The impact of India’s economy on the development of seaports

Summary. India’s diversified economy includes traditional and modern agriculture, crafts, modern industries and a variety of services. In 2017, almost half (48.93%) of India’s GDP was generated by the service sector, whereas the industrial sector accounted for 26.16% and agriculture 15.45%. Despite a short-term economic downturn caused by a demonetisation and implementation of compulsory tax on goods and services, the continued favourable economic growth, including sustainable growth of the gross domestic product, revenue per capita, private consumption and public investment, as well as the improvement of other economic indicators, for example, car sales indicate that India’s macroeconomic conditions are generally stable. Structural reforms introduced by the government contribute to enhanced productivity among domestic businesses and attract more foreign direct investment. Due to its geographical location, India has been using sea transport to promote its international trade. However, with too few deep-sea ports and limited cargo handling capacity, its seaports can handle only some of the largest intercontinental ships. This article discusses India’s economic situation, with particular regard to the GDP growth in 2000-2017 and foreign trade. The analysis covers growth in cargo handling in main ports in India in 2000-2018. It discusses the port development project of Sagarmala introduced by the Government of India in 2015. The project is expected to solve problems

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associated with the performance of Indian ports and strengthen the Indian maritime sector to meet the ever-growing demand for goods transported by sea.

Keywords: India, main ports, economy, cargo handling, Sagarmala

1. INTRODUCTION

India belongs to the fastest growing economies and is currently the seventh largest economy in the world. After the completion of reforms liberalising the economy in 1991, India became one of the newly industrialised countries. The economic growth has been accelerated by the deregulation of industry, privatisation of state enterprises and the relaxation of foreign trade and investment controls. The overall development of the country is still undermined by corruption, poorly developed infrastructure, restrictive and burdensome regulatory environment, as well as inefficient budget and finance management.

The transport sector in India is large and diverse but it has been lagging behind growing demands. Main directions for the development of the sector set by the government are intended to support the further economic growth of the country and eradicate poverty. Due to its geographical location, India uses sea transport to promote its international trade; it accounts for approximately 95% of trade in goods in terms of volume and 70% in terms of value. However, infrastructure in India’s seaports cannot compete with technologically advanced seaports of China or Singapore designed to handle the largest container vessels in the world. Guided by its economic calculations and geostrategic location, the government of India has decided to introduce port development programs, create transport corridors and modernise its logistics. The implementation of the far-reaching large scale investment is designed to convert India into a global production hub and boost its economy.

2. INDIA’S ECONOMY

For the past several years, India witnessed an accelerated growth regarding its gross domestic product of approximately 7% a year. As regards GDP per capita, according to the International Monetary Fund, India was ranked 119 out of 185 countries around the world in 2018, with its revenue per capita of approximately 2,000 USD (for comparison, China was ranked 73).

The diversified economy of India consists of traditional and modern agriculture, crafts, modern industries and a variety of services. In 2017, almost half of India’s GDP (48.93%) was generated by the service sector, whereas the industrial sector accounted for 26.16% and agriculture 15.45%. Leading service industries include telecommunications, IT and software. The developing IT industry is gradually becoming a very important part of India’s economy since, in the fiscal year of 2016/2017, it accounted for around 8% of the GDP, which was a slight decrease in relation to previous years when the sector delivered approximately 10% of GDP. Nevertheless, the IT industry has been steadily growing in terms of income and

2 2019 Index of Economic Freedom; https://www.heritage.org/index/country/india
3 India Brand Equity Foundation; https://www.ibef.org/industry/ports-india-shipping.aspx
4 World Economic Outlook Database, April 2019; International Monetary Fund; https://www.imf.org/external/pubs/ft/weo/2019/01/weorept.aspx?sy=2018
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employment. IT includes software development, consulting, software management, online services and business process management (BPM)\(^5\).

