

# India on the Global Market of Electric Vehicles: Issues of Manufacturing Leadership

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**Abstract:** The research aims to identify the role played by the automotive industry and, in particular, the production of electric vehicles in developing the Indian industrial sector in the context of implementing industrial policy. Within the framework of this research, the authors used fairly traditional methods for review-type articles. Particularly, the authors used the methods of analysis, induction, and deduction. The authors revealed that despite the fact that India is not yet among the leaders either in the production of cars or in the production of electric vehicles, the Indian market and the measures taken by the government are not devoid of significant potential. The disclosure of India's potential in the automotive and electric vehicle market is facilitated by policies in the field of support and development of the industrial sector, infrastructure development programs, investment policy, and government initiatives. An additional incentive to unlock the country's industrial potential is the construction of industrial corridors and national investment and manufacturing zones. The paper once again confirms that one of the main characteristics of the policies that are being implemented in the country is an inclusive approach that covers all industries and sectors of the economy and affects the country in terms of territorial coverage. Inclusiveness in the field of industrial policy is based on the development of the urban environment and its industrial potential, turning regional and municipal units into industrial centers and, thereby, stimulating economic growth and development.

**Keywords:** India, FDI, manufacturing policy, manufacturing hub, electric vehicles

**JEL codes:** F6, N7, O1, Q3, Q48

Nowadays, India's industrial sector accumulates about 31% of the GDP, while the economically active population involved in the secondary sector of the economy reaches about 121 million people (Ministry of Finance, 2023). By 2026, the volume of the automotive industry may amount to about \$300 billion; by 2030, the volume of production of electric vehicles may amount to more than \$200 billion (this may require investments of \$180 billion). In 2022, the car production volume in India has already amounted to 22.9 million units. The volume of passenger car sales totaled 3.07 million units. Experts note that the steady growth of car sales contributes to the gradual growth of the share of the middle class. Moreover, India plans to increase its automobile exports fivefold from 2016 to 2026. The undoubted advantage of car production in India is the savings on operating costs by 10%–25% compared to the countries of Europe and Latin America. From April 2000 to September 2022, the volume of accumulated FDI in the automotive sector amounted to \$33.77 billion. As the Indian government expects, the sector can attract \$8–\$10 billion by the end of 2023. According to representatives of the Indian automotive giants, the transition to the production of electric vehicles is mainly due to the desire to increase the availability of these vehicles for the population and reduce CO<sub>2</sub> emissions in the country. The production of electric vehicles in the country is expected to contribute to the emergence of 5 million jobs by 2030 (IBEF India, n.d.).

“The automotive mission plan” is implemented in the country from 2016 to 2026. This plan is an integrated approach on the part of the state and national automotive manufacturers, which should ensure the competitiveness of Indian cars, automotive components, and tractors, increase output and sales, and contribute to economic growth and development. The plan's implementation is also aimed at putting this industry sector on a certain trajectory and creating an ecosystem that would include regulatory tools, policies, development, design, technology, testing, sales, use, repair, processing, export, and import. By 2026, the share of the automotive industry in the structure of GDP may reach 12%, the share of the automotive industry in the structure of the industrial sector may be about 40%, and the share of excise duties will be 13%. The automotive industry is considered the leading industry within the framework of industrial production in the country, which is associated with the depth and breadth of integration and interconnectedness of the automotive industry with other types of industries, including the extractive sector and the service sector (SIAM, 2016).

### **Materials and Method**

The methodology of the scientific topic is based on traditional methods of economic analysis, such as deduction, induction, comparison, and retrospective analysis. Since 2014, the country has been developing and implementing large-scale programs and government initiatives aimed at developing the Indian economy in a broad sense. The investment policy implemented in the country since the early 1990s has gone a long way towards liberalization and large-scale opening of economic sectors to foreign investors. Foreign investment is seen as a necessary aid and driver not so much of economic growth as the creation of the necessary capital and technological conditions for the Indian economy. Industrial sectors are widely included in investment policy and in several government initiatives. A significant number of works, mainly by foreign authors, are devoted to the effectiveness and problems of

implementing investment and industrial policy in the country (Gupta & Campbell-Mohn, 2022; Konovalova, 2021; Maji et al., 2022; Mani, 2011; O'Sullivan et al., 2013; Rajan, 2015). We can distinguish N. V. Galistcheva (Galistcheva, 2017, 2019, 2020) among the Russian Indologists whose works are devoted to investment and industrial policy of India. Within the manufacturing industry, much attention is paid to the automotive industry, which should become the primary driver of India's economic growth and a tool for its transformation into a global manufacturing and industrial hub. Simultaneously, there are many studies devoted to the issues of the position of the Indian Republic in the world market of electric vehicles (Das & Bhat, 2022; Mohanty, 2022; Murthy & Nethravathi, 2021; Veeramanju, 2022). Although the scientific community pays great attention to the aspects mentioned, we must say that the issue of the dissemination of information in the world is relevant.

