Annex VI - Case Study - India

Contents

VI.1. General Description And Basic Economy

India, the world's largest democracy with a population of 1.2 billion, is the seventh-largest country by area and second only to China in terms of population size. It is a member of the BRICS group of nations - Brazil, Russia, India, China and South Africa - a set of newly industrialized developing countries distinguished by their fast growing economies, as well as a member of the G-20 group.

Located in South-east Asia, India is geographically surrounded by the Indian Ocean on the south, the Arabian Sea on the south-west, and the Bay of Bengal on the south-east. It shares borders with Pakistan to its left, China, Nepal and Bhutan to the northeast, while Burma and Bangladesh comprise its eastern land border. The Andaman and Nicobar Islands, a Union Territory[1] of India, shares a maritime border with Thailand and Indonesia.

Economic growth in the country has been consistently strong since economic liberalization in the early 1990s, with GDP growing at an average annual rate of 8.2% between 2006 and 2011, touching a high of 9.6% in 2006 (Government of India Ministry of Finance[2]), except for the recent slowdown in 2011-12 where growth fell to 6.5%. With a 2011 value of USD 4.5 trillion it ranks as the world's fourth-largest economy in purchasing power parity terms (World Bank India profile) [3].

Sectorial composition of GDP over the past two decades has significantly changed, witnessing a consistent increase in the share of the Services sector, from 50% in

[1] A Union Territory is an administrative division of India. They are ruled directly by the Central Government (unlike states, which have their own elected state governments), and have special rights and status on account of their constitutional formation.

[2] Union Budget and Economic Survey 2011-12, Chapter 1 http://indiabudget.nic.in/es2011-12/echap-01.pdf Accessed on 15 October 2012

[3] World Bank – India overview. http://www.worldbank.org/en/country/india/overview. Accessed on 13 October 2012

1990-91 to 59% in 2011-12, while the share of Agriculture and Allied sectors gradually declined in the same period, from 29% to 17% (Planning Commission Government of India)[4]. The Services category has contributed most to economic growth, registering an annual average of 4.5% growth since 1990. The contribution from Manufacturing has remained more or less constant, between 21% and 24%.

Analysing the sub-services within the Services sector for 2010-11, it is seen that trade (wholesale and retail), hotels and restaurants as a group is the largest contributor to GDP with a 16.6% share, followed by financing, insurance, real estate, and business services with 15.8% (Table 1).

Table 1: Per cent share of different services categories in GDP at factor cost (current prices)

Service sector	2009-10
Trade, Hotels & restaurants	16.6
Transport, storage & communications	7.8
Financing, insurance, real estate and business services	15.8
Community, social & personal services	14.5
Construction	8.2
Total services (excluding construction)	54.7
Total services (including construction)	63

Source: Government of India Ministry of Finance[4]

VI.2. Nature Of Aviation And Shipping Industries

VI.2.1 Aviation

Including its impact on tourism, aviation makes up 1.5% of GDP and 1.8% of the workforce. The six major international airports are in the 6 metro cities – New Delhi, Mumbai, Chennai, Bengaluru, Kolkata and Hyderabad – and have the capacity to handle 78.6% of total passenger traffic. In 2010-11, around 100 million passengers a year passed through them.[5] The Airport Authority of India controls 125 airports in the country of which 84 are operational.[6]

Capacity utilization at the six major airports is currently 62.5%, indicating potential for passenger traffic growth. International passenger traffic is dominated by foreign airlines, with Indian airlines presently having only 34.6% market share (Table 2).

[4] Planning Commission, Data and Statistics http://planningcommission.nic.in/data/datatable/0904/tab_27.pdf Accessed on 15 October 2012

[5] *Economic Benefits from Air Transport in India*, Oxford Economics, 2011. http://www.benefitsofaviation.aero/Documents/Benefits-of-Aviation-India-2011.pdf Accessed on 17 October 2012

[6] *Report of Working Group on Civil Aviation Sector*, June 2012. Government of India Ministry of Civil Aviation. http://civilaviation.gov.in/cs/groups/public/documents/document/moca_001680.pdf Accessed on 17 October 2012.

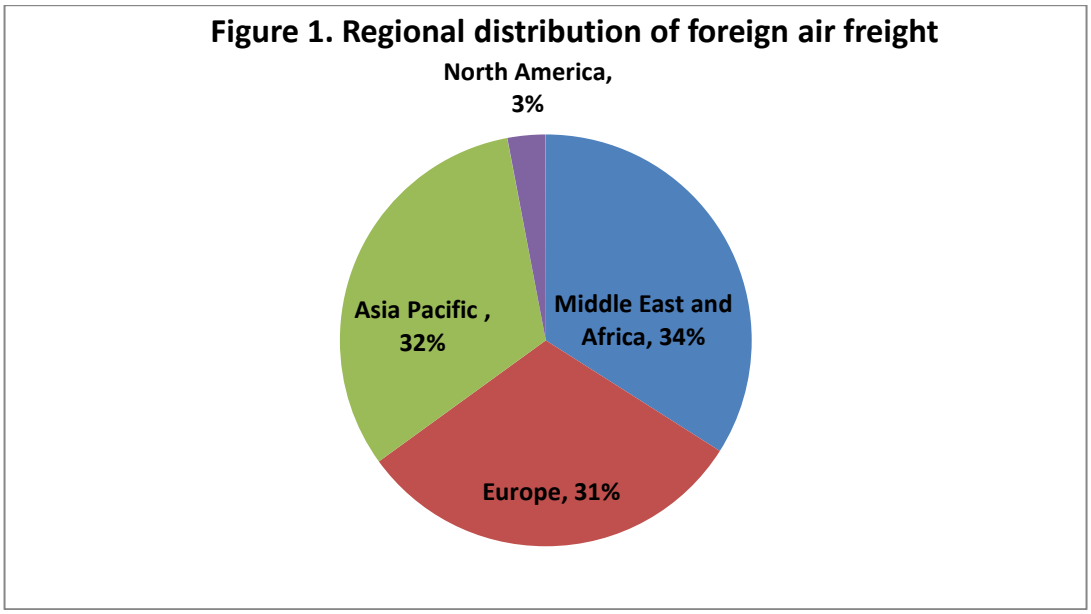
Table 2: Market share of international passengers carried by Indian and foreign carriers

Year	Scheduled Indian carriers	Foreign carriers
1990-91	31.7	68.3
1994-95	29.3	70.7
2004-05	28.9	71.1
2009-10	34.6	65.4

Source: Government of India Ministry of Civil Aviation[7]

In terms of air freight, aviation accounts for only 5% of overall Indian foreign trade. In 2010-11, 1.4 million tonnes of domestic and international freight was handled at Indian airports. 31% of air freight transport is to and from the EU (Figure 1). Here too, Indian scheduled carriers from India have consistently lost out to their international counterparts, their market share having declined from 37% in 1990 to 16% in 2009.

Figure 1. Regional distribution of foreign air freight



Source: *Economic Benefits from Air Transport in India*, Oxford Economics, 2011

Key Indian airlines and their fleet are presented in Table 3 below.

