AGRICULTURE

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EXECUTIVE SUMMARY

2nd largest agricultural land
- At 157.35 million hectares, India holds the 2nd largest agricultural land in the world

Favourable climatic conditions
- With 20 agri-climatic regions, all 15 major climates in the world exist in India. The country also possesses 46 of the 60 soil types in the world

Record production of food grains
- In FY2016, total food grain production in India was recorded at 253.16 million tonnes, which increased to 273.83 million tonnes in FY17.

Largest producer of major agricultural and horticulture crops
- India is the largest producer of spices, pulses, milk, tea, cashew & jute; & the 2nd largest producer of wheat, rice, fruits & vegetables, sugarcane, cotton & oilseeds

Increasing farm mechanisation
- India is one of the largest manufacturers of farm equipment such as tractors, harvesters & tillers. India accounts for nearly one-third of the overall tractor production, globally, with the tractor production in the country estimated to increase from 0.57 million units in FY16 & reach to 16 million units by 2030.

Source: Ministry of Agriculture, Government of India, TechSci Research

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Robust demand

- A large population is the key driver of demand for agricultural products
- Rising urban & rural incomes have also aided demand growth
- External demand has also been growing especially from key markets like the Middle East

Attractive opportunities

- Increasing demand for agricultural inputs such as hybrid seeds & fertilizers.
- Promising opportunities in storage facilities; potential storage capacity expansion of 35 million tonnes under the 12th Five Year Plan
- The government plans to reduce the import duty on wheat from 10 per cent to 0 per cent, in order to boost the domestic availability of wheat in the country.

Competitive advantages

- High proportion of agricultural land (157 million hectares)
- Leading producer of spices, jute, pulses; 2nd largest producer of wheat, paddy, fruits & vegetables

Policy support

- Schemes like Paramparagat Krishi Vikas Yojana (PKVY) helps in developing organic clusters & make available chemical free inputs to farmers.
- Other steps include Pradhanmantri Gram Sinchai Yojana that ensures improved access to irrigation; creation of an unified national agricultural market which would help boost the incomes of farmers
- 100 per cent FDI under automatic route for development of seeds

Source: Ministry of Agriculture, World Bank, FAOSTAT, TechSci Research

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EVOLUTION OF AGRICULTURE IN INDIA

- Stagnation in agriculture
- Low growth in crop & grain production (0.4 and 0.1 per cent p.a.)
- Food grain production of 59.2 MT in 1952–53, with a yield of 579.8 kg/ha

1950s

- Pioneering work of agricultural scientists & efforts of farmers led to Green Revolution
- High Yield Variety (HYV) of seeds, increased use of fertilizers and irrigation resulted in a significant spike in production
- Attained food security & reduced import of food grains

1960-80

- Expanding cereal production
- Economic reforms introduced; greater encouragement to exports
- Surplus of production of agricultural commodities over domestic demand
- India emerges as a net exporter of agricultural products
- Increase in population & strong income growth

1980-2000

- 50 per cent increase in seed subsidy
- Additional financial assistance for horticulture crops
- Schemes like Pradhan Mantri Krishi Sinchai Yojana that accords high priority to water security
- Creation of Price Stabilization Fund (PSF) by the Department of Agriculture & Cooperation as a price control measure to dampen the impact on consumers
- Allocation of USD830 million for the development of micro irrigation, watershed & Pradhan Mantri Krishi Sinchai Yojana
- The Indian agricultural services & agricultural machinery have cumulatively attracted USD2,315.33 million from April 2000 to December 2016

2000 onwards

Source: Ministry of External Affairs, RBI, Ministry of Agriculture, TechSci Research
Notes: MT - Metric Tonnes, P. A. - Per Annum
For updated information, please visit www.ibef.org
SCHEMES INITIATED BY THE GOVERNMENT

Agricultural Technology Management Agency (ATMA)

- This technique facilitates retrieval of data & data entry from the internet based web portals without actually having internet by using a simple mobile phone.
- More than a dozen of services of innovative technology like USSD are being operationalized for farmers and other stakeholders.

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

- Under the scheme, allocation of USD7.64 billion has been made for investment in irrigation, expanding cultivable area, improve efficiency of on-farm water to reduce wastage, enhance adoption of precision irrigation, etc.
- Governments of, majorly, all the states are funding agriculture sector & taking appropriate measures to achieve the targeted growth rate & address the issues being faced by farmers.

Pradhan Mantri Fasal Bima Yojana (PMFBY)

- In 2016, Central Government launched PM Mantri Fasal Bima Yojana for providing financial support to farmers & cover their crop losses. The scheme covers rabi, kharif crops as well as annual horticultural & commercial crops.
- PMFBY is a crop insurance policy & premium payable on the principle amount to the farmers.

Paramparagat Krishi Vikas Yojana (PKVY)

- This scheme ensures the promotion of organic farming.
- Adoption of farming will promote the balanced use of chemical fertilizers & enhance the quality of farm produce.

Source: Deptt. of Agriculture and Cooperation, Ministry of Agriculture, FAOSTAT, TechSci Research

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**GROWTH IN AGRICULTURE … (1/2)**

- GDP of agriculture and allied sectors in India was recorded at USD 244.74 billion in FY16.
- According to the advanced estimates of MOSPI, agriculture and allied sector recorded a CAGR rise of 6.64 per cent during FY07-16.
- Agriculture is the primary source of livelihood for about 58 per cent of India’s population.

