

Tractor Industry in India – Present and Future

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ABSTRACT

India is mainly an agricultural country. Agriculture accounts for approximately 25 percent of India's GDP. Agriculture in India is the means of livelihood of almost two thirds of the workforce in the country and employs nearly 62 percent of the population. It accounts for 13 percent of India's exports. About 42 percent of India's geographical area is used for agricultural activity. It is therefore considered to be the vital sector of the Indian economy.

The Indian tractor industry is the largest in the world, accounting for one third of global production. The other major tractor markets in the world are China and the USA. Volume growth in the tractor industry in the past four decades shows a compound annual growth rate (CAGR) of ten percent, despite seasonal variations that cause changes in tractor demand and subsequently impacting industry volumes.

In the long term, the industry growth is expected to continue from a moderate CAGR rate of five percent to seven percent largely due to the continued thrust by the government to increase agricultural GDP. We expect the domestic industry to stabilize at about 350,000 tractors per year and exports to reach in excess of 60,000 tractors per year by 2010.

Many factors influence the tractor demand. Primary demand comes from agricultural growth and the secondary demand comes from allied uses of tractors, primarily haulage. Credit and money availability has always impacted tractor industry and mechanization fortunes.

Tractor testing facilities are currently available in India at CFMT & TI, Budni.

The National Automotive Testing and R&D Infrastructure Project (NATRIP) is underway which is country's first comprehensive initiative to equip India with state-of-the-art automotive testing, homologation and pre-competitive/generic R&D infrastructure to meet national requirements by 2015. NATRIP is also planning to work closely with UNAPCAEM (United Nations Asia Pacific Center for Agricultural Engineering and Machinery) in the future.

1. INTRODUCTION

TRACTOR INDUSTRY IN INDIA – PRESENT AND FUTURE

Prior to the 1960s, India had to import most of its food. But improved farming techniques, including farm mechanization, the use of irrigation and high-yield grains, have greatly increased the food production and allowed India to become self-reliant with regards to food. However, since most of the cropped area, even now, does not have any assured irrigation, monsoons assume a crucial role in influencing agricultural production.

1.1 Agricultural development

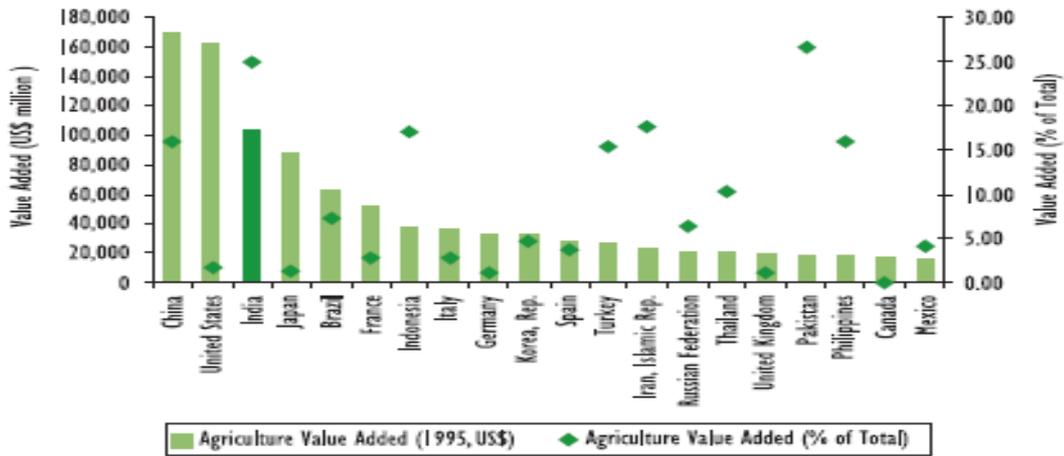
Agricultural development in India can be categorized into four major periods:

1. **Pre-Green Revolution** – This was before 1960s, when there was boost in the productivity growth of coarse grains and pulses per unit of land.
2. **Green Revolution (mid 1960s to mid 1980s)** – This was a period of expansion of area and rapid growth in productivity of wheat and rice, expansion of agricultural research and establishment of national infrastructure.
3. **Post-Green Revolution (mid 1980s – 2000)** – This was a period of continued growth in productivity achieved through intensification of chemical use and labor, and also expansion of area under maize, cotton, sugarcane and oil seeds.
4. **The Current Stage (2000 – present)** -- The current stage is characterized by the following:
 - Further diversification of cropping patterns from low- value to high-value crops, such as fruits, vegetables, flowers and other horticultural crops for domestic consumption, processing and export
 - Regaining “Agricultural Dynamism,” a key goal of eleventh Five Year Plan
 - Aiming to achieve a sustained growth rate of four to five percent.
 - Improvements in farm mechanization

1.2 Highlights of the Indian Agricultural Sector

- Key sector of economy
- Contributes to 25 percent of Indian GDP
- Accounts for 13 percent of India’s exports
- Second largest producer of rice and wheat in the world
- Largest producer of pulses
- Fourth largest producer of coarse grains
- Second largest producer of vegetables, groundnuts & fruits
- Current average growth rate: 2.2 percent

The international league table



Source: World Development Indicators

Figure 1. Global Agricultural Value Added

1.3 India – Vision 2020

Rising productivity and rapid diversification in agricultural sector.

- Total proportion of work force involved in agriculture is expected to decrease from 56 to 40%.
- Growth rates are expected to reach four to five percent from current average growth rate of 2.2 percent.
- Agriculture-based energy policy to focus on production of fuel oil and biomass power – could generate lucrative alternate markets for farm production while reducing the country’s dependence on imported fuels.
- Accelerated acquisition of technology capabilities to raise productivity in agriculture, industry and services.
- Sectoral composition of GDP to drop from 25 percent to six percent in 2020.

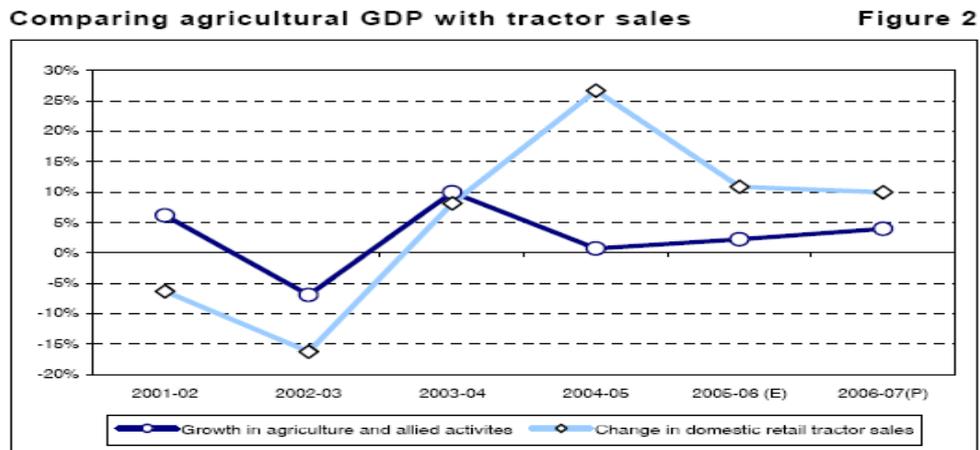
2. THE INDIAN TRACTOR INDUSTRY

The Indian Tractor Industry is the largest in the world, accounting for one third of global production. The other major tractor markets in the world are China and the USA. The global spotlight on tractor manufacturing in terms of unit volume seems to be swinging away from the USA, UK and Western and Eastern Europe towards India and China, where growth in the number of producers and the total volume of production in recent years has been impressive.

Until 1960, the demand for tractors was met entirely through imports. Indigenous manufacture of tractors began in 1961, but India continued to import tractors to bridge the total needs up to the late 1970s. The Indian Tractor Industry has come a long way since then. Volume growth in the past four decades show a CAGR of 10 percent, despite seasonal variations that cause natural fluctuations in the demand for tractors, subsequently impacting industry volumes.