Table 3: Aircraft ownership pattern for full service carriers in India - 2010

Airline	Leased	Owned	Total
Air India	29	94	123

[7] *Report of Working Group on Civil Aviation Sector*, June 2012. http://civilaviation.gov.in/cs/groups/public/documents/document/moca_001680.pdf Accessed on 17 October 2012.

Jet Airways	58	33	91
Jetlite[1]	23	0	23
Kingfisher Airlines	63	3	66
TOTAL	**150**	**130**	**280**

Source: *Economic Benefits from Air Transport in India*, Oxford Economics, 2011

[1] A domestic airline. Ceased operations in 2012 after merger with JetKonnect, a division of Jet airways.

Commercial fleet size is estimated to reach 1000 by 2020, from 400 today. Airlines are expected to add around 370 aircrafts worth Rs 150,000 crores to their fleet by FY-17.

Limited availability of space is a significant constraint for expansion of existing airports. The Government has approved development of 15 greenfield airports in non-metro cities. A new international airport in Mumbai is under construction, expected to be operational by 2016. Its delayed opening is expected to constrain Mumbai's air passenger traffic growth with the current Mumbai airport reaching its saturation point of 40 million passengers by 2013.[8]

The Indian aviation industry has begun taking measures to report and control CO2 emissions. In 2012, the Indian Directorate General of Civil Aviation (DGCA) released its first report on carbon footprint for the Indian aviation industry for 2011. It stated that CO2 emissions from Indian scheduled airline operations as well as from foreign airlines to international destinations represent less than 1% of the country's total CO2 emissions. The figure is significantly lower than the global average contribution of airlines, which comprises ~ 2% of global anthropogenic emissions. The carbon footprint of Indian scheduled airlines for domestic and international operations was 12,704,000 tonnes of CO2 in 2011, a 6% increase from 2010. Indian airlines and airports are devising measures to reduce carbon emissions, a move aligned with global best practices and which will also reduce their cost of doing business nationally and internationally. Bangalore and Mumbai airports have also participated in Airport Carbon Accreditation[9] to reduce emissions.[10]

VI.2.2 Shipping

With a coastline of 7,517 km, India's exports and imports are largely dependent on maritime transport. Shipping plays an integral role in the Indian economy with around 95% of trade by volume and 68% in terms of value, being transported by sea. As of 1 January 2012, India's fleet strength is 1,122 ships with Gross Tonnage (GT) of 11.06 million, of which the public-sector Shipping Corporation of India has the

[8] Government of Maharashtra, Department of Environment: Environmental Information Centre http://envis.maharashtra.gov.in/envis_data/?q=enmianws_nov10 Accessed on 23 October 2012.

[9] The European carbon standard for airports. Extended beyond Europe to Asia-Pacific, from November 2011.

[10] Government of India Directorate General of Civil Aviation: The Carbon Footprint of Indian Aviation 2011. July 10, 2012 http://dgca.nic.in/env/Carbon%20Footprint%20Report%202011.pdf Accessed on 17 October 2012

largest share of 36.17%. Of this, 372 ships with 10 million GT cater to India's overseas trade and the rest to coastal trade.

Although India has one of the largest merchant shipping fleets among developing countries, it ranks eighteenth globally in terms of dead weight tonnage[11] with a minute 1.09% share. Majority vessels are crude tankers and bulk carriers (Figure 2). Indian vessels are comparatively older than the international average with 44% of the fleet being over 20 years old, and 12% between 16 to 20 years, as of December 2011. According to initial estimates by the United Nations Conference on Trade and Development (UNCTAD), India ranks 8th among developing countries in terms of container ship operations with a world share of 0.32% (8.94 million Twentyfoot Equivalent Units of Containers in 2010).

Although Indian international maritime trade has more than doubled in the last decade, from 224.6 million tonnes in 1999-2000 to 570 million tonnes in 2010-11, it has been accompanied by a steady decline in the share of Indian ships in foreign trade. From about 40% in the late 1980s, share of Indian ships in trade has declined to 9 % in 2010-11 with an 18% share in India's oil imports in 2009-10. Given the abysmally low participation of Indian ships in India's trade and the fact that Indian ships are ageing, with the average age of the Indian fleet increasing from 15 years in 1999 to 18.37 years in 2012, there is a need to increase the shipping fleet if it is to capture the majority of India's present trade volumes. (Government of India Ministry of Finance)[12]

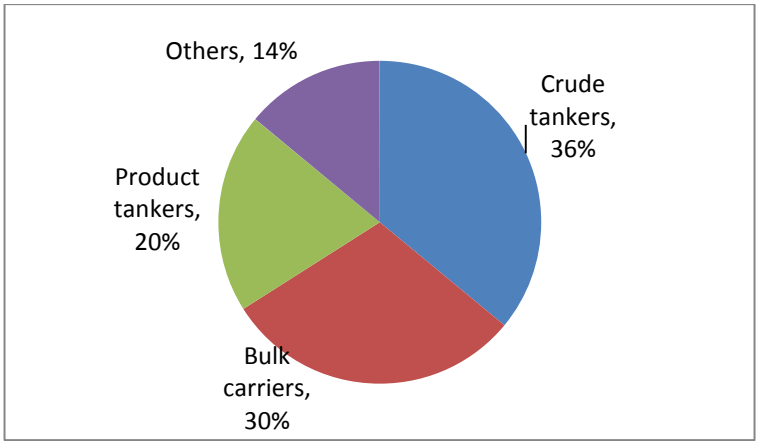
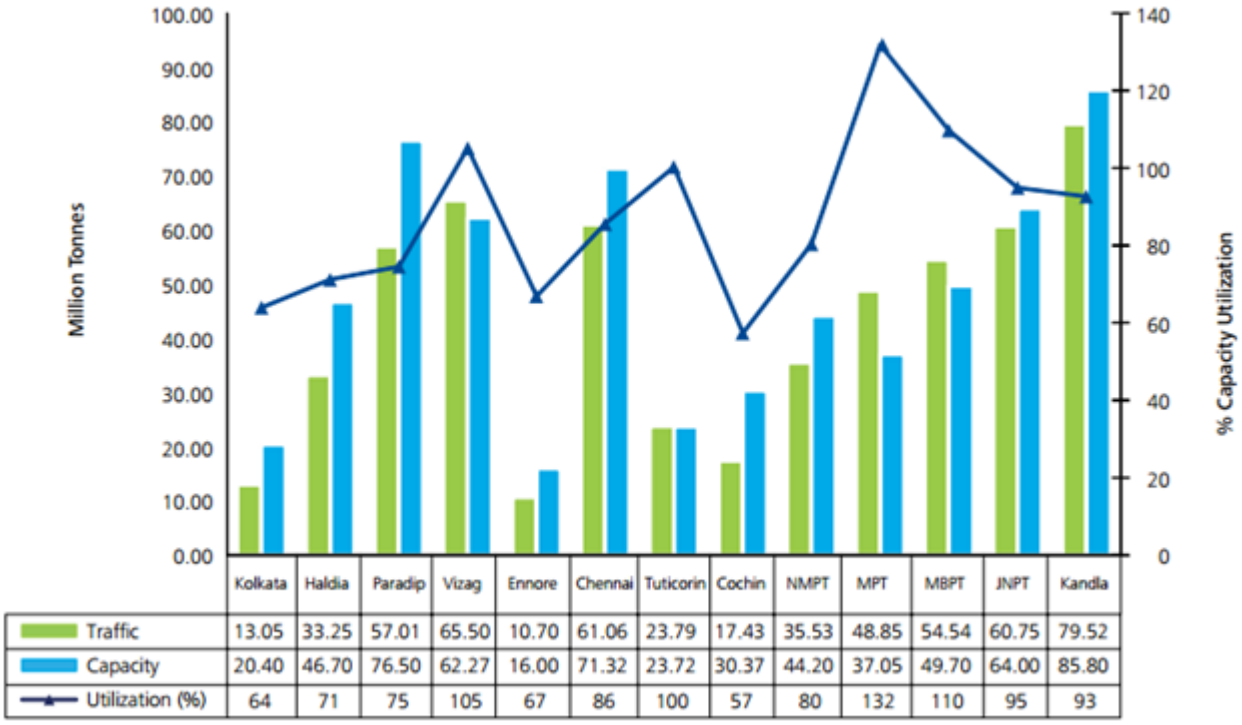