### GDP by value added – size of agriculture and allied activities (USD billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Value Added (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>137.17</td>
</tr>
<tr>
<td>FY08</td>
<td>162.67</td>
</tr>
<tr>
<td>FY09</td>
<td>141.77</td>
</tr>
<tr>
<td>FY10</td>
<td>139.39</td>
</tr>
<tr>
<td>FY11</td>
<td>157.35</td>
</tr>
<tr>
<td>FY12</td>
<td>160.80</td>
</tr>
<tr>
<td>FY13</td>
<td>140.77</td>
</tr>
<tr>
<td>FY14</td>
<td>132.71</td>
</tr>
<tr>
<td>FY15</td>
<td>259.23</td>
</tr>
<tr>
<td>FY16</td>
<td>244.74</td>
</tr>
</tbody>
</table>

*Source: Ministry of Agriculture, Print Release, RBI, TechSci Research*

*Notes: GDP – Gross Domestic Product, MOSPI – Ministry of Statistics and Programme Implementation, FY16 – Advance Estimates*
As per Union Budget 2016-17, the major focus would be on doubling farmers income by 2022. Other than that, the government would increase expenditure in farm & rural sector, infrastructure sector, social sector & also work on employment generation.

To establish a Long Term Irrigation Fund, under NABARD, an initial collection of nearly USD3.06 billion has been planned in Union Budget 2016-17. A multilateral funding of around USD0.92 billion to execute various programmes related to sustainable management of ground water resources.

As per Union Budget 2017-18, allocation of USD148.74 billion was made for agriculture sector & welfare of farmers. Also the provision of USD0.84 billion made for PMFBY under the same budget.

Source: Ministry of Agriculture, TechSci Research
Note: RKVY is a central government scheme providing funds to state governments to spend on agriculture
NABARD - National Bank for Agriculture and Rural Development
PMGSY – Pradhan Mantri Gram Sadak Yojana
PMFBY - Pradhan Mantri Fasal Bima Yojana
There are 2 major agricultural seasons in India: Kharif & Rabi

Kharif season lasts from April to September (summer); rice (paddy) is the season’s main crop.

Rabi season lasts from October to March (winter); wheat is the season’s main crop.

According to the Ministry of Agriculture, total food grain production in the country in February 2017, stood at around 271.98 million tonnes.

India imported 2.7 million tonnes of wheat in FY 17 (till January 16, 2017) & an additional 1.2 million tonnes are to be imported by February 2017.

In March 2017, of 64.5 million hectares of agriculture land, the government insured 19 million hectares during the rabi season, to benefit 16.4 million farmers, under the Pradhan Mantri Fasal Bima Yojana (PMFBY) programme. The total amount for insurance for rabi crops is USD10.16 billion.

Source: Finance Ministry, Ministry of Agriculture, TechSci Research

1 - Data is 2nd Advance Estimate
### Area Sown in FY17 (lakh hectares)

<table>
<thead>
<tr>
<th>Season</th>
<th>Crop</th>
<th>Area Sown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rabi</td>
<td>Wheat</td>
<td>56.16</td>
</tr>
<tr>
<td></td>
<td>Coarse Cereals</td>
<td>74.55</td>
</tr>
<tr>
<td></td>
<td>Pulses</td>
<td>25.98</td>
</tr>
<tr>
<td></td>
<td>Oilseeds</td>
<td>79.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Season</th>
<th>Crop</th>
<th>Area Sown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kharif</td>
<td>Rice</td>
<td>372.95</td>
</tr>
<tr>
<td></td>
<td>Coarse Cereals</td>
<td>184.13</td>
</tr>
<tr>
<td></td>
<td>Oilseeds</td>
<td>142.02</td>
</tr>
<tr>
<td></td>
<td>Pulses</td>
<td>179.6</td>
</tr>
<tr>
<td></td>
<td>Cotton</td>
<td>45.77</td>
</tr>
<tr>
<td></td>
<td>Sugarcane</td>
<td>7.56</td>
</tr>
<tr>
<td></td>
<td>Jute &amp; Mesta</td>
<td>101.96</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Finance, Ministry of Agriculture, TechSci Research

**Notes:**
- Kharif FY17 – Data till September 2016
- Rabi FY17 – Data till November 2016
PRODUCTION OF RICE AND WHEAT ON THE RISE

* Since 2010, production as well as yield of both major crops - rice and wheat has increased significantly.

* During 2013-14, production of wheat & rice in the country reached an all-time high, with the production of rice & wheat being recorded at 106.29 million tonnes and 95.85 million tonnes, respectively.

* However, in FY16, production of rice stood at 103.61 million tonnes, whereas, production of wheat stood at 93.82 million tonnes.

* According to 2nd advance estimates, production of wheat in 2015–16 stood at 93.82 million tonnes & that of rice was 103.61 million tonnes.

* In FY15, yield of rice in the country reached 2.39 tonnes/hectare & that of wheat reached 2.9 tonnes/hectare.

* Ministry of Agriculture is targeting to achieve 270 million tonnes production of food grains, during (July-June) 2016-17.

* Backed by robust output of wheat, rice and pulses due to a heavy rainfall in 2016, the country’s foodgrain production increased by 8.7 per cent to a record high 273.83 million tonnes in 2016-17.