## Results

Data on global car production from 2019 to 2022 show significant volume fluctuations. By the end of 2019, the global car production volume amounted to 92.1 million units. In 2020, due to the COVID-19 pandemic, it decreased to 77.6 million units. By 2021, there was a relative recovery to 80.2 million units. However, in 2022, the global car production volume has not recovered and amounted to 85 million units. Global sales decreased from 91.2 million to 81.6 million during the same period. Of the 85 million units of cars produced, 16.2 million were produced in Europe (in 2019, the figure was 21.5 million cars). North American countries also reduced production from 20.1 million to 17.7 million cars. The volume of car production in the ATS countries from 2019 to 2022 increased from 49.3 million to 50 million, with some fluctuations. China, India, and Japan stand out among the Asia-Pacific countries. China's production volume increased from 25.7 million to 27 million during the reviewed period. India increased production from 4.5 million to 5.4 million units. Japan witnessed a drop in car production from 9.6 million to 7.8 million. Regarding production volumes, African countries are kept in the corridor of just over 1 million units (OICA, n.d.). Trends in the direction of environmental protection have also affected the global car market, which was mainly reflected in the appearance of cars that are not used as fuel by traditional energy resources. Moreover, more countries are gradually coming to increase the share of electric vehicles in the volume of national production.

The volume of sales of electric vehicles in the world from 2012 to 2021 increased from 120 thousand units to 6.6 million units. By the end of 2021, about 10% of global sales were accounted for by electric vehicles, which is four times more than the sales volume in 2019. The growth in sales of electric vehicles by the end of 2021 was mainly due to sales growth in China (China accounted for about 50% of the increase). In 2021, 3.3 million units were sold in China. As a manufactured and marketed commodity, electric vehicles do not cover all countries and regions of the world. China, Europe, and the USA accumulate two-thirds of the production of electric vehicles. They also accounted for 95% of global sales in 2021. In countries such as Brazil, India, and Indonesia, the share of electric vehicles does not exceed 0.5% (IEA, 2023a). According to experts of the International Energy Agency, global sales of electric cars by the end of 2023 will continue to grow (in the first quarter of 2023, 2.3 million

electric vehicles have already been sold in the world, which is almost 25% more than in the first quarter of 2022). While maintaining a high level of sales by the end of 2023, about 14 million electric vehicles can be sold in the world, which is 35% higher than in 2022. The share of electric vehicle sales from the total volume may reach 18% (IEA, 2023b). The scenarios considered by experts are based on an increase in the share of electric vehicle sales by 2030 (up to 35% of the total potential car sales).

China will retain its leading position in terms of sales of electric vehicles (40% of the total sales of electric vehicles in the world by 2030). The USA will potentially increase its share to 20%, and the share of Europe will remain at 25% (IEA, 2023b). Since 1991, when the liberalization process was launched in India, affecting all sectors of the economy, India has significantly increased the indicators of the automotive industry and the capacity of this sector, with a parallel expansion of the product range. In 2015, the Department of Heavy Industry of India launched the “Rapid Adaptation and Production of Hybrid and Electric Cars in India” scheme to promote the development and production of electric and hybrid cars with an estimated cost of 795 crores Indian rupees. The necessary conditions for the effectiveness of the implementation of this scheme are as follows:

- Ensuring a flexible redistribution of resources between these three verticals;
- Ensuring fiscal and non-fiscal incentive measures from the government (significant reduction or complete elimination of road tax, exemption from fees and taxes for parking, registration, etc.).

Stimulating demand for the purchase of electric vehicles should mainly be provided due to the product’s availability in terms of price and the use of various forms of payment (in advance or credit). The second important vertical is the development and construction of infrastructure for charging electric vehicles. For example, one slow-speed charging device and one fast-charging device for every 10 buses should be provided for each bus (Ministry of Heavy Industries, n.d). The Ministry of Heavy Industry of India has authorized the construction of 2636 car charging stations in 62 cities and 24 states and union territories. India’s presence in the global electric vehicle market shows the following. The country is leading in terms of sales of three-wheeled electric vehicles mainly due to government support and implemented business models. The dynamics of sales of three-wheeled electric vehicles have been growing since 2012. An important factor is the fuel cost for traditional vehicles, while three-wheeled electric vehicles are 70% cheaper than gasoline analogs. China and India account for almost 99% of global sales of three-wheeled electric vehicles.