Figure 2. Composition of the Indian fleet (July 2006)
Source: *Indian Shipping Industry: A Catalyst for Growth*. Export Import Bank of India, October 2010

India's has 13 major ports[13] and 187 minor ports of which 48 are fully operational. The 13 major ports are controlled by the Central Government through the Ministry of Shipping. In 2009-10, 8 major ports were operating at more than the optimum range of 70-75 per cent utilisation. Of these, four - Vizag, Tuticorin, Mormugao, &

[11] Dead weigh tonnage (DWT) is a measure of how much weight a ship can safely carry.
[12] Union Budget and Economic Survey 2011-12, Chapter 10 http://indiabudget.nic.in/es2011-12/echap-10.pdf Accessed on 15 October 2012
[13] 13 major ports – Kolkata, Haldia, Paradip, Vizag, Ennore, Chennai, Tuticorin, Cochin, New Mangalore Port Trust (NMPT), Mormugao Port Trust (MPT), Mumbai Port Trust (MBPT), Jawaharlal Nehru Port Trust (JNPT), Kandla

Mumbai – are more than 100 per cent utilized (Figure 3). Gujarat has emerged as the leading state in cargo handling. Kandla port in Gujarat accounted for the highest share (~14%) in major port traffic (Deloitte 2012)[14].



	Kolkata	Haldia	Paradip	Vizag	Ennore	Chennai	Tuticorin	Cochin	NMPT	MPT	MBPT	JNPT	Kandla
Traffic	13.05	33.25	57.01	65.50	10.70	61.06	23.79	17.43	35.53	48.85	54.54	60.75	79.52
Capacity	20.40	46.70	76.50	62.27	16.00	71.32	23.72	30.37	44.20	37.05	49.70	64.00	85.80
Utilization (%)	64	71	75	105	67	86	100	57	80	132	110	95	93

Figure 3. Capacity utilization at Indian ports[15]
Source: Deloitte 2012[14]

Jawaharlal Nehru Port Trust (JNPT), India's largest container port (Table 4), ranks 25th globally in terms of container traffic (Government of India Ministry of Finance)[16].

[14] National Conclave on Shipping 2012 Background paper, Deloitte Consulting. http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/Thoughtware/National%20Conclave%20on%20Shipping%202012-Background%20paper.pdf Accessed on 17 October 2012.

[15] Abbreviations: MPT – Mormugao Port Trust, MBPT – Mumbai Port Trust, NMPT – New Mangalore Port Trust, Vizag – Vishakhapatnam.

[16] Union Budget and Economic Survey 2011-12, Chapter 10 http://indiabudget.nic.in/es2011-12/echap-10.pdf Accessed on 15 October 2012

Table 4: Category-wise Vessel traffic at Major Indian ports, 1996-97 and 2009-10

Port	Period	Dry bulk	Liquid bulk	Break bulk	Container	Total	Others#	Grand total
Kolkata	1996-97	14	336	184	288	822	15	877
	2009-10	61	264	396	578	1299	-	1299
Haldia	1996-97	341	467	43	95	946	-	946
	2009-10	892	852	68	433	2163	-	2163
Paradip	1996-97	358	187	11	-	556	36	592
	2009-10	1154	326	40	11	1531	-	1531
Vizag	1996-97	530	602	223	63	1418	55	1473
	2009-10	1275	715	210	206	2406	-	2406
Ennore*	1996-97	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2009-10	195	78	-	-	273	-	273
Chennai	1996-97	425	547	293	395	1660	66	1726
	2009-10	446	493	462	703	2131	-	2131
Tuticorin	1996-97	292	137	294	182	905	-	905
	2009-10	451	175	333	455	1414	-	1414
Cochin	1996-97	43	369	98	277	787	150	937
	2009-10	59	380	44	389	872	-	872
New Mangalore	1996-97	163	336	145	-	644	15	659
	2009-10	353	682	74	77	1186	-	1186
Mormugao	1996-97	268	197	12	30	507	17	524
	2009-10	235	184	8	38	465	-	465
Mumbai	1996-97	100	966	654	863	2583	44	2627
	2009-10	48	870	713	8	1639	-	1639
JNPT	1996-97	49	64	-	408	521	119	640
	2009-10	66	496	13	2521	3096	-	3096
Kandla	1996-97	224	868	305	130	1527	18	1545
	2009-10	663	1421	437	255	2776	-	2776
ALL PORTS	**1996-97**	**2807**	**5076**	**2262**	**2731**	**12876**	**575**	**13451**
	2009-10	**5898**	**6936**	**2825**	**5674**	**21251**		**21251**

Source: Compiled from annual statistics Indian Ports Association[17]

Note: # Lash / Passenger / Tugs / Non Cargo Vessels
**Ennore port began operations in 2001*

In terms of commodity type, Petroleum and oil products (POL), iron ore, and coal constitute a major chunk of traffic (Table 5).

[17] Category-wise Vessel traffic http://www.ipa.nic.in/oper3e_2010.htm Accessed on 16 October 2012.