**Source:** Ministry of Agriculture, TechSci Research

<table>
<thead>
<tr>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16*</th>
</tr>
</thead>
<tbody>
<tr>
<td>78.6</td>
<td>96.7</td>
<td>80.7</td>
<td>99.2</td>
<td>80.8</td>
<td>89.1</td>
<td>86.9</td>
<td>96</td>
<td>105.3</td>
</tr>
<tr>
<td>93.51</td>
<td>103.8</td>
<td>95.85</td>
<td>106.29</td>
<td>88.94</td>
<td>104.8</td>
<td>93.82</td>
<td>103.61</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Ministry of Agriculture, TechSci Research

1. - 2nd Advance Estimates
FRUIT AND VEGETABLE PRODUCTION CONTINUES TO INCREASE

- India ranks 2nd in global production of fruits & vegetables & is a leading exporter of mangoes & bananas. The country also exports grapes in a large quantity across the world.

- National Horticulture Mission, National Horticulture Board, Technology Mission for Integrated Development of Horticulture in North-East are some of the initiatives taken by the Government of India to boost the horticulture sector of the country.

- The National Horticulture Board has launched a new capital investment subsidy scheme for construction & expansion of cold storages & storages of horticulture products.

- During FY05-16, horticulture production in India grew at a CAGR of 4.92 per cent.

### Indian Horticulture Area and Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (million hectares)</th>
<th>Production (million tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY05</td>
<td>166.9</td>
<td>182.8</td>
</tr>
<tr>
<td>FY06</td>
<td>191.8</td>
<td>211.2</td>
</tr>
<tr>
<td>FY07</td>
<td>214.7</td>
<td>223.1</td>
</tr>
<tr>
<td>FY08</td>
<td>240.5</td>
<td>257.3</td>
</tr>
<tr>
<td>FY09</td>
<td>268.8</td>
<td>277.3</td>
</tr>
<tr>
<td>FY10</td>
<td>280.5</td>
<td>283.36</td>
</tr>
<tr>
<td>FY11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY12</td>
<td></td>
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<tr>
<td>FY13</td>
<td></td>
<td></td>
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<tr>
<td>FY14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Note: 1 - CAGR Mentioned is for Production
2 - As per 3rd Advance Estimates

For updated information, please visit [www.ibef.org](http://www.ibef.org)
India is among the 15 leading exporters of agricultural products in the world.

Total agricultural exports from India grew at a CAGR of 19 per cent over FY10-16 to reach USD32.08 billion in FY16.

The contribution of agriculture to total export was 12.47 per cent in FY15 and 12.28 per cent in FY16.

Agricultural exports increased from USD24.7 billion in 2011–12 to USD32.08 billion in 2015-16, at a CAGR of 6.75 per cent.

In FY17 (April–January 2017), agricultural exports from India stood at USD12.84 billion.

Notes: CAGR - Compound Annual Growth Rate
\(^1\) - Data is for April – January 2017
SURGE IN DEMAND OF INDIA AGRICULTURAL PRODUCTS … (2/2)

- India exported Basmati rice worth USD1.62 billion during FY17 (Till September 2016)
- Marine Products, Buffalo Meat are the next largest export items in terms of value; they accounted for 26.8 per cent & 5.76 per cent, respectively, of total agricultural exports in 2016-17
- Guargum meal emerged as major export commodity; the value of exports rose at a CAGR of 6.88 per cent over FY10 - 16
- Total agricultural exports from India increased to USD31.76 billion in FY16

Key agricultural and allied sector exports from India in 2016-17 (USD billion)

<table>
<thead>
<tr>
<th>Product</th>
<th>Value (USD Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>1.62</td>
</tr>
<tr>
<td>Guargum Meal</td>
<td>0.16</td>
</tr>
<tr>
<td>Marine Products</td>
<td>2.77</td>
</tr>
<tr>
<td>Oil Meals</td>
<td>0.20</td>
</tr>
<tr>
<td>Sugar</td>
<td>0.64</td>
</tr>
<tr>
<td>Buffalo Meat</td>
<td>1.83</td>
</tr>
<tr>
<td>Cashew Nut</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Exports of guargum meal

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (USD Million)</th>
<th>Quantity (Thousand Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY10</td>
<td>229</td>
<td>218</td>
</tr>
<tr>
<td>FY11</td>
<td>615</td>
<td>403</td>
</tr>
<tr>
<td>FY12</td>
<td>3489</td>
<td>707</td>
</tr>
<tr>
<td>FY13</td>
<td>405</td>
<td>39</td>
</tr>
<tr>
<td>FY14</td>
<td>1970</td>
<td>405</td>
</tr>
<tr>
<td>FY15</td>
<td>1550</td>
<td>602</td>
</tr>
<tr>
<td>FY16</td>
<td>665</td>
<td>665</td>
</tr>
<tr>
<td>FY17</td>
<td>481</td>
<td>325</td>
</tr>
<tr>
<td>FY17²</td>
<td>179</td>
<td>164</td>
</tr>
</tbody>
</table>

Source: Ministry of Agriculture, APEDA, TechSci Research
1 - Data is for April 2015 – February 2016
2 - Data is for April – September 2016
KEY AGRICULTURAL STATES AND THEIR CONTRIBUTIONS