At the beginning of 2023, the Indian auto giant Tata Corporation received an order from Uber for 25 thousand electric vehicles. The Indian company “Ola,” the leader in terms of profit among manufacturers of electric vehicles, plans to concentrate its activities on two-wheeled vehicles, increasing production to 2 million by the end of 2023. In 2011, an Industrial Policy was adopted in India, mainly aimed at increasing the share of the industrial sector in the GDP structure to 25% and creating 100 million jobs over the next decade. The policy also provided for deeper integration of the rural young population into the process of improving skills and obtaining the necessary competencies. Equally important is the

recognition by the government of the fact that the industrial sector has a multiplier effect, primarily in creating jobs. One of the priorities of industrial policy in the country is the creation of National Investment and Manufacturing Zones (NIMZs), which should spread throughout the country, where the industry can unite in clusters and adopt a model of self-regulation. NIMZs are considered settlements with industrial and social infrastructure, land use in which should be carried out according to the principle of zoning. It is also planned to use clean and energy-efficient technologies. At least 30% of the total land area proposed for the NIMZ will be utilized for the location of manufacturing units. To implement the industrial policy, several state initiatives have been launched in the country to strengthen the manufacturing industry and stimulate the inflow of FDI into the country. According to preliminary data, the volume of FDI to India amounted to more than \$84 billion in 2021–2022.

One of the most important initiatives is the “Make in India” initiative. It aims to stimulate investment, encourage innovation, and create world-class infrastructure. The Indian economy has achieved significant results since the program’s launch. The program focuses on 27 sectors of the economy, 15 of which are coordinated by the Department of Industry Promotion and Foreign Trade, and 12 are coordinated by the Ministry of Industry and Trade. Among 15 industries, 24 sub-sectors with the most significant competitive advantages and potential in the field of import substitution and export (furniture, air conditioners, leather and shoe products, food, livestock, agricultural products, components for cars, aluminum, etc.) are allocated to a separate group (Ministry of Commerce and Industry, 2023). The automotive sector is included in the list of sectors covered by this initiative. India is one of the world leaders in producing tractors and two-wheeled vehicles. In value categories, India ranks second in the world in terms of the production of two-wheeled vehicles, seventh in the production of commercial vehicles, sixth in the production of passenger vehicles, and first in the production of tractors. By 2026, India plans to enter the top three in the production of cars in the world. The share of the automotive industry and the production of components for cars is currently about 7% in the structure of GDP; by 2026, the volume of the automotive industry should grow from \$820 billion to \$270 billion while creating 65 million jobs (Garg, 2022).

In India, more than 30 million people are currently employed in the sector of organized and unorganized industrial production, which should become a driver of economic growth with the involvement of an even larger number of the economically active population, most of whom have low qualifications. In the budget for 2022–2023, about \$315 million has been allocated for a program to promote electronics and IT equipment, and more than \$100 million has been allocated for introducing and producing hybrid and electric vehicles. With the help of the Amazon global marketplace, India plans to provide companies of any size with the opportunity to export products worth up to \$10 billion by 2025. In September 2021, the government approved a \$3.5 billion program for the automotive and uncrewed aerial vehicle industries. Moreover, \$2.5 billion was allocated to produce advanced chemical cell batteries. The volume of financing for producing semiconductors is about \$9.7 billion. The Indian market of equipment and electronics is planned to increase to \$21 billion by 2025 and \$50

billion by 2030 (IBEF India, 2022a). In 2022–2023, the Indian economy became one of the fastest growing, which is confirmed by the growth of the country's GDP at 7%. Experts note that the most active recovery of the Indian economy was observed in the second quarter of 2022–2023 (after the COVID-19 pandemic), primarily due to the normalization of supplies of domestic supply chains (IBEF India, 2022b).

The Central Government has also initiated one of the most ambitious initiatives, “One district one product,” which is an international division of labor at the regional level. The program is seen as an important transformational step towards realizing the true potential of the country's districts, thereby contributing to economic growth, economic development, job creation, and rural entrepreneurship development. The initiative is operationally merged with the “Districts as export hub (DEH)” initiative. The goal is to transform the districts into manufacturing and export centers radically. The institutional mechanisms for managing regional development are Export Promotion Committees at the state level, as well as District Export Promotion Committees in all 36 states and Union Territories.