Table 5: Cargo-wise traffic handled at major ports, 2009-10 ('000 tonnes)

Major Ports	Petroleum, oil and lubricants	Iron ore	Fertilizer	Coal	Container	Other cargo	TOTAL
Kandla	47211	660	5700	3225	2421	20304	79521
Visakhapatnam	18290	18108	3684	11118	1679	12622	65501
Chennai	13425	7882	591	3362	23476	12321	61057
JNPT	5082	-	-	-	53078	2586	60746
Paradip	11647	16158	3567	19821	44	5774	57011
Mumbai	34596		442	3745	606	15154	54543
Mormugao	964	40574	125	4741	192	2251	48847
New Mangalore	21339	7062	833	2791	475	3028	35528
Haldia	9338	7684	294	7525	2010	6399	33250
Tuticorin	514	41	2091	5813	6599	8729	23787
Cochin	11957	-	354	148	3928	1042	17429
Kolkata	724	809	47	16	6645	4804	13045
Ennore	395	936	-	9279	-	93	10703
TOTAL	**175482**	**99914**	**17728**	**71584**	**101153**	**95107**	**560968**

Source: Government of India, Ministry of Shipping

Even though freight volumes have grown steadily over the years, port infrastructure development has not kept pace. Efficiency of Indian ports has worsened over the years, reflecting the need for better cargo handling infrastructure and services at ports, especially for crude oil handling. The average turnaround time at major Indian ports worsened to 4.66 days in 2011, from 3.41 days in 2004-05, putting Indian ports at a disadvantage compared to internationally competitive ports like Singapore and Hong Kong which have turnaround times of less than a day.

Trends in shipping indicate a rise in larger number of vessels of 6000-8000 TEUs and a few vessels with 12,000-14,000 TEUs. This would necessitate drafts between 13m to 15.5 m, however, several ports are not equipped to handle large vessels generally more than 9.5 m and 12.5 m draft, due to present draft restrictions.

Table 6: Traffic projections for Indian ports

Ports	Projections				CAGR Compounded Annual Growth Rate (%)		
	2009-10	2011-12	2016-17	2019-20	2011-12	2016-17	2019-20
Major ports	561	630	1031	1215	6	9	8
Non-major ports	289	402	988	1280	18	19	16
Overall	850	1032	2019	2495	10.2	13.1	11.3

Table 7: Capacity addition plans of Indian ports

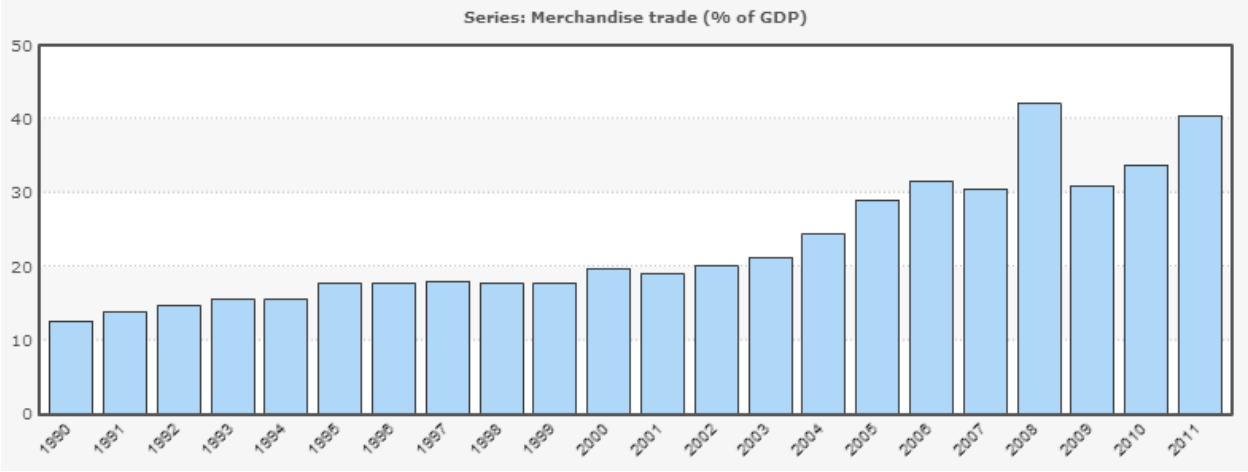
Ports	Projections				CAGR (%)		
	2009-10	2011-12	2016-17	2019-20	2011-12	2016-17	2019-20
Major ports	616	741	1328	1459	9.6	11.5	9
Non-major ports	346	499	1264	1670	20	20.3	17
Overall	963	1240	2592	3130	13.4	15	18.3

Source: Ministry of Shipping Maritime Agenda 2020, Deloitte 2012[18]

VI.3. Summary of Exported and Imported Goods

India's exports dropped in 2009 for the first time in decades, falling by 2.8 % but bouncing back in 2010 by 24.7% growth to reach USD 220.4 billion. Imports dipped similarly, and increased by 31.4 percent in 2010 to reach USD 350 billion. This resulted in a trade deficit of USD 129.6 billion. Imports and exports are well diversified – more than 25 countries accounted for 80% exports and 24 partners comprised 80% imports (UNCOMTRADE India profile).

In 2009-10, total trade contribution was 36% of total GDP (of which exports was 13.79% and imports 22.24%), a huge increase from 6% in 1985 and 24% in 2006 (OECD Economic Survey of India, 2007).[19] India's trade to GDP ratio has increased from 15% to 40% of GDP between 1990 and 2011 (Figure 4), but tariffs continue to be relatively high compared to other nations (World Bank)[20].



[18] National Conclave on Shipping 2012 Background paper, Deloitte Consulting. http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/Thoughtware/National%20Conclave%20on%20Shipping%202012-Background%20paper.pdf Accessed on 17 October 2012.

[19] Organisation for Economic Co-operation and Development, Policy Brief October 2007. http://www.oecd.org/economy/economicsurveysandcountrysurveillance/39452196.pdf Accessed on 16 October 2012.

[20] India: Foreign Trade Policy http://go.worldbank.org/RJEB2JGTC0 Accessed on 17 October 2012.

Figure 4. India's merchandise trade as a % of GDP[21]
Source: World Bank dataset, World Development Indicators