- **Punjab and Haryana** were the key states of green revolution. Punjab is one of the largest producers of food grains.
- **Gujarat** – largest producer of cotton (1.62 million tonnes)
- **Maharashtra** – largest producer of Jowar, Tobacco & Safflower
- **Karnataka** – largest producer of Sunflower seed, Maize, Ragi, Coffee & Cardamom
- **Uttar Pradesh** – largest producer of wheat (30.00 million tonnes)
- **West Bengal** – largest producer of rice (15.80 million tonnes)
- **Assam** - largest producer of tea
- **Madhya Pradesh** – largest producer of soybean, pulses, Linseed

Source: Department of Agriculture & Cooperation,
Notes: All figures as of 2015,
1 - Projected for 2016-17
GROWTH DRIVERS OF INDIAN AGRICULTURE

Demand-side drivers
- Population & income growth
- Increasing exports
- Favourable demographics

Supply-side drivers
- Hybrid & genetically modified seeds
- Mechanisation
- Irrigational facilities
- Green Revolution in Eastern India

Policy support
- Growing institutional credit
- Increasing MSP
- Introduction of new schemes like Paramparagat Krishi Vikas Yojana, Pradhanmantri Gram Sinchai Yojana, Sansad Adarsh Gram Yojana
- Opening up of exports of wheat & rice

Note: MSP - Minimum Support Price
**A LARGE POPULATION ENSURES HIGH DEMAND FOR AGRICULTURAL PRODUCTS**

- India, the 2\textsuperscript{nd} most populated country in the world, has to meet food consumption needs of over 1,280 million people.
- In FY2016, India’s population stood at around 1.29 billion.
- Population is a key demand driver of agricultural growth in the country.
- India’s population is expected to reach 1.39 billion by FY21.

![Population of India (million)](chart)

*Source: Census of India 2011, World Population Statistics, TechSci Research*
INCOME GROWTH ALSO DRIVING AGRICULTURE DEMAND

- Domestic demand for agricultural & allied products has not only been rising due to rising population, but also as a result of greater consumption by a wealthier population.
- Over FY07-16, India’s per capita income increased at a CAGR of 6.88 per cent & reached to USD1182.9
- Consumption expenditure in India is likely to reach USD3.6 trillion by 2020, up from an estimated USD0.2 trillion in FY16
- Indian agriculture has also benefitted from rising external demand & the sector’s wider participation in the global economy
The Government of India has launched a new scheme, Pradhan Mantri Krishi Sinchai Yojana, that provides end-to-end solutions in irrigation supply chain & focuses on creating sources of assured irrigation, per drop more crop & harnessing rain water at micro-level through Jal – Sanchay & Jal - Sinchan.

The 2 major lift irrigation projects in Kohlapur; Tembhu & Takari Mhaisal-have received USD19 million & USD15 million by the Union Government.

In September 2016, allocation of USD3.06 billion was made, under NABARD, to establish a Long Term Irrigation Fund.

23 irrigation projects under Accelerated Irrigation Benefit Program (AIBP) would be fast tracked for completion before March 2017.

In February 2017, Government of West Bengal brought an additional 3 lakhs acres of agricultural land with an aim to ensure welfare of farmers, under its irrigation programme. With no shortage of water supply, rabi & boro crops will be cultivated on that area.

In April 2017, the central government launched water conservation and irrigation projects in drought-prone regions of Maharashtra, Odisha and Madhya Pradesh, with an aim to increase the area of irrigated land. With the help of concerned state governments, the central government will also renovate, repair and restore water bodies in these states.
Gross irrigated area under food grains is estimated to have grown to 61.632 million hectares in FY13.

- Of the wide variety of crops in India, rice & wheat are the most irrigated.

- With growing investments in irrigation, the dependence on monsoons has declined considerably over the years.

- As per Union Budget FY17, the government has planned to bring 28.5 lakh hectares of land under irrigation for using water optimally, under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

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**Gross irrigated area under food grains (‘000 hectares)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (‘000 hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY13</td>
<td>61632</td>
</tr>
<tr>
<td>FY12</td>
<td>61612</td>
</tr>
<tr>
<td>FY11</td>
<td>61065</td>
</tr>
<tr>
<td>FY10</td>
<td>58122</td>
</tr>
<tr>
<td>FY09</td>
<td>60415</td>
</tr>
<tr>
<td>FY08</td>
<td>59512</td>
</tr>
<tr>
<td>FY07</td>
<td>58550</td>
</tr>
<tr>
<td>FY06</td>
<td>56489</td>
</tr>
<tr>
<td>FY05</td>
<td>54715</td>
</tr>
</tbody>
</table>

*Source: Food and Agricultural Organization US, Ministry of Agriculture, TechSci Research*
Mechanisation helps in raising farm income by increasing productivity & limiting post-harvest losses.

Government of India is focussing on increasing its reach of farm mechanisation to the regions where availability of farm power is low & to small and marginal farmers.

Allocation of USD223 million was made for the establishment of Farm Machinery Banks & distribution of farm machinery & tools to farmers in various states in FY16.

The sale of tractors increased from 0.35 million units in FY07 to 0.57 million units in FY16, witnessing growth at a CAGR of 5.5 per cent.