![Graph showing India's GDP growth from 2000 to 2017](https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg?locations=in)

Source: [https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg?locations=in](https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg?locations=in)

India’s economy is largely based on domestic trade and to a limited extent on export. Therefore, it remains less susceptible to external factors compared to other markets which rely on foreign trade, particularly considering the current trade conflict with the United States. India’s major trading partners include China, the United States, United Arab Emirates and Saudi Arabia, Indonesia, South Korea, United Kingdom, Switzerland, and Germany.

In 2018, India exported goods worth 323.1 billion USD, which accounts for 19.1% of its total GDP and growth by 8.4% compared to 2017. In terms of transaction value, almost half of Indian goods (49.3%) were delivered to other Asian countries, 19.3% to Europe, 18% to North America, 8.3% to Africa, 2.9% to Latin America and the Caribbean (excluding Mexico) and 1.3% to Australia and Oceania\(^6\).

The 2018 India’s import was worth 507.6 billion USD. The majority of goods (60.3%) were brought from Asian countries. Goods purchased by India from their European trading partners accounted for 15.8% of import, from Africa 8.2% and from North America the remaining 8.1%. A less important contribution to the overall imports was made by goods imported from Latin America and the Caribbean, excluding Mexico (4.2%), and from Australia and Oceania (2.9%).

Product groups in Table 2 account for 80% of the total value of imports.

India has used its large, educated and English speaking community to export its IT and business services and promote the employment of its software programmers in foreign

\(^5\) Statista; [https://www.statista.com/statistics/271329/distribution-of-gross-domestic-product-gdp-across-economic-sectors-in-india/](https://www.statista.com/statistics/271329/distribution-of-gross-domestic-product-gdp-across-economic-sectors-in-india/)

\(^6\) [http://www.worldstopexports.com/indias-top-10-exports/](http://www.worldstopexports.com/indias-top-10-exports/)
companies\(^7\). However, the country still has one of the highest levels of poverty, the largest income disparities and poorly developed public healthcare.

![Graph showing the value of India’s exports in 2007-2018, in billion USD. Source: own material based on http://www.intracen.org/itc/market-info-tools/statistics-export-country-product/]

**Fig. 2.** Value of India’s exports in 2007-2018, in billion USD
Source: own material based on http://www.intracen.org/itc/market-info-tools/statistics-export-country-product/

**Tab. 1**

| Product Group                          | Value, billion USD | % of total exports |
|----------------------------------------|-------------------|--------------------|
| Mineral fuels, including oil           | 48,3              | 14,9               |
| Gems, precious metals                  | 40,1              | 12,4               |
| Machines, including computers          | 20,4              | 6,3                |
| Vehicles                               | 18,2              | 5,6                |
| Organic chemicals                      | 17,7              | 5,5                |
| Pharmaceuticals                        | 14,3              | 4,4                |
| Electrical machines, equipment         | 11,8              | 3,6                |
| Iron, steel                            | 10,0              | 3,1                |
| Cotton                                 | 8,1               | 2,5                |
| Clothing, accessories (excl. knitting) | 8,1               | 2,5                |

Source: http://www.worldstopexports.com/indias-top-10-exports/

\(^7\) 2019 Index of Economic Freedom; https://www.heritage.org/index/country/india
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![Graph showing the value of India's exports from 2007 to 2018, in billion USD.](image)

**Fig. 3.** Value of India’s exports in 2007-2018, in billion USD

Source: based on [http://www.intracen.org/itc/market-info-tools/statistics-export-country-product/](http://www.intracen.org/itc/market-info-tools/statistics-export-country-product/)

| Product Group                        | Value, billion USD | % of total imports |
|--------------------------------------|-------------------|--------------------|
| Mineral fuels, including oil         | 168,6             | 33,2               |
| Gems, precious metals                | 65,0              | 12,8               |
| Electrical machines, equipment       | 52,4              | 10,3               |
| Machines, including computers        | 43,2              | 8,5                |
| Organic chemicals                    | 22,6              | 4,4                |
| Plastics and products                | 15,2              | 3,0                |
| Iron, steel                          | 12,0              | 2,4                |
| Animal fats/vegetable oils, wax      | 10,2              | 2,0                |
| Optical, technical and medical devices | 9,5            | 1,9                |
| Inorganic chemicals                  | 7,3               | 1,4                |

**Tab. 2**

Source: [http://www.worldstopexports.com/indias-top-10-exports/](http://www.worldstopexports.com/indias-top-10-exports/)

India is the second after China in the world in terms of its population. In 2017, the population was nearly 1.4 billion people. To meet their demand for employment in the working-age population, each year more than 10 million jobs should be created.