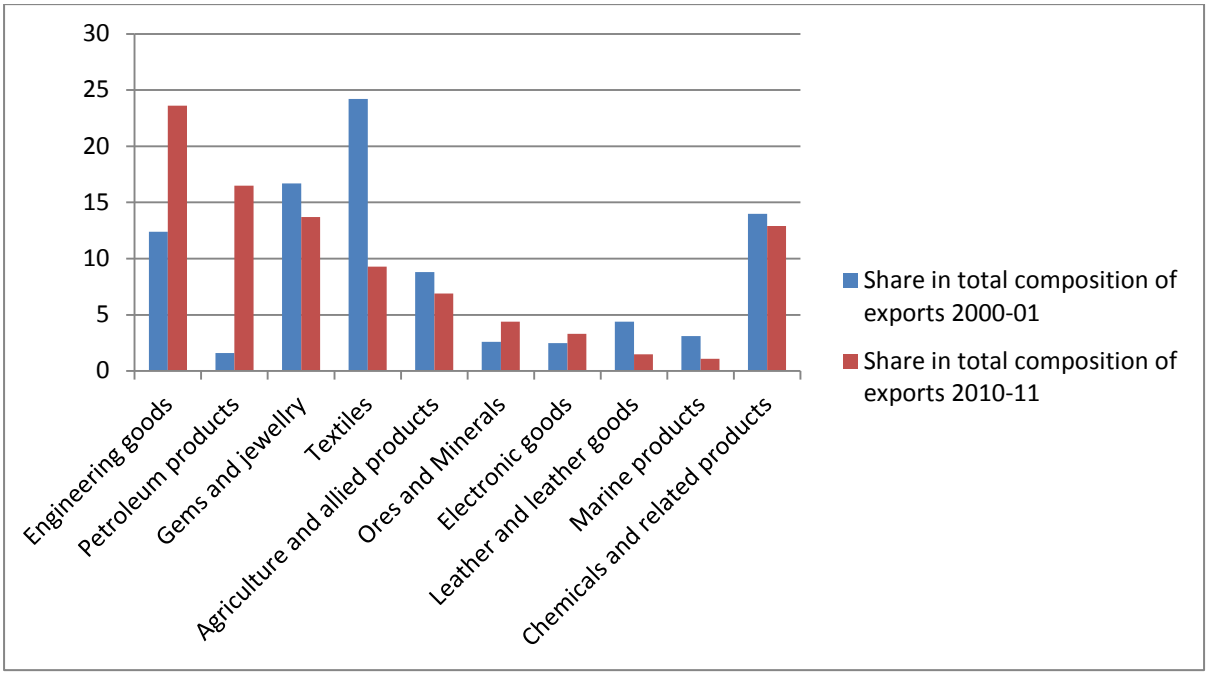


Figure 5: Change in the composition of exports 2000-01 to 2010-11 (in %)
Source: Institute for Studies in International Development, New Delhi[22]

The most important export items are engineering goods, petroleum products (not crude), gems and jewelry, chemicals and textiles (Figure 5). Share of Machinery (engineering goods) exports have nearly doubled in the last decade. Petroleum products constitute the 2nd important segment of exports with a 16 % share in 2010-11 (see table above). India has become one of the leading petroleum refining centres in Asia. In future India could likely emerge as a global hub of petroleum refining due to its proximity to the Gulf countries. Gems and jewelry are 3rd most important comprising 16.75%. Of concern is the declining share of textiles in exports, from 24% in 2000-01 to 9% in 2010-11. India is one of the largest food producing nations in the world but its food exports are small due to massive domestic consumption.

With regard to direction of trade, India has effectively diversified its export and import markets. Share of Asia and ASEAN in total trade has rapidly increased in the past decade, from 33.3% in 2000-01 to 57.3% in the first half of 2011-12. On the other hand, share of Europe and USA fell from 42.5% to 30.8%. The reduced dependency on Western markets has helped India remain resilient during the 2008 economic crisis. In 2007-08, USA was India's largest trading partner but it has now slipped to 3rd spot. It's place has been taken over by UAE, followed by China (Press Information Bureau of India)[23]. This is attributable to India's "Look East" policy and efforts to build relations with China and ASEAN. Major export partners in 2011-12

[21] Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars

[22] Structural changes in India's foreign trade, T.P Bhat, November 2011. http://isid.org.in/pdf/ICSSR_TPB.pdf Accessed on 17 October 2012.

[23] Economic Survey 2011-12. http://pib.nic.in/archieve/esurvey/esurvey2011/eng2011.pdf Accessed on 13 October 2012

were UAE (11.7%), USA (11.3%), China (5.9%), Singapore (5.5%). But the EU as a whole is India's second largest export partner: 18% of India's 2010 total exports were to the EU (World Trade Organisation)[24].

Major export items to EU countries comprise mineral fuels and their products, gems and jewelry and apparel (Government of India Ministry of Commerce and Industry)[25]. To USA, top exports comprised textiles, precious stones and metals and pharmaceutical products. Singapore and UAE are main markets for petroleum products. Engineering goods' destinations are USA, China and EU countries (Directorate General of Commercial Intelligence and Statistics)[26]

As mentioned in the introduction, Services are the major source of economic growth, accounting for more than half of India's output, with only one-third of its labor force. India has capitalized on its large educated English-speaking population to become a major exporter of information technology and software services which comprised 46.4% of total service exports in 2009-10. In 2009, 7 Indian firms were listed among the top 15 technology outsourcing companies in the world. India has been slowly shifting from an agriculture based economy to a knowledge based economy.
The change in imports[27] composition from 1980 to 2010, is given below

Table 9: Sectoral breakdown of India's imports (in %)

Product categories	1980-81	1990-91	1995-96	2000-01	2007-08	2010-11
Energy	42.2	15.3	23	33.2	34.3	32.8
Chemicals	10.6	10	16.8	10.7	5.6	6.8
Machinery	8.7	13.8	18.7	10.4	11.5	6.1
Electricals	2.1	2.3	4	1	1.2	1
Electronics	-	-	7.1	7.3	8.6	6.1
Food and agri	3	1.3	5.9	2.9	1.6	2.6
Non ferrous metals	3.8	3.2	3.3	1.1	1.4	1.1
Iron and steel	6.8	7.1	5.1	1.6	3.5	2.9
Textiles	1.1	1.4	1.6	1.2	1	0.87
Vehicles	3.8	1.4	1.5	0.9	-	-
Precious and semi-precious stones	3.3	4.9	5.7	9.5	3.1	8.8

[24] WTO India country profile, April 2012 http://stat.wto.org/CountryProfiles/IN_e.htm Accessed on 15 October 2012
[25] Export-Import Data Bank http://commerce.nic.in/eidb/ergncom.asp Accessed on 15 October 2012.
[26] Foreign Trade Performance of India 2011 http://www.dgciskol.nic.in/annualreport/book_3e.pdf Accessed on 20 October 2012.
[27] India's imports were broadly classified into bulk and non-bulk items. The product groups such as food and allied products, fuel, ores and metals, fertilizers and paper, paper board and pulp fall under bulk category and rest of the items in non-bulk category.

Transport equipment	3.8	2.2	3	1.4	8	3.2

Source: Institute for Studies in International Development, New Delhi[28]

Crude oil (energy), machinery and chemicals remain important imports but food and agriculture declined rapidly between 1980 and 2011. India largely depends on fossil fuels to meet its energy demands – 70% of electricity generation is from fossil fuels. Crude oil ("energy products" in table above) imports presently comprise 32% of India's total imports and 80% of the country's crude requirements. Most important import partners in 2011-12 were China (11.5%), UAE (7.3%), Switzerland (6.6%), Saudi Arabia (6.3%) and USA (5%).

VI.3.1 Tourism

Tourism does not fall under a single heading in India's National Accounts Statistics, hence official estimations of its contribution to GDP and employment in 2007-08 are 5.92% and 9.24 % respectively (Government of India Ministry of Finance)[29]. The Hotels and restaurants sector forms a small portion of overall GDP contribution - 1.46% (2010-11). Tourism plays an important role as a foreign exchange earner for the country. In 2010, foreign exchange earnings (FEE) from tourism were US$ 14.19 billion a 24.6% growth over the 2009 figure of US$ 11.39 billion.

Foreign tourist arrivals doubled within the decade from 2.6 million in 2000 to 5.7 million in 2010. The role of aviation in tourism is crucial for India given that 92% of foreign arrivals in 2010 were by air. Maximum share of arrivals were at capital city New Delhi (34%) and financial capital Mumbai's airports (20%). In 2010, maximum number of foreign tourist arrivals was from Western Europe (30%), followed by North America (20%), a trend consistent since 2008 (Government of India Ministry of Tourism)[30].