2.1 Industry Status 2004 to 2006

1. The tractor industry, which grew at a CAGR of 16 percent between 1994 and 1998, reached a plateau in 1999 to 2001. 2001 to 2003 saw the industry shrinking at a negative CAGR of 13.5 percent. The recovery phase started from mid-2004 and is the current phase.
2. Strong monsoons, increased lending by the nationalized banks, and the entry of private commercial banks created a positive outlook. Firming up of commodity prices and money availability catapulted tractor demand, helping the industry regain the lost volumes at a CAGR of 19.5 percent.
3. Agricultural and allied GDP (at constant prices of 1999 to 2000) is estimated to have grown by 2.3 percent in 2005 to 2006 after increasing by 0.7 percent in 2004 to 2005. This growth was mainly driven by a nearly normal monsoon, rise in minimum support prices and the continued thrust of the government to boost agricultural output. This helped the industry in 2005 to 2006 to surpass the industry best of 2000 to 2001, reaching the new peak of 292,908 tractor sales.



Source: Central Statistical Organisation and CRIS INFAC

Figure 2. Agricultural GDP compared with tractor sales

4. The government continues to focus on increasing agricultural output. In fact, the government has targeted a four percent growth in agricultural GDP, primarily to achieve its overall GDP growth target of ten percent or more.
5. During Union Budget 2006-2007, the finance minister relieved the farmers of interest liability up to two percent on crop loans of principal up to Rs 100,000 (US\$1,743) taken during kharif and rabi seasons in 2005-2006. Also, the government has set a target that the short-term credit available to farmers should not exceed seven percent during 2006-2007 owing to rising interest rates. It also plans to provide to compensate the financiers for this subsidized lending rate. Although these waivers are for short-term loans, such measures augment the incomes of the farmers. Therefore, the buoyant trend and industry growth is expected to continue in the fiscal 2006-07. So far, the industry has growth of more than 30% up to August 2006.

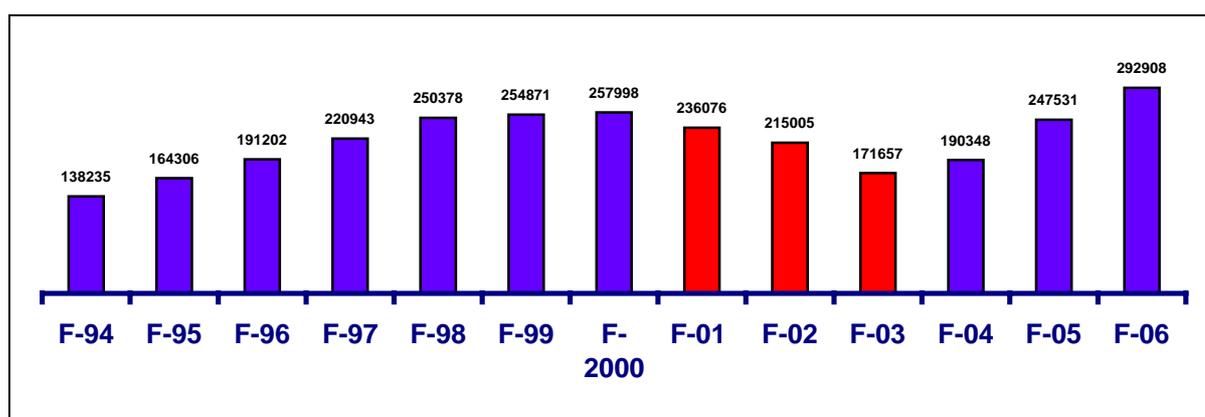


Figure 3. Tractor industry growth (units sold)

In the long term, the industry growth is expected to continue from a moderate rate of five percent CAGR to seven percent, largely due to the continued thrust by the government to increase agricultural GDP. We expect the domestic industry to stabilize at about 350,000 tractors per year and export to reach in excess of 60,000 tractors per year by 2010.

2.2 Exports

Tractor exports from India have grown by around 41 percent in 2005-2006, in which the US absorbed a major share. Exports to other countries, such as South Asian countries, Malaysia and Turkey, are growing rapidly as well. Indian players have aggressively started exporting to African countries by bidding for government tender requirements. Indian tractors are gaining acceptance in international markets. In the past three years, exports of Indian tractors have grown at a CAGR of over 55 percent. In 2005-2006 the industry exported 28,118 tractors.