Simultaneously, “the Government has put in place an investor-friendly Foreign Direct Investment (FDI) policy under which most sectors except certain strategically important sectors are open for 100% FDI under the automatic route. India continues to open up its sectors to global investors by raising FDI limits, removing regulatory barriers for attracting increased investments, in addition to developing infrastructure and improving the business environment.” Since 2014, the government has implemented several radical and transformative FDI reforms across almost all sectors of the economy (Ministry of Commerce and Industry, 2023). The advantage of Indian industrial policy and initiatives that are being developed and implemented in the country is inclusiveness as the main leitmotif. A combination of social and economic problems, a large number of young people (often without the necessary qualifications), the breadth of the informal and unorganized sector, relatively low GDP per capita, and depreciation of fixed assets are not obstacles to the opening of India and the development of its potential. Perhaps, one of the key directions of Indian economic and industrial policies is the deeper integration of business, population, and other market participants into the international division of labor by identifying competitive, supporting, import-substituting, and export sectors and types of production.

## **Discussion**

One of the controversial issues in implementing industrial policy, investment policy, and a number of government initiatives is the degree of dependence on imports (industrial imports), as well as foreign direct investment, which exists in the Indian economy. In 2022–2023, the structure of commodity imports of India included the following commodity groups:

- More than 36.5% – “27 – Mineral fuels, mineral oils, and products of their distillation”;
- 10.3% – “71 – Natural or cultured pearls, precious or semiprecious stones, and other”;
- 7.6% – “84 – Nuclear reactors, boilers, machinery, and mechanical appliances; parts thereof”;
- 9.4% – “85 – Electrical machinery and equipment and parts thereof” (Ministry of Commerce & Industry, n.d.).

India's foreign trade balance has been chronic and deficit since the very beginning of the country's independence in 1947. Therefore, one of the key tasks in the framework of the country's foreign economic policy is to identify and develop the potential of local industries of regional importance, as well as to strengthen and ensure deeper integration of Indian producers in global production chains (Raghavan & Singh, 2020). The primary economic function of imports is to meet demand. However, according to the Centre for Monitoring Indian Economy, growing imports are the basis for job cuts at the regional level (the unemployment rate in the country is 8.3%, reaching 10% in rural areas). The growth of unemployment leads to international migration, primarily labor migration (even though India is among the top-3 receiving countries in terms of money transfers). Excessive imports are leading to falling capacity utilization of Indian industry and lowering the demand for employment. According to experts, the manufacturing sector of the Indian economy underutilizes production capacity by 30% (Banerjee, 2023). Simultaneously with the problems mentioned above, for example, according to the former governor of the Reserve Bank of India (Raghuram Rajan), India needs to focus not on the manufacturing sector, copying the Chinese model of economic development (since it does not work in India) but on the tertiary sector of the economy – the service sector. Despite significant progress in investment liberalization, India remains a difficult place for production. Although India is a major car manufacturing market, five major automakers (i.e., Ford, General Motors, Harley Davidson, Man Truck, and Bus) have left the Indian economy. Additionally, support programs for the industrial sector imply many conventions that are quite difficult to comply with in conditions of high uncertainty (e.g., companies can claim benefits if a certain threshold of staff turnover is reached after five years). Cheap and unskilled labor is no longer a competitive advantage of developing economies. High import duties combined with a technological gap and high prices are also constraining factors against India (Bothra, 2022).

## **Conclusion**

India is currently in the process of achieving and implementing one of its most ambitious goals – to become a global industrial hub. The basis of the industrial breakthrough should be as follows:

- The implementation of industrial policy and import substitution models;
- Export orientation of large, small, and medium-sized businesses;
- Deeper integration of regions and market participants into the process of industrial production, development and realization of export potential;
- Attracting investment and increasing economic growth.

Accumulating 7% of the Indian GDP, the automotive industry strives to become one of the components and drivers of economic growth and development. Simultaneously, the production of electric vehicles plays one of the leading roles in the automotive sector. The production of electric vehicles is designed to increase the accessibility of the sector for business and the civilian population and stimulate employment growth in the country. India's industrial policy is inclusive in terms of a theoretical and ideological approach and is practically implemented in the country, covering all sectors of the manufacturing industry.

From the point of view of an inclusive approach, the industrial hub that India plans to become will really include not only the economy but also its spatial understanding and territorial development of states and union territories, with small and large industrial centers, industrial clusters, and smart cities. Generally speaking, industrial policy is a tool for developing the Indian economy.

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