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8 The World Bank; [https://data.worldbank.org/country/india](https://data.worldbank.org/country/india)
The structure of the Indian labour market distinguishes between employment in informal and formal sectors. The informal sector employs almost 81% of all the employed in India, whereas the formal only 6.5% and 0.8% in the household sector. The informal sector includes companies operating on their own account. These include all unlicensed, single person or unregistered businesses, such as shops, crafts, physical work, rural trade, agriculture, etc. The organised sector includes people employed by the government, state enterprises and enterprises of the private sector. These include businesses that are registered and subject to tax on goods and services, such as banks, private schools, hospitals, listed companies, corporations, factories, shopping centres, hotels, etc.

For several years, India did not publish its employment figures (last official data are of 2012 - then unemployment rate was 2.7%). However, independent experts estimate that in the last period, the unemployment rate has been growing at the highest rate in the past 45 years and it is now 8.5% (in 2018 alone, India lost 11 million jobs), and the rapid economic growth generates much fewer jobs than in the past.

Despite a short-term economic downturn caused by demonetisation and implementation of compulsory tax on goods and services, the continued favourable economic growth, including sustainable growth of the gross domestic product, revenue per capita, private consumption and public investment, as well as the improvement of other economic indicators, for example, car sales, indicate that India’s macroeconomic conditions are generally stable. Structural reforms introduced by the government contribute to enhanced productivity among domestic businesses and attract more foreign direct investment.

In 2014, the Indian government implemented the „Make in India” program, which is intended to transform India into a global production hub, contributing to the creation of new jobs and the rise of the professional qualifications of the population. The initiative has been gradually gaining momentum and would benefit various sectors, including the maritime economy.

3. SEAPORTS IN INDIA

The Indian peninsula has one of the largest coastlines in the world, extending a distance of more than 7500 km, with approximately 200 seaports of India, including 12 major ones. The main ports handle more than 75% of the total freight traffic. On the east coast, India has the following main ports: Calcutta (Kolkata Dock System and Haldia Dock Complex), Paradip Vishakhapatnam, Ennore, Chennai, Chidambaranar (formerly Tuticorin), whereas on the west coast: Kochi, New Mangalore, Marmagao, Mumbai, Jawaharlal Nehru (JNPT) and Kandla. The main ports are answerable to the Ministry of Shipping except for the port of Ennore, which is a public company acting under the business name of Kamarajar Port Limited registered as a company (68% of shares owned by the state and 32% by Chennai Port Trust), and the company pays dividends to the state. Smaller ports are answerable to governments of relevant states and perform the role of auxiliary ports for the above mentioned main ports.

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9 The WIRE: Nearly 81% of the Employed in India Are in the Informal Sector: ILO, May 2018; https://thewire.in/labour/nearly-81-of-the-employed-in-india-are-in-the-informal-sector-ilo
10 CNN Business; https://edition.cnn.com/2019/04/05/economy/narendra-modi-economy-election-india/index.html
11 https://www.ibef.org
12 India: Government to Build Mega Container Terminal at Chennai. DredgingToday.com. Retrieved October 2011.
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2000-2018 cargo handling in major ports of India is shown in Table 3.