VI.4. Key Demographics

70% of the population (840 million) lives in rural areas, the remaining 30% in cities (UNESCO Institute of Statistics, 2010)[31]. However, rapid urbanization as a result of economic growth is expected to increase urban population to 40% by 2030 (McKinsey Global Institute, 2010)[32]. GDP per capita is USD 1,527 (2011, current USD or USD 3,200 by PPP), a low figure inspite of the country's rapid economic growth.

India houses around a third of the world's poor. The World Bank estimates that 32.7% of the Indian population lives on less than USD 1.25 per day (USD 1.25 per day is the international poverty line). According to the Global Hunger Index 2011, India

[28] Structural changes in India's foreign trade, T.P Bhat, November 2011. http://isid.org.in/pdf/ICSSR_TPB.pdf Accessed on 17 October 2012.

[29] Union Budget and Economic Survey 2011-12, Chapter 10 http://indiabudget.nic.in/es2011-12/echap-10.pdf Accessed on 15 October 2012

[30] India Tourism Statistics 2010, pages 9, 14 http://tourism.gov.in/writereaddata/CMSPagePicture/file/Primary%20Content/MR/pub-OR-statistics/2010Statistics.pdf Accessed on 16 October 2012

[31] India profile http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=289&IF_Language=eng&BR_Country=3560&BR_Region=40535 Accessed on 15 October 2012.

[32] *India's Urban Awakening*, April 2010. Accessed on 14 October 2012.

was one of 3 countries whose score increased between 1996 and 2011 from 22.9 to 23.7, whereas 78 out of the 81 developing countries studied, improved their hunger scores (Global Hunger Index 2011)[33].

By World Bank classification, India is a lower middle income country, compared to fellow BRICS nations which are upper middle income having an average GDP per capita (PPP) of USD 10,000. (World Bank country classifications)[34]

But a demographic transition is expected to occur in the coming decades. McKinsey has projected a decline in poverty and rise in a largely urban middle class population, with proportion of rural "deprived"[35] decreasing from 54% in 2005 to 22% in 2025 and middle class rising from 5% in 2005 to 41% in 2025 (McKinsey Global Institute 2007)[36]. The Indian National Council for Applied Economic Research's (NCAER) puts rising middle class estimates at a slightly more conservative 37.2% for 2025, a nine times increase from 4.4% in 2011 (Economic Times 2011)[37].

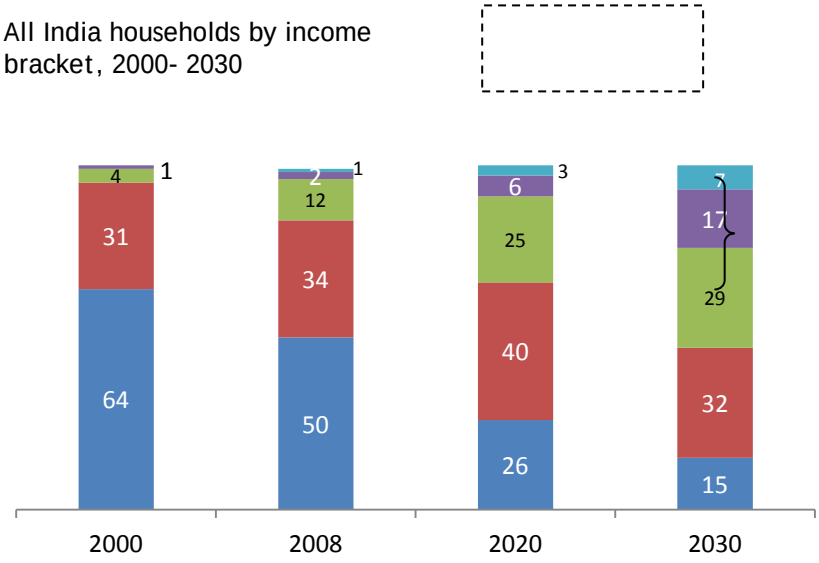


Figure 6 : Increase in middle class households by 2030
Source: India's Urban Awakening, McKinsey Global Institute, 2010.

[33] International Food Policy Research Institute http://www.ifpri.org/sites/default/files/publications/ghi11.pdf Accessed on 14 October 2012.

[34] World Bank 2012 http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Lower_middle_income Accessed on 15 October 2012.

[35] McKinsey uses conventions followed by the Indian National Council of Applied Economic Research (NCAER) in defining middle class as comprising two economic segments: "seekers" with real annual household disposable incomes of INR 200,000 to 500,000 (USD 23,530 to 58,820 at PPP) and "strivers" at INR 500,000 to 1,000,000 (USD 58,820 to 117,650 at PPP)

[36] *The 'bird of gold': The rise of India's consumer market*, May 2007. http://www.mckinsey.com/locations/india/mckinseyonindia/pdf/India_Consumer_Market.pdf Accessed on 16 October 2012.

[37] *India's middle class population to touch 267 million in 5 yrs*, Feb 6, 2011. http://articles.economictimes.indiatimes.com/2011-02-06/news/28424975_1_middle-class-households-applied-economic-research Accessed on 15 October 2012.

India's income pyramid will undergo changes as incomes rise, spurring consumption by the new dominant middle class which will control 59% of India's consumptive power by 2030. Middle class consumer spending currently is and is expected to continue being, maximum for food, although its share in total household spend will decrease from 42% to 25%. Expenditure on discretionary items is expected to increase – transportation, communications, healthcare, personal products (McKinsey Global Insitute, 2007)[37]. NCAER estimates that a typical urban middle class household spends around 50% total income on daily necessities, lending them strong purchasing power for discretionary items. Interestingly, a similar trend has been noticed in rural consumption too. For the first time in two decades, rural consumption expenditure between 2009-10 and 2011-12 outpaced that of urban India by 25%. Like urban patterns, discretionary spending in rural India is also believed to be increasing, with more than half of India's stock of consumer durables and 2-wheelers reported to be in villages (Crisil Research, 2012)[38].

Since it is difficult to ascertain dependencies of demographic groups on certain export or import goods or sectors, a look at official data on the distribution of employment in various sectors can be used to infer dependencies on sectors (Table 10)

[38] *Sustaining the Rural Consumption Boom*, August 2012. http://www.indianexpress.com/news/rural-india-outpaces-urban-spending-/995115/0 Accessed on 17 October 2012.

Table 10: Sectoral break-up of employment (millions)

	Organized	Unorganised[39]	Total
Employment			
Agriculture	1.4	223.6	225
Mining	0.9	1.6	2.5
Manufacturing	6.3	45.3	51.6
Electricity, water	1.2	0	1.2
Construction	1	24.7	25.7
Trade, hotels and restaurants	0.6	47.8	48.4
Transport, Storage, Communications	3.2	15.4	18.5
Finance, insurance, real estate	1.9	5.8	7.7
Community, social and personal services			
Public	9.5	0	9.5
Private	2.3	24.2	26.4
TOTAL	**28.2**	**388.3**	**416.5**

Source: Planning Commission, Government of India[40]

52% of the work force is employed in agriculture. After agriculture, the Trade, Hotels and Restaurants and Manufacturing sectors employ the largest number of people in both organised and unorganized sectors, the latter comprising socially and economically backward citizens.