2.3 Segment-wise analysis

1. The Indian tractor market is traditionally a medium-horsepower market consisting mostly of 31-40 hp, which constitutes almost 51 percent of the total market in 2005-2006. Growth of the industry is closely related to growth in this category. The category in 2005-2006 included a sales volume of 148,000 units, up 18 percent over 2004-2005.

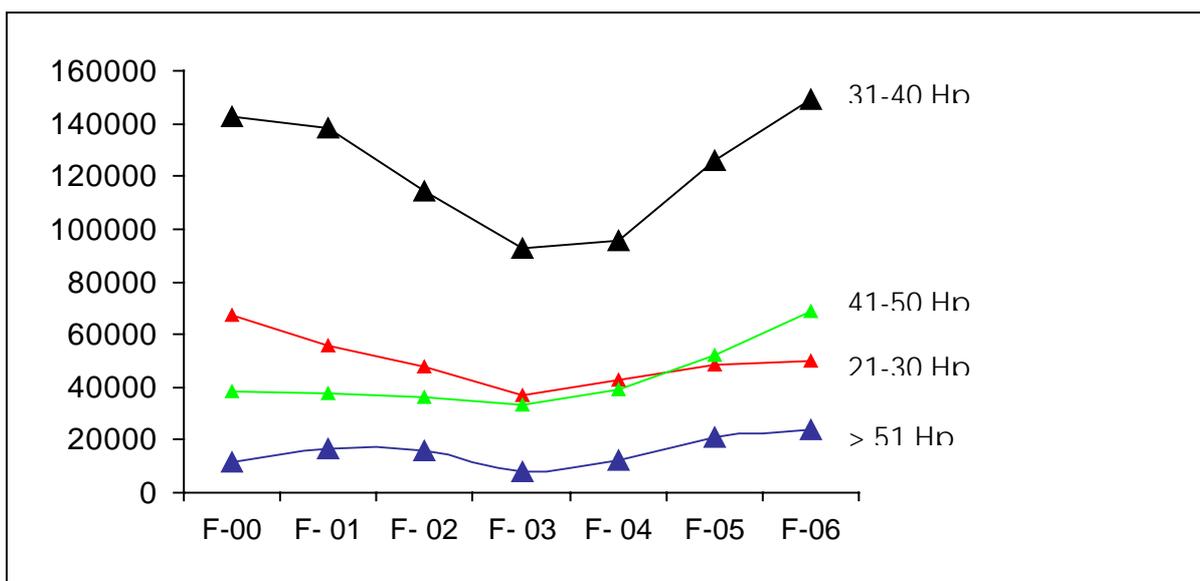


Figure 4. Tractor Sales by Power Category

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3. In other-size categories, 41- 50hp category achieved the second highest growth of 34 percent over 2004-2005 and constitutes 24 percent of the total market. The 21-30 hp category had a market share of 17 percent while the above 51 hp category was around eight percent.

2.4 By-state analysis

1. Ninety three percent of the tractor industry is concentrated in twelve major states namely, Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Maharashtra, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh. Uttar Pradesh is the largest tractor market with 44,308 units sold in 2005-2006. Incidentally this is 3.5 percent less than 2004-2005 sales. Tractor sales in states such as Karnataka, Maharashtra, Tamil Nadu and Gujarat have shown a tremendous growth in the 2005-2006 period of 63 percent, 54 percent, 47 percent, respectively. Meanwhile, tractor sales in Bihar and Madhya Pradesh fell by 28 percent each.