Tab. 3

| Port         | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Calcutta     | 31   | 001  | 46   | 46   | 47   | 43   | 39   | 41   | 46   | 50   | 50   | 50   | 50   | 50   | 50   | 50   | 50   | 57   |
| Paradip      | 13   | 636  | 55   | 57   | 56   | 54   | 56   | 56   | 68   | 71   | 776  | 885  | 102  | 102  | 102  | 102  | 102  | 102  |
| Vishakhapatnam | 39  | 510  | 50   | 65   | 68   | 67   | 59   | 58   | 58   | 57   | 61   | 63   | 63   | 63   | 63   | 63   | 63   |
| Ennore*      | -    | 9479 | 10   | 703  | 11   | 009  | 14   | 956  | 17   | 885  | 27   | 337  | 32   | 206  | 30   | 020  | 30   | 446  |
| Chennai      | 37   | 443  | 43   | 806  | 61   | 61   | 55   | 53   | 51   | 51   | 50   | 51   | 51   | 51   | 51   | 51   | 51   |
| Chidambaranar | 9993| 811  | 15   | 787  | 23   | 25   | 28   | 28   | 28   | 32   | 36   | 38   | 38   | 38   | 38   | 38   | 38   | 583  |
The busiest ports handling the international container traffic include Calcutta, Chidambaranar, Chennai, Cochin, Vishakhapatnam and Jawaharlal Nehru (Table 4).

Tab. 4

| Port                  | 2000 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Calcutta and Haldia   | 175  | 287  | 502  | 526  | 552  | 600  | 563  | 630  | 663  | 772  |
| Chidambaranar (Tuticorin) | 137  | 307  | 440  | 468  | 477  | 476  | 508  | 560  | 612  | 642  |
| Chennai               | 322  | 617  | 1216 | 1524 | 1558 | 1540 | 1468 | 1552 | 1565 | 1495 |
| Cochin                | 130  | 185  | 290  | 290  | 336  | 335  | 347  | 366  | 419  | 491  |
| Vishakhapatnam       | 20   | 45   | 98   | 145  | 234  | 247  | 262  | 248  | 293  | 367  |
| JNPT                  | 889  | 2371 | 4062 | 4270 | 4321 | 4259 | 4162 | 4467 | 4492 | 4500 |
| Total                 | 1673 | 3812 | 6608 | 7223 | 7478 | 7457 | 7310 | 7813 | 8044 | 8267 |

Source: own material based on http://www.ipa.nic.in/index1.cshtml?lsid=155

The analysis of 2000-2018 cargo handling changes in major ports of India indicates a steady increase. A visible slowdown in 2012-2014 resulted from the reduction in trade after the world economic crisis, as well as the insufficient capacity of infrastructure in Indian ports and weak operating results due to the limited possibility of further shipments. Apart from insufficient capacity, the development of Indian ports can be seen as a key factor in the protection of the Indian trade against fluctuations in the global economy. However, too few deep-sea ports and limited cargo handling capacity constrains its seaports handling of only some of the largest intercontinental ships. As a result, much Indian cargo must be reloaded in more developed Asian ports (Colombo, Sri Lanka), which increases time and cost of

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*Lawful operations started in December 2002
Source: own material based on http://www.ipa.nic.in/index1.cshtml?lsid=155

13 Berry A.: Ports in India Need Overhaul. The Economic Times 2018; https://economictimes.indiatimes.com/industry/transportation/shipping/-transport/ports-in-india-need-overhaul-agam-berry-quantified-commerce/articleshow/63886226.cms
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operation. For example, one-quarter of containers which in 2016 were handled by the main state ports of India had to be transshipped elsewhere. To resolve these issues and to strengthen the Indian maritime sector in the context of the ever-growing demand for goods transported by sea, in 2015, the government of India adopted a port development project known as Sagarmala. Its goal is to deliver a comprehensive solution to problems faced by the Indian ports.

4. THE SAGARMALA STRATEGY FOR DEVELOPMENT OF SEA PORTS

The Sagarmala Strategy has been developed as part of a broader program of “Make in India” as its key component. The coordination of the program at the national level is the responsibility of the Ministry of Shipping, which take care of the transformation of infrastructure into a modern system. The process comprises the modernisation of ports and their integration with special economic zones, smart port cities, industrial parks, warehouses, logistics parks and transport corridors. According to the plan, the implementation of the project should attract foreign direct investment and the implementation of individual projects under the Sagarmala Strategy (mainly private or PPP schemes) and their consistency is the responsibility of respective ports, state governments/maritime councils, and central administration.