Source: Department of Agriculture and Cooperation, State of Indian Agriculture 2013-14, ICRA, A report on ‘Farm Mechanization in India’, TechSci Research
INCREASING MECHANISATION OF FARMING … (2/2)

- Sale of tillers increased at a CAGR of 7.8 per cent to 48,882 units over FY07-16

- The government has set up a number of Farm Machinery Training and Testing Institutes to train farmers on the operation and maintenance of agricultural equipment

- DAC proposes to initiate National Mission on Agricultural Mechanisation (NMAM) to spread the benefits of mechanisation among all levels of farmers especially small and marginal ones

Source: Department of Agriculture and Cooperation, A report on 'Indian Tractor Industry' by ICRA, TechSci Research DAC - Dept. of Agriculture and Cooperation

For updated information, please visit www.ibef.org
In FY16, production of foundation seeds reached 149,542 tonnes from 74,800 tonnes in FY06.

There has been strong growth in the use of hybrid seeds due to their high yield and resistance.

Usage of hybrid seeds has been more prevalent in cash crops than food crops.

In FY16, production of certified seeds increased to 3.4 million tonnes from 1.4 million tonnes in FY06.

Source: Ministry of Agriculture, TechSci Research
Usage of hybrid seeds has boosted the yield of food grains to 2,056 kg/hectare in FY16 from 1,756 kg/hectare in FY07.

The government has been playing a proactive role in promoting greater use of hybrid seeds; it encourages private seed companies by providing a subsidy of 25 per cent of the capital cost subject to a maximum of USD50,000 per unit.

The government of India has targeted production of 270.1 million tonnes (MT) of food grains for FY17.

Institutional credit to agriculture (USD billion)

- Institutional credit to the agriculture sector increased at a CAGR of 3.90 per cent during FY07–15.
- Farmers are allowed to avail crop loans at an interest of 7 per cent.
- In FY15, institutional credit to the agricultural sector was USD89.90 billion from Commercial Banks, USD20.60 billion from Cooperative Banks and USD15.24 billion from Regional Rural Banks.

Source: Ministry of Agriculture, RBI, National Sample Survey Organisation (NSSO), TechSci Research
*: Provisional
The MSP is announced well ahead of the sowing season so that the farmers can take informed decisions on cropping.

The Indian government increases MSPs regularly to incentivise farmers to enhance production of crops & ensure there is adequate supply.

The MSP for rice was raised from USD44 per quintal in FY14 to USD45.80 per quintal in FY15 at YoY growth of 4.1 per cent.

MSP for rice reached to USD21.5 per quintal in FY16 (for Kharif season from July-October).

**Source:** Ministry of Agriculture, TechSci Research

**Note:** MSP is Minimum Support Price

\(^1\) - Data is for Kharif Season
* Government has increased the MSP of pulses significantly in the past 3 years to encourage production & thereby reduce the supply shortage

* MSP for Arhar increased from USD31.2 per quintal in FY07 to USD75.02 per quintal in FY16

Source: Ministry of Agriculture, TechSci Research
FAVOURABLE POLICIES ARE SUPPORTING THE SECTOR GROWTH … (1/2)

- **Paramparagat Krishi Vikas Yojana (PKVY)**
  - This scheme ensures the promotion of organic farming. USD45.83 million has been allocated for the scheme during the year 2015-16.
  - Adoption of farming will promote the balanced use of chemical fertilizers and enhance the quality of farm produce.

- **Foreign Direct Investment (FDI)**
  - 100 per cent Foreign Direct Investment (FDI) is allowed under automatic route in storage & warehousing including cold storages.
  - FDI policy for agriculture was amended to allow 100 per cent FDI under automatic route for development of seeds.

- **Pradhan Mantri Krishi Sinchai Yojana (PMKSY)**
  - The scheme ensures access to the means of irrigation to all agricultural farms in the country to produce ‘per drop more crop’, thus bringing much desired rural prosperity.
  - To increase agricultural production & productivity by increasing availability of water and its efficient use.

- **APMC farmers goes cashless**
  - In January 2017, Indore Agricultural Produce Market Committee (APMC) adopted the cashless payment policy & farmers have started accepting alternative modes of payments such as cheques & RTGS.

- **Niti Aayog, Contract Farming Law**
  - In February 2017, as an effort to protect the farmers against price volatility, Niti Aayog has come up with a law on contract farming, to protect the farmer’s interest. The law on contract farming is considered important for private players, as it would induce competition, while ensuring better price of horticulture produce to farmers through advance agreement.

*Source: Ministry of Agriculture, Union Budget, TechSci Research*
*Note: RKVY - Rashtriya Krishi Vikas Yojana*
FAVOURABLE POLICIES ARE SUPPORTING THE SECTOR GROWTH … (2/2)

Pulses Production

- Government has allocated USD76.38 million to lift the production of pulses under National Food Security Mission (NFSM). The government would increase cover for about 622 districts under the initiative in FY17.

Support through Initiatives

- Under MNREGA, government is planning to create 1 million compost pits for organic manure.
- A corpus of USD2.90 billion to be allocated for adding 0.22 million km of road, under PMGSY by 2019.

Regional Rural Bank Credit Refinance Fund

- The government plans to set up a Regional Rural Bank Credit Refinance Fund with a capital of USD2.1 billion to enhance the capacity of RRBs to disburse short term crop loans to small and marginal farmers.
- In FY17, the government raised the budget allocation for agriculture sector to USD137.5 billion.

Integrated Scheme of Oilseeds, Pulses, Oil palm & Maize (ISOPOM)

- ISOPOM scheme was launched in 2004 to provide flexibility & promote crop diversification; under ISOPOM, states can utilise the allotted funds to develop a crop of their choice.

