facilitate better functioning of these markets.

Source: Survey of India 2005, DAC, GoI
Key issues and challenges facing Agriculture

Key Issue 4: Poor Research, Extension Services and Education

- In light of Stagnant yield and falling net sown area, **Productivity improvements are main source of growth in the sector**
- Poor and reducing outlay

<table>
<thead>
<tr>
<th></th>
<th>Outlay</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rs crore</td>
<td>Share</td>
</tr>
<tr>
<td>9th plan</td>
<td>130</td>
<td>13%</td>
</tr>
<tr>
<td>10th plan</td>
<td>143</td>
<td>9%</td>
</tr>
</tbody>
</table>

- According to the KDR there are Inherent flaws in the extension programs as there are faults in formulation, implementation, and non-cooperation of beneficiaries.
- Existing linkages between the agricultural universities, extension services, and other research centers has to be strengthened
- Currently there is no collaboration with the existing schooling system or vocational programs in the rural areas and the state’s extension programs.
- Conservation efforts need to be a main stay for the extension programs in the state which have not received much focus
Key issues and challenges facing Agriculture

Key Issue 5: Support for Farmers

- Currently MSP supports only 14 crops
- Subsidies have also crowded out investments to key state developmental needs.
- According to ISEC study, benefit through subsidies reaching marginal & small farmers is minimal
- Appropriate mechanisms and steps to ensure provision of support to farmers and overall development of sector are necessary

Source: Volume and Composition of subsidies in food and agriculture : Volume and Composition of Budgetary Subsidies in Karnataka (ISEC)

Source: Volume and Composition of subsidies in food and agriculture : Volume and Composition of Budgetary Subsidies in Karnataka (ISEC)
Thank you!