The concept of "port-driven development” is the heart of the Sagarmala vision. The concept focuses on intensive development of logistics supported by efficient and modern port infrastructure and a functioning supply chain supported by qualified personnel.

As regards the above assumptions (upgrade of existing ports and development of new ones, improvement of connections to ports, industrialisation of ports and development of coastal communities), the program identifies 415 projects, the implementation of which is staged in 2015-2025 with the expected cost of 123 billion US dollars.

The Government of India believes that the implementation of the Sagarmala Strategy will reduce the costs of logistics, which is crucial for domestic production. Today, in India, the logistics cost consumes about 19% of GDP (1/3 higher than in China), to compete on the global market, India needs to reduce it to 4-6%.

According to the National Plan, the Sagarmala Strategy provides for:

- Modernisation of existing and development of new ports - through 189 projects, including 116 to improve the operational capacity of the existing ports and the construction of six mega-ports: Vizhinjam International Seaport (status Kerala), Colachel Seaport (Tamil Nadu) Vadhavan Port (Maharashtra), Tadadi Port (Karnataka), Machilipatnam Port (Andhra Pradesh) and Sagar Island Port (West Bengal). The country designated a total of

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14 Poonawalla S., Sinha R.: Will Vizhinjam port fulfill India's maritime dream? Rediff Business, December 2015; https://www.rediff.com/business/column/will-vizhinjam-port-fulfill-indias-maritime-dream/20151214.htm
15 The Financial Times: India's new private ports challenge impact state giants; https://www.ft.com/content/b6892980-2e68-11e7-9555-23ef563ee9a
16 Government of India, Ministry of Finance (2018), Sagarmala: Background; http://sagarmala.gov.in/about-sagarmala/background
17 http://www.makeinindia.com/article/-/v/developing-ports-sagarmala-project
18 Mishra D: Sagarmala — Transformation of the Maritime Infrastructure and Make in India, April 2018; https://medium.com/@devsnamishra/sagarmala-transformation-of-the-maritime-infrastructure-and-make-in-india-4ba48ec0c80b
19 Developing Ports: Sagarmala Project; http://www.makeinindia.com/article/-/v/developing-ports-sagarmala-project
21 billion USD for the above objectives. The implementation of the Vizhinjam port project is underway and projects in other ports are in the designing phase;

- Improvements in communication with ports - 170 projects with the expected cost of 35 billion US dollars to modernise road and railway infrastructure and building multimodal hubs on 111 inland waterways in 24 states; a number of inland waterways will gain national status, which means that they will be included in the development program. This group of activities includes such governmental projects as Jal Margin Vikas (four terminal ports on River Ganga). India contracted a loan from the World Bank in the amount of 375 million US dollars for the project\(^{20}\), Dedicated Freight Corridors (construction of rail corridors that can handle longer and heavier freight trains from/to ports in Delhi, Mumbai, Chennai and Kolkata and diagonal corridors north-south Delhi-Chennai and east-west Calcutta-Mumbai) Whether Bharatmala (construction and upgrading of 34 800 national roads, including 2000 km of roads along coastlines and in major ports);

- Industrialisation associated with ports - 33 projects of the expected cost of 65 billion USD. The initiative provides for the development of economic regions (CEZ) in 14 coastal zones with industrial clusters. The objective is to save time and reduce costs of cargo handling in national and international traffic. It is estimated that in coastal zones, direct and indirect employment may reach 6 million people. Energy clusters, consisting of refineries and petrochemical industry, reduce India’s dependence on import of petroleum products. By 2025, two more refineries and four petrochemical clusters located along the coast of India should be developed;

- The development of coastal communities - the cost of 23 projects promoting the involvement of people living in coastal zones (18% of India’s population) in the overall socio-economic development of the region is 648 million USD. Projects focus on education of citizens, development of refrigeration chain, fisheries, aquaculture, local tourism and leisure facilities.