Source: Ministry of Agriculture, Union Budget, TechSci Research
Notes: RRB – Regional Rural Bank, ISOPOM - Integrated Scheme of Oilseeds, Pulses, Oil palm and Maize, MNREGA - Mahatma Gandhi National Rural Employment Guarantee Act, PMGSY - Pradhan Mantri Gram Sadak Yojana
Agriculture GVA

- Central Statistics Office (CSO) estimates the share of agriculture & allied sector comprising of agriculture, livestock, forestry & fishery was almost 15.35 per cent of the Gross Value Added (GVA) during FY16.

Farmers income

- Under the budget 2017-18, the government to double farmers income in coming 5 years.

Food grain production reached 273.83 MMT

- Food grain production reached 273.83 million tonnes in 2016-17, in comparison with 253.16 million tonnes in 2015-16, which is projected to further increase to 280.6 million tonnes by 2020-21.
- MSP for every agriculture produce increased significantly.

Agricultural exports estimated to increase

- Agriculture exports from India, during FY16 reached to USD32.08 billion.
- The export of agricultural products is likely to cross USD45 billion by 2019 – 20.
- India’s exports of grapes to Europe & China are estimated to increase, with increase in production of exportable grapes. Nearly 80 per cent of the overall supply is sourced from Nasik, from a cultivated area of 55000 hectares, of which 33000 hectares of land is registered for cultivating grapes that are to be exported only.

Source: Union Budget, Ministry of Agriculture, TechSci Research
NABARD - National Bank for Agriculture and Rural Development

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AGRICULTURE

HIGHLIGHTS OF THE BUDGET 2017-18

Funds Allocated

- Allocated USD27.84 billion to rural, agricultural and allied sectors under the budget
- Agriculture credit target fixed USD1.48 trillion
- Under NABARD, Dairy processing infrastructure fund worth USD1.18 billion will be set up with an initial sum of USD297.48 million
- Under Pradhan Mantri Fasal Bima Yojana (PMFBY), a allocation of funds has been increased to USD1.96 billion in the budget 2017-18.
- Micro irrigation fund will be created with a sum of USD743.71 million

Source: Union Budget, Ministry of Agriculture, TechSci Research
NABARD - National Bank for Agriculture and Rural Development

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## AGRICULTURE

### OPPORTUNITIES

<table>
<thead>
<tr>
<th>Farm management services</th>
<th>Agricultural inputs</th>
<th>Logistics</th>
</tr>
</thead>
</table>
| • New agri business, which provides inputs such as seeds, fertilizers along with providing advice & training farmers on latest agricultural practices | • Limited arable land against growing population makes agricultural inputs crucial  
• Huge opportunity exists for agri input segments like seeds & plant growth nutrients  
• In India, commercial seeds only account for minor percentage (25 per cent) & huge demand is expected for quality branded seeds | • The 12th Five Year Plan estimated a potential storage capacity expansion of 35 million tonnes  
• Cold storage capacity needs to grow rapidly from the current level of 24 million tonnes  
• Private warehouse operators are supported by multiple income streams, subsidy & available of credit  
• It is expected that 4 per cent growth in the food grain storage capacity would restructure agricultural sector over the next few years |

*Source: Ministry of Agriculture, TechSci Research*
### AGRICULTURE

#### INITIATIVES THAT WILL FURTHER PROP UP THE SECTOR

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foreign Direct Investment (FDI)</strong></td>
<td>Cumulative FDI from April 2000 to December 2016 in agriculture services was USD 1,869.37 million, whereas in agricultural machinery was USD 445.96 million.</td>
</tr>
<tr>
<td><strong>MOUs/Agreements</strong></td>
<td>MOUs/Agreements has been signed with 52 countries</td>
</tr>
<tr>
<td></td>
<td>Number of partnerships with other countries have reached 63</td>
</tr>
<tr>
<td></td>
<td>Provides better agricultural facilities in areas such as R &amp; D, capacity building, germ - plasm exchange, post – harvest management, value addition/food processing, plant protection, animal husbandry, dairy &amp; fisheries</td>
</tr>
<tr>
<td></td>
<td>Helps in improving bilateral ties as well</td>
</tr>
<tr>
<td><strong>Buyer Seller Meet</strong></td>
<td>In January 2017, the Spice Board in Guwahati organised a meet, which witnessed participation of spice producing farmers, sellers, exporters &amp; importers from North East. The meet facilitated trial orders, which might turn into a potential spice trade worth US$ 1.48 million, by next year.</td>
</tr>
</tbody>
</table>

*Source: Ministry of Agriculture, DIPP, TechSci Research*
GOVERNMENT INITIATIVES THAT WILL FURTHER PROP UP THE SECTOR