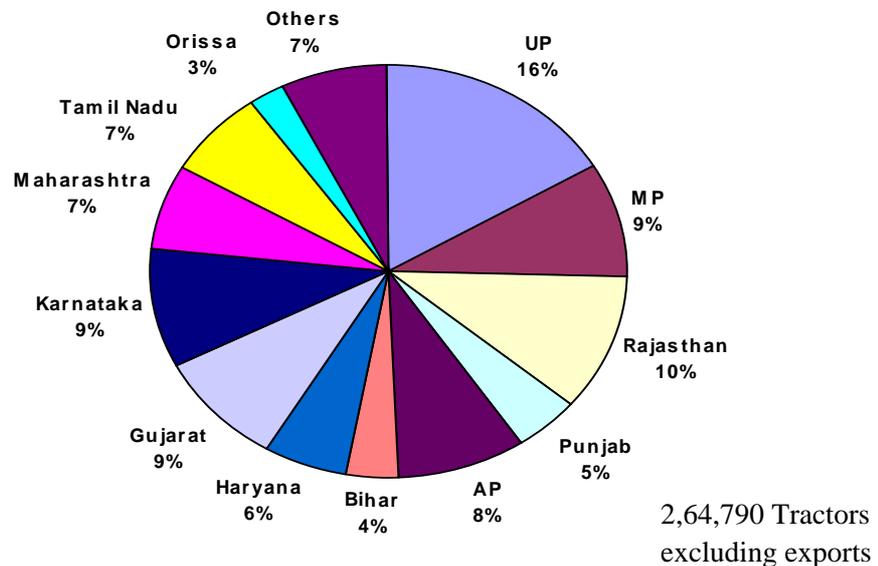


Figure 5. Tractor sales in India by state

- On the supply side, all of the companies had increased their production and the total production reached 296,080 in FY 2006. The total industry supply was increased by 18.87 percent in FY 2005-2006 as compared to FY 2004-2005. The sharpest increase in production was in the 41-50 hp category, by 30 percent, followed by 21-30 hp category, by 21 percent. However, the 41-50 hp category grew by 8.7 percent.

3. CURRENT AND FUTURISTIC FEATURES OF TRACTORS IN INDIA

Hp wise segment and tractor features are given as Annex I .

4. CURRENT TRENDS IN FARM MECHANIZATION

- Increased usage of haulage and non-agricultural applications. The non-agricultural customer does not necessarily possess agricultural land.
- Moving towards secondary mechanization, leading to more use of new attachments like reaper, combine, or seed drills.
- Due to land fragmentation (bifurcation of property and formation of nuclear family), farmers with small land holdings (two to four acres) are buying tractors.
- Reduced availability of cheap farm labor.
- Business through tractor exchange (joint use) has gone up significantly in northern and western states of India.

- In the traditional northern Indian states, most of the tractor sales in the last few years were replacement in nature, signifying old markets. But in most other states, new markets have developed.

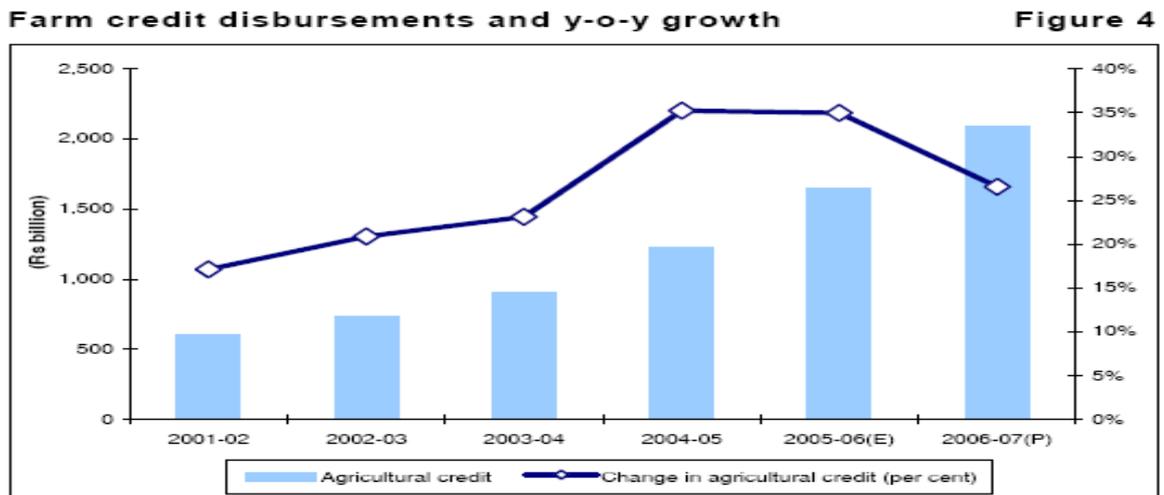
5. DRIVERS OF TRACTOR GROWTH

Many factors influence tractor demand. Primary demand emanates from agricultural growth and the secondary demand from dual use of tractors, primarily haulage. The primary usage (agriculture) is dependent upon the following drivers:

- Expansion and Extension of Agricultural land:
 1. From the past 20 years, it is evident that irrigated and arable land has not increased. There is an immediate need to expand agri-land by conversion of wasteland.
 2. Availability of water is another important factor in guaranteeing a predictable agricultural yield, without having to depend on the yearly variations and unpredictability of monsoons. In the last four decades, very few additions have occurred with respect to direct-irrigation potential. Almost all growth has resulted from exploration of groundwater, which has led to exploitation and depletion.
 3. Government sponsorship of major and monumental projects like the interlinking of rivers / national policy on water resources and implementation is a foregone need. Even if the final completion is a generation away, the incremental progress that will be made during the process of implementation will catapult Indian agriculture to more than the targeted four percent of GDP. The short-term focus must be on increasing and maintaining natural water, such as natural water storages, ponds, lakes and retention dams.
- Value additions in Farming
 1. Land is limited. Therefore, it must be our aim to get the maximum yield from every acre of farmable land.
 2. We have to look at the world as the source and consumer. The government must enable farmers to move away from low-yield to higher-value crops in a judicious manner, in order to increase farming income and to attract a new crop of young farmers.
- Return on Investment (RoI) increases in farming will attract educated youth and will become another satisfying, future job-opportunity.

Mechanization will, therefore, justifiably increase, helping the tractor industry as a whole.

1. RoI can increase only if price uncertainty and distress-selling can be controlled. Storage of produce and the creation of infrastructure to distribute on the world market is one solution.
 2. Integration of Indian farmers to the world of commodity trading needs to be expedited – road, rail, port and airport infrastructure must be enhanced to expedite delivery.
- Credit and money availability has always been a big factor in the tractor industry's and mechanization's fortunes. The government must initiate a long-term policy of zero or marginal interest rates to enhance the use of agricultural mechanization.
 1. Post-harvest use of agricultural mechanization and the sophistication in accessories and supplements are inadequate. There is a need to selectively subsidize these initiatives for a short time to popularize usage and acceptance.
 2. Commercial banks must be free to offer finance to all deserving customers with clear intention to pay. At the same time, there must be a clear and transparent process to weed out fraud and 'no intention to pay' categories. There needs to be a uniform loan policy and standardized application format across all banks.



Source: CRIS INFAC

6. INDIAN AUTOMOBILE POLICY -- KEY FEATURES

Why important?

- Fully liberalized, de-licensed industry with 100 percent foreign direct investment (FDI) permitted
- Progressively reducing fiscal burden
- Fiscal incentives for R&D expenditures

- Tightening safety and performance regulations
- Export promotion, encouragement to “brand” India
- Policy Aims to (i) Establish a globally competitive automotive market in India, (ii) Double its contribution to the economy by 2010, and (iii) Make India a global hub of automotive manufacturing.

7. AUTOMOTIVE MISSION PLAN 2016

- US\$145 billion turnover by 2016.
- Ten percent contribution to GDP
- Create 25 million additional employment.
- Focused action plan on -
 - Demand creation, brand building & infrastructure
 - International trade
 - Competitiveness in manufacturing and technology
 - Human resource development
 - Environment and safety

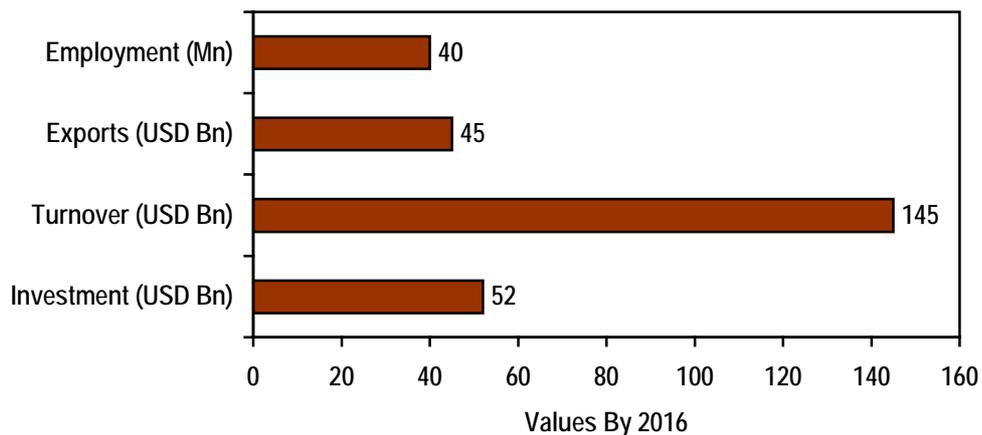


Figure 7. Goals of Automotive Missions Plan - 2016

8. TESTING FACILITIES

1. A tractor testing facility is currently available in India at CFMT & TI, Budni. Test facilities and testing equipment are given herewith as Annex II. (Where is Annex II?)
2. National Automotive Testing and R&D Infrastructure Project (NATRIP) is underway, which is the country’s first comprehensive initiative to equip India with state-of-the-art automotive testing, homologation and pre-competitive/generic R&D infrastructure to meet national requirements by 2015.

Key Benefits of NATRIP:

- Creation of infrastructure to enable the government to introduce global vehicular safety, emission and performance standards
- Encouraging larger value addition within the country leading to higher sectoral contribution to the economy by way of revenues and employment.
- Facilitating development and mass production of high-technology driven, affordable and globally acceptable automotive products
- De-bottlenecking exports of automotive products

9. CHALLENGES FOR TRACTOR INDUSTRY

1. Buying Capacity - Reducing of average age of tractor buyers from the age group of above 40 to younger people

- Increasing demands
- Higher expectations on comfort levels
- Importance for styling and appearance
- Better finish (Paint finish like cars)
- Importance for brand identities
- Fuel economy
- Awareness about latest technologies
- Likes on new models
- Longer life – resale value

2. New Product Development

- Rapid prototyping-component development
- Engine performance - power train research and development
- Styling – availability of latest softwares and technologies
- Accelerated testing techniques reduce the development lead time to help industry to introduce new models in shorter periods

3. New Regulations – Emission norms in near future – Bharat TREM IV / EURO 3/ US TIER 3

- Homologation test facilities
- Dedicated engine development test cells and research labs
- Accelerated durability test rigs
- Engine performance improvement

4. New Regulations – Noise/Safety/Other Regulations

- NVH Center of Excellence
 - Availability of anechoic chambers
 - Quiet rooms for subsystem level development
 - Latest software tools for NVH(spell out)
 - Specialized test tracks
- Center of Excellence for passive safety
 - Roll over testing

- Crash testing
- ROPS Testing
- Various gradients
- Various braking surfaces
- Vehicle dynamics

5. Alternate Energy - Alternate energy source development and tractor development are interdependent

- Increased focus on agri-based energy policy in near future
- Production of fuel oil and biomass power
- Lucrative alternate markets for farm produce
- Reduce the country's dependence on imported fuels
- Alternate energy development – most important agenda for power train research and development

6. Application of electronics - The recent developments in applications of electronics on agricultural tractors like GPS and Auto Cruise systems have helped farmers greatly.

7. Export Potential

- Testing under various climatic conditions – one of the challenges for export of tractors
- Testing and certification as per OECD
- NATRIP would represent India in technical committees worldwide
- Expert teams to coordinate with standardization
- Cooperation with other test agencies worldwide
- Advanced homologation labs to test as per regulations by 2015

8. Testing Networks

- NATRIP Centers would be able to conduct all homologation tests as per global standards
- Will be globally authorized testing and certification agency
- NATRIP would also work with UNAPCAEM (United Nations Asia Pacific Center for Agricultural Engineering and Machinery)
- Would work to develop Asian network for testing of tractors like ENTAM (European Network for Testing of Agricultural Machines)