VI.4.1 Foreign Development Aid

Net Overseas Development Assistance (ODA) to India was USD 2.1 billion in 2008, increasing by 33% to USD 2.8 billion in 2010, an equivalent of 0.2% of its GNI. Top three donors in 2009-10 were Japan, World Bank's International Development Association (IDA) and the United Kingdom and 60% of bilateral ODA was in the Economic Infrastructure and Services sector (OECD Aid Statistics 2010)[41]

Table 11: Top 10 donors of gross ODA, USD million (2009-10 average)

1	Japan	1,466
2	IDA	1,165
3	United Kingdom	657

39 http://mospi.nic.in/mospi_new/upload/nsc_report_un_sec_14mar12.pdf?status=1&menu_id=199 Accessed on 23 October 2012.
The unorganised or informal sector constitutes a crucial part of the Indian economy. More than 90% of the workforce and ~50% of the national product are accounted for by the informal economy. A large proportion of socially and economically underprivileged sections of society are in informal economic activities.

40 http://planningcommission.nic.in/data/datatable/0904/tab_56.pdf

41 http://www.oecd.org/dac/aidstatistics/1877912.gif Accessed on 17 October 2012.

4	Germany	509
5	Global Fund	170
6	United States	107
7	EU Institutions	97
8	UNICEF	42
9	GEF	37
10	France	37

Source: OECD Aid statistics

There is growing sentiment that India's economic growth and burgeoning middle class no longer make it a priority country for aid, unlike Africa, and that measures to tackle poverty should now come from internally. In 2011, DFID's India aid was limited to £280 million, less than the 2009-10 spend of £295 million, making Ethiopia DFID's largest aid recipient at £331 million per year (The Times of India, 2011)[42].

VI.5. Impacts on Future Trade And Tourism

General EU reports on the economic impacts of aviation in EU-ETS state that for consumers the effects will be small as the increase in price would be ~4% of the average ticket cost. Although the EU Commission has predicted a small decrease in overall aviation growth – from 145% to 138% - the real effects on airlines will depend on their business models (International Centre for Trade and Sustainable Development 2012)[43].

Indian passenger demand is known to be highly sensitive to air fares. Usually, a 10% increase in price reduces demand for domestic air travel by about 12%, as per calculations by the Civil Aviation Ministry. High aviation taxes in general would reduce the wider economic benefits gained from aviation, negatively impacting economic growth and government revenues. (Government of India Ministry of Civil Aviation)[44]. Domestic aviation suffered heavily between 2008 and 2010, as skyrocketing fuel prices led to a drop in passenger numbers. Indian aviation is already subject to a multitude of taxes, much more than other countries, and there is a danger of price conscious consumer reacting to an increase in airfares. This however, pertains to domestic travel only.

It is unlikely that international travel will be severely impacted, since the relative increase in ticket cost would be small. The EU Commission has specified that the carbon tax burden will be minimal for India since India emissions from Indian and European carriers flying to and from EU are only 0.2% of the total EUETS emissions

[42] Charity begins at home. March 26, 2011. http://articles.timesofindia.indiatimes.com/2011-03-26/special-report/29192075_1_india-growth-story-indian-charity-india-shining Accessed on 16 October 2011.

[43] *The Inclusion of Aviation in the EU ETS: WTO Law considerations.* April 2012. http://ictsd.org/downloads/2012/05/the-inclusion-of-aviation-in-the-eu-ets-wto-law-considerations.pdf. Accessed on 16 October 2012.

[44] *Report of Working Group on Civil Aviation Sector*, June 2012. http://civilaviation.gov.in/cs/groups/public/documents/document/moca_001680.pdf Accessed on 17 October 2012.

(Live Mint, 2012).[45] But civil aviation minister Ajit Singh's opinion differs. *"The likely impact on airfares, though expected to be significant, is not being estimated as no Indian carrier is submitting the trial data required this year on emissions in view of the stand of the government to oppose the scheme."*

Since India's economy is not highly dependent on tourism, it is debateable whether the EU ETS aviation tax will have significant impacts on economic growth. However, some level of ripple effects on trade, hotels and restaurants sectors, and employment in these, could be expected, especially since Trade, Hotels and Restaurants constitutes maximum share of the Services sector in GDP (Table 1), as well as maximum in unorganized employment (Table 10).

Studies find that European network carriers will be at a competitive disadvantage compared to non-EU airlines. For EU-based carriers, the percentage of free allocated allowances compared to the total allowances required for airlines' operations are much lower for EU-based carriers than for non-EU carriers (Table 12). This is because EU-based carriers operate their feeder network with relatively high specific emissions under the ETS, while non-EU based carriers operate only long-distance flights to and from Europe. This implies that EU airlines will be at a cost disadvantage, as additional allowance costs for non-EU carriers will be lesser (Transport Research Forum 2010)[46]. One caveat in these findings however, is that the non-EU carriers considered in these calculations comprised only the 10 largest non-EU carriers[47] in which no Indian airline featured. Even so, whether the findings mean that Indian scheduled carriers can expect to attain a higher market share for international passenger traffic, remains to be seen.

Table 12: Comparison of initial allocation, forecasted emissions and acquisition costs[48] for different airline groups

	10 largest EU net-work carriers	10 largest non-EU network carriers
Free allocation of EU-allowances in Mt for 2012	60.8	24.0
Forecasted CO_2-emissions for 2012 in Mt	93.0	31.8
Percentage of free allocation	65.4	75.6
EU allowances to be acquired in Mt	32.2	7.8
Acquisition cost for additional allowances (25 € per allowance) in million €	805.3	193.9
Acquisition cost for additional allowances (40 € per allowance) in million €	1288.5	310.2

[45] Burden from carbon tax will be minimal on India: EU. Sep 23, 2012. http://www.livemint.com/Politics/BJ9orqr6K0feTN8d91xJhJ/Burden-from-carbon-tax-will-be-minimal-on-India-EU.html?facet=print Accessed on 18 October

[46] The Economic Impact of the Upcoming EU Emissions Trading System on Airlines and EU Member States – An Innovative Modelling Approach http://www.trforum.org/forum/downloads/2010_14_Economic_Impact_EU_Emissions_Airlines.pdf Accessed on 16 October 2012.

[47] Singapore Airlines, American Airlines, Emirates, United Airlines, Delta Air Lines, Cathay Pacific, Continental, Thai,
Korean Air and Japan Airlines

[48] Acquisition costs refer to the costs of purchasing emission allowances

Source: The Economic Impact of the Upcoming EU Emissions Trading System on Airlines and EU Member States – An Innovative Modelling Approach, Transport Research Forum 2010.

Major import commodities from the EU are gems and jewelry (22%), engineering goods (19%) and electrical machinery and equipment (11%), which do not form part of basic necessities. Further, India on the whole imports little of its food requirements (Table 12), making it unlikely that citizens will face rise in prices of essential commodities in this context. Intuitively, an increase in prices of imports may have negative effects on the economy because the manufacturing and heavy industries utilizing these import items (e.g. auto industry) may pass their increased costs to consumers which may prompt consumers to reduce the uptake of discretionary products. Whether the increase in India's middle class means price rises will not make a significant impact on consumer spending, is difficult to predict. In situations where increased costs are not wholly transferred, company revenues and profits would decline, consequently impacting the economy.

India's dependence on Middle-east and Asia for trading, in particular for its crucial crude oil requirements, may cushion the country from the EUETS. But Europe still is a significant trade partner, particularly for exports, so economic impacts are likely to be felt. The tax may decrease competiveness of India's exports, resulting in possible reduction in foreign exchange earnings.

VI.6. Plans for Port Expansions

Port capacity expansions are being planned through construction of additional berths at major ports, mechanization, deepening of harbours to accommodate bigger vessels, and improved rail and road connectivity (Table 8). The biggest public-private partnership project in the ports sector as well as the largest dredging project has been approved recently in JNPT, Mumbai. Increased trans-shipment of Indian EXIM containers is expected in future, particularly at Cochin port where an International Container Transhipment Terminal has been newly built (Government of India Ministry of Finance)[49]

Table 8: Status of Port Projects as presented in Indian Parliament, August 2011

[49] Union Budget and Economic Survey 2011-12, Chapter 10 http://indiabudget.nic.in/es2011-12/echap-10.pdf Accessed on 15 October 2012

Status of Port Projects as presented at Rajya Sabha on 4 August 2011

Sr.	Project	Name of Dept. / Agency	Estd. Cost (in Cr.)	Structure	Date of Award	Likely date of completion
1	Development of Container Terminal at Ennore.	Ennore Port	1407	BOT	13 August 2010	Feb, 2014
2	LNG Re-gasification Terminal at Cochin.	Cochin Port	3500	Captive	13 March 2009	March, 2012
3	Construction of Offshore Container Berths and Development of terminal on BOT basis at Mumbai Harbour at Mumbai Port	Mumbai Port	1460.52 (I.R 445, Pvt Inst.1016) Rs. 1460.52	BOT	1 April 2009	Sep. 2012
4	Construction of Captive Jetty for handling Coal by M/s. NPCL at NMPT	New Mangalore Port	230	Captive	9 May 2008	March, 2011
5	Construction of Coal Berth at NBW for NLC – TNEB at Tuticorin	VOC Port, Tuticorin	49.50 (Captive)	Captive	January 2010	Nov,2011
6	Construction of North Cargo Berth-II at Tuticorn	VOC Port, Tuticorin	332.16	BOT	12 August 2010	Oct, 2012
7	Construction of Deep Draft Iron Ore Berth at Paradip.	Paradip Port	591.35	BOT	1 July 2009	July 2013
8	Construction of Deep Draft Coal Berth at Paradip.	Paradip Port	479.01	BOT	21 August 2009	July 2013
9	Multi-purpose Berth at Paradip to Handle Clean Cargo including Containers	Paradip Port	387.31	BOT	5 July 2010	July 2013
10	Setting up of Mechanised Iron Ore Handling Facilities at Berth No- 14 at New Mangalore	New Mangalore Port	296.03	BOT	23 September 2009	Oct. 2011
11	Development of Coal Handling Teminal at Berth no- 7 at Mormugao	Mormugao Port	252 (406 as per Financing Plan)	BOT	7 August 2009	May 2013
12	Development of 13th Berth other than liquid and container cargo berth) at Kandla.	Kandla Port	188	BOT	19 September 2009	March, 2013
13	Development of 15th multipurpose cargo berth at Kandla.	Kandla Port	188.87	BOT	7 December 2010	July, 2013
14	Development of 16th multipurpose cargo berth at Kandla.	Kandla Port	188.87	BOT	7 December 2010	July, 2013
15	Setting up of Captive Barge Jetty at Old Kandla (IFFCO)	Kandla Port	27.00	Captive	17 February 2011	Aug,2013
16	Development of Western quay(WQ-6) in the northern arm of Inner harbour of VPT for handling Dry bulk cargo at Vizag	Visakhapatnam Port	114.50	BOT	28 December 2009	Dec. 2011
17	Development of EQ-10 berth in Inner Harbour for handling liquid cargo at Vizag	Visakhapatnam Port	55.38	BOT	2 March 2010	Aug. 2012
18	Mechanised Coal handling facilities at General cum Cargo Berth(GCB) in the Outer Harbour at Vizag	Visakhapatnam Port	444.10	BOT	1 March 2010	Dec, 2012

S.						
19	Development of EQ-1 by replacement of Equity EQ-1 and Part of EQ-2 in Inner Harbour to Handle Steam Coal at Visakhapatnam Port	Visakhapatnam Port	323.18	BOT	19 March 2011	Aug. 201 (not firme dependin signing of
20	Development of EQ-1A on South side of EQ-1 for Handling Thermal Coal and Stem Coal in the inner harbour of Visakhapatnam Port	Visakhapatnam Port	313.39	BOT	19 March 2011	- do -
	Total		10348.29			

Source: Press Information Bureau (PIB) Website

Source: National Conclave on Shipping 2012 Background paper, Deloitte.

From the above table, it appears that expansion plans are geared towards anticipations of future increases in coal, iron ore, and container cargo.

In order to comply with the mandatory measures for increasing energy efficiency and reducing maritime emissions of greenhouse gases adopted by the International Maritime Organization (IMO) in February 2012, the Indian Directorate General of Shipping has reportedly initiated steps to survey Indian ships. These measures, which will come into effect from January 1, 2013, include guidelines on: calculating the Energy Efficiency Design Index (EEDI) for new ships, developing a Ship Energy Efficiency Management Plan (SEEMP) for all ships, surveying and certifying the EEDI, and calculating reference lines for use in the EEDI.

VI.7. Modelling results

The Global Emissions Trading for international aviation and shipping (MBM1a) scenario predicts that the reduction in India's GDP will be relatively small at -0.005% - smaller than impacts on all other case study economies bar Togo, for which overall impacts are predicted to be positive – see part 7 of Togo case study. Of the modelled reduction in India's GDP, the majority of this (-0.004%) is through the maritime sector, with the additional 0.001% from impacts on aviation. India's dependence upon maritime transport for trade and limited dependence upon air-based trade can go towards explaining this distribution of results. Further, significant dependence upon terrestrial transport, a modest trade intensity and a rapidly growing economy can explain the relatively small predicted impacts on national GDP. However, it is important to note that GDP results may not be indicative of real impacts on Indian citizens. The very high levels of poverty, with a third of the population living below the USD 1.25 poverty line, suggests that much of the population could suffer severe negative impacts as a result of increases in commodity import costs.

When revenue recycling is accounted for, total impacts on Indian GDP are predicted to be slightly less negative, at -0.002%, with impacts on aviation predicted to be positive (0.001%), slightly buffering the still negative but reduced impacts on shipping (-0.003%). India currently hosts about 50% of world's CDM projects. If this trend will continue and 30% of offsets demanded by