- Allocation of USD3.9 billion for RFID, USD234 million for long – term rural credit fund, USD7.03 billion for short – term cooperative rural credit finance fund, USD3.9 billion for short – term RRB refinance fund
- Target of USD137.49 billion agricultural credit during 2016 – 17
- The Ministry of Food Processing Industries have taken few initiatives for developing the food – processing sector that would enhance the exports of agro & processed foods and income of farmers
- Government is planning to invest USD8 billion so as to revive 4 fertilizer plants & setting up 2 plants to produce farm nutrients
- Financial Outlay of USD35.47 million has been announced under the National Dairy Development Board (NDDB) to boost milk output & per animal production of milk
- Israel have strengthened its bilateral ties with India by helping the farmers to choose the right crops or vegetables & multiplying income of farmers
- Government has fixed the minimum wages for unskilled agricultural labor in C-class towns in central sphere at USD 5.28 (INR 350) per day. The rates will be effective from November 2016
- As of February 2017, the government has created a buffer stock of 1.1 million tonnes of pulses & have asked the National Agricultural Cooperative Marketing of India (NAFED) & Food Corporation of India (FCI), to clear the older stock.
- In March 2017, the government has approved the creation of buffer crops to stabilised prices as well as increase their imports, For the same, an agency named as Buffer Stock Management Agency (BSMA) has been formed, which is responsible for efficient management like liquidation, storage, maintenance & procurement of the stock.
- In March 2017, the government created a Banana Research Centre in Vaishali, Bihar, as the district’s climate is best suited for production of bananas.
- In May 2017, the government signed an MoU with Malaysia to develop Ammonia and Urea manufacturing plant. The project is expected to cost around USD2.1 billion, and will have a capacity to produce 2.4 million tonnes of Urea and 1.35 million tonnes of Ammonia annually.
- In May 2017, the Ministry of Agriculture and Farmers Welfare launched e-Krishi Samvad, an internet-based platform that will provide direct and effective solutions to the problems faced by farmers and stakeholders in the agriculture sector.

Source: Ministry of Agriculture, DIPP, TechSci Research; Note: RFID – Radio Frequency Identification

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CONTRACT FARMING: CHANGING THE FARM DYNAMICS … (1/3)

- The Government of India’s National Agriculture Policy envisages that “Private sector participation will be promoted through contract farming & land leasing arrangements to allow accelerated technology transfer, capital inflow & assured market for crop production especially of oilseeds, cotton & horticultural crops”
- The promotion of the agritech sector has led to a heavy investments of over USD10 million in 2017 by companies like Accel India, IDG ventures, etc.

The government is planning to revamp the old model Agriculture Produce Marketing Committee Act (APMC Act) & carve out the provisions on contract farming into a separate law to form a new Contract Farming Act.

Source: Company reports, Assorted articles, TechSci Research

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Foreign companies practicing contract farming in India

<table>
<thead>
<tr>
<th>Company</th>
<th>State</th>
<th>Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargill India Pvt Ltd</td>
<td>Madhya Pradesh</td>
<td>Wheat, Maize &amp; Soya bean</td>
</tr>
<tr>
<td>Hindustan Lever Ltd</td>
<td>Madhya Pradesh</td>
<td>Wheat</td>
</tr>
<tr>
<td>ITC - IBD</td>
<td>Madhya Pradesh</td>
<td>Soybean</td>
</tr>
<tr>
<td>Appachi</td>
<td>Tamil Nadu</td>
<td>Cotton</td>
</tr>
<tr>
<td>Nestle India Ltd</td>
<td>Punjab</td>
<td>Milk</td>
</tr>
<tr>
<td>Pepsi Foods Pvt Ltd</td>
<td>Punjab, TN</td>
<td>Chillies, Groundnut, Seaweed, Tomato &amp; Basmati Rice</td>
</tr>
</tbody>
</table>
At present among successful contract farming practices undertaken in Gujarat:

**Pepsi India, Arvind mills, Jojoba Oil Industries Ltd**
- These are some companies who have approached the government & shown keen interest in doing research & contract farming in Agro-products in Gujarat under their backward integration projects.

**Godrej Agrovat Ltd.**
- Is also planning to grow high quality oil palm under contract farming in south Gujarat region by providing imported tissue culture plants and farming technology to the contract farmers.

**Agrocell Corporation Ltd.**
- It is doing contract farming of organic cotton & sesame seeds covering about 5000 acres in Kutch & Surendranagar district of Gujarat since last 8 years.
- The farmers get 7-8 per cent more price than ordinary cotton in current market & concession in certain services from the company.

**Atreyas Agro Organic Pvt. Ltd.**
- Plans to grow Jetrophs Curcas by contract farming. They have target of covering more than 50,000 acres of irrigated & non-irrigated land of Gujarat.

*Source: Company reports, Assorted articles, TechSci Research*
• Contract farming agreement with farmers in Punjab
• PMG technology sourced from China

Pepsico

• Company supported farmers in R&D & other farm activities
• Farmer started to grow two crops in one year

Groundnut

• Yields increased to 3-4 tonnes per hectare, much above national average of 1 tonne per hectare

Model extended to other states

• Created procurement centers to procure Barley in Rajasthan

SAB Miller

• Provide higher-quality certified seeds & training to 5,600 farmers in Rajasthan

Barley

• Increase in yields from 1.9 tonnes a hectare to 3.8 tonnes a hectare within the space of one year

Others followed the model

Source: Company reports, Assorted articles, TechSci Research
Note: PMG - Plastic Mulch Groundnut

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RALLIS INDIA: BENEFITTING FROM DEMAND OF AGRICULTURAL INPUTS … (1/2)