At the same time, it is expected that the implementation of the Sagarmala strategy will contribute to the annual reduction of CO\(_2\) emission from transport by 12.5 MT.

In March 2018, in the different phases of development and implementation were 492 projects worth 62 billion USD\(^{21}\). Out of the total 116 investment projects improving the operational efficiency of major ports, 91 projects have been completed, 8 are in progress, and 9 projects abandoned\(^{22}\).

Noteworthy is the building of the new container port of Vizhinjam, Kerali State, launched in 2019 at the coast of Arabian Sea under the PPP scheme. It is going to be the first in India deep-sea mega-terminal (up to 18 m draft) capable of handling the largest container vessels of up to 24 thousand TEU. In addition to the port of Dhamra, which does not yet have an adequate infrastructure to handle container ships, no other Indian container port has such operating depth\(^{23}\).

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\(^{20}\) GKTODAY, GK-Current Affairs_General Studies; https://currentaffairs.gktoday.in/tags/jal-marg-vikas-project

\(^{21}\) India Briefing; https://www.india-briefing.com/news/sagarmala-developing-india-ports-aid-economic-growth12980-12980.html/

\(^{22}\) http://sagarmala.gov.in/project/port-modernization-new-port-development

\(^{23}\) https://seanews.co.uk/features/container-shipping-indian-ports-set-to-outpace-previous-records/
The building of the Vizhinjam seaport, including the breakwater, quays, terminal and the port building, is divided into three stages. Stage one, requiring dredging at sea, includes the construction of an embankment of 66 ha and a breakwater of 3180 m in length. The project also includes a railway line of 10.9 km and a 9 km tunnel (second longest railway tunnel in India) to connect the port and the main railway line\textsuperscript{24}. The port is expected to be put into service at the end of 2020. According to the agreement, the port will be operated by Adani Vizhinjam Port (AVPL), a private concessionaire, for 40 years with the possibility to extend the contract for further 20 years, whereas the state government will receive part of the revenue after 15 years.

5. SUMMARY

In India, the establishment of new ports and modernisation of existing ones, development of coastal zones, improved transportation between ports by expanding road, rail and inland waterways networks and the development of multimodal logistics parks will boost economic development in coastal areas and stimulate the development of the whole country, creating new jobs.

An efficient system of connections to ports in India is very important because centres attracting goods for shipment are mainly located inland rather than in coastal regions. A long distance to the destination point of the shipment increases the logistics cost and time for cargo

\textsuperscript{24} https://www.thenewsminute.com/article/kerala-s-vizhinjam-port-commissioning-deadline-extended-october-2020-96738
to be delivered. Connectivity between ports of India with their hinterland is based primarily on road and rail transport, whereas coastal and inland waterway shipping plays a very limited role. Hence, the creation of a well-connected logistics system in the country together with the introduction of new technologies and increasing handling capacity of ports is of paramount importance for the development of the national economy. This is one of the major factors boosting competitiveness, promoting traffic flow in the ports of both at the present and expected increased levels resulting from the development of international trade in goods.

For the main ports of India to be globally competitive, the Member State must ensure an attractive investment climate for global investors. In the framework of projects related to the construction and development of ports, the government of India has permitted direct foreign investments up to 100% of their value. In the period from April 2000 to December 2018, the port sector in India attracted aggregated direct foreign investment of 1.64 billion USD. Moreover, companies investing may enjoy 10-year tax exemption and apply for financial aid of 50% of investment value. Additionally, the 10-year tax exemption was extended to companies dealing with development, maintenance and operation of sea and inland ports, as well as inland waterways\(^\text{25}\).

Indian government plans to improve the efficiency of all 12 major port have been finalised. Projects concentrating on the development of cargo handling capacity will be gradually implemented in the next 20 years. At the end of March 2018, in different phases of their development and implementation were 492 projects worth 62 billion USD\(^\text{26}\).

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