Salient characteristics

- Rallis is a leading player in the agricultural inputs business and one of the largest player in agri chemical business
- Crop protection is the major segment for the company and it plans to expand its presence in seeds and PGN
- As part of the above mentioned plans, Rallis acquired a research-led seeds company ‘Metahelix’ & launched a PGN product in the name of ‘Ralligold’
- Rallis India has set up Rallis Farm Management services to undertake contract farming
- Rallis Research Centre has won the prestigious New Millennium Indian Technological Leadership Initiative award for a molecule discovery
- Launched GeoGreen which has established itself as a brand for soil conditioner. It improves the soil health to enhance the productivity
- Programmes like MoPu – More Pulses, Samrudh Krishi have been initiated to drive the productivity of various agri services

Major business segments

- Crop protection
- Agri services
- Contract farming
- Seeds and PGN

Note: PGN - Plant Growth Nutrients
RALLIS INDIA: BENEFITTING FROM DEMAND OF AGRICULTURAL INPUTS … (2/2)

Net sales (USD million)

<table>
<thead>
<tr>
<th>Year</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>140.50</td>
<td>174.30</td>
<td>185.30</td>
<td>233.61</td>
<td>266.45</td>
<td>265.14</td>
<td>286.28</td>
<td>297.26</td>
<td>214.53</td>
</tr>
</tbody>
</table>

Profit before taxes (USD million)

<table>
<thead>
<tr>
<th>Year</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>30.50</td>
<td>22.30</td>
<td>31.80</td>
<td>38.40</td>
<td>31.10</td>
<td>31.70</td>
<td>39.40</td>
<td>36.76</td>
<td>25.20</td>
</tr>
</tbody>
</table>

Source: Company website, TechSci Research
Autonomous Bodies

• **National Institute of Agricultural Extension Management**
  Rajendranagar, Hyderabad–500 030, Andhra Pradesh
  Phone: 040-24016702 to 706
  Fax: 040-24015388

• **National Institute of Agricultural Marketing (NIAM)**
  Bambala, Kota Road
  Jaipur–302033, Rajasthan
  Phone: 0141-2770027
  Fax: 0141-2771938, 2770027

Boards

• **Central Insecticides Board and Registration Committee**
  Machinary Store Building,
  N.H.IV Faridabad
  Phone: 0129 -2413002

• **Coconut Development Board**
  Kera Bhavan, SRVHS Road, Kochi
  Kerala–682011
  Phone: 0484-2376265, 2377267, 2376553
  Fax: 0484-2377902
INDUSTRY ASSOCIATIONS … (2/2)

• National Dairy Development Board (NDDB)
  PB No 40, Anand–388 001
  Phone: 02692-260148/260149/260160
  Fax: 02692-260157

• National Horticulture Board (NHB)
  Ministry of Agriculture, Government of India
  85, Institutional Area, Sector-18
  Gurgaon–122015, Haryana

• National Oilseeds and Vegetable Oils Development Board (NOVOD)
  86, Institutional Area, Sector-18
  Gurgaon–122015, Haryana

Councils

• Indian Council of Agricultural Research (ICAR)
  Krishi Bhavan, New Delhi 110 114
  Phone: 91-11-25846010
AIBP: Accelerated Irrigation Benefit Programme

Breeder seeds: Seeds move from germ-plasm (research) stage to breeder stage

CAGR: Compound Annual Growth Rate

Certified/quality seeds: Foundation seeds are further multiplied to get certified seeds, which are sold to farmers

FMTTI: Farm Machinery Training and Testing Institutes

Foundation seeds: Breeder seeds are multiplied as foundation seeds

FY: Indian Financial Year (April to March) – FY12 implies April 2011 to March 2012

KCC: Kisan Credit Card

MSP: Minimum Support Prices

NFSM: National Food Security Mission

NMAM: National Mission on Agricultural Mechanisation

PGN: Plant Growth Nutrients
**RKVY**: Rashtriya Krushi Vikas Yojana is a central government scheme providing funds to state governments to spend on agriculture

**Wherever applicable, numbers have been rounded off to the nearest whole number**
### Exchange rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
</tr>
<tr>
<td>2006–07</td>
<td>45.14</td>
</tr>
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<td>2007–08</td>
<td>40.27</td>
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<tr>
<td>2008–09</td>
<td>46.14</td>
</tr>
<tr>
<td>2009–10</td>
<td>47.42</td>
</tr>
<tr>
<td>2010–11</td>
<td>45.62</td>
</tr>
<tr>
<td>2011–12</td>
<td>46.88</td>
</tr>
<tr>
<td>2012–13</td>
<td>54.31</td>
</tr>
<tr>
<td>2013–14</td>
<td>60.28</td>
</tr>
<tr>
<td>2014–15</td>
<td>61.06</td>
</tr>
<tr>
<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–17 (E)</td>
<td>67.23</td>
</tr>
</tbody>
</table>

### Exchange rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
</tr>
<tr>
<td>2006</td>
<td>45.18</td>
</tr>
<tr>
<td>2007</td>
<td>41.34</td>
</tr>
<tr>
<td>2008</td>
<td>43.62</td>
</tr>
<tr>
<td>2009</td>
<td>48.42</td>
</tr>
<tr>
<td>2010</td>
<td>45.72</td>
</tr>
<tr>
<td>2011</td>
<td>46.85</td>
</tr>
<tr>
<td>2012</td>
<td>53.46</td>
</tr>
<tr>
<td>2013</td>
<td>58.44</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015</td>
<td>64.15</td>
</tr>
<tr>
<td>2016 (Expected)</td>
<td>67.22</td>
</tr>
</tbody>
</table>

Source: Reserve bank of India, Average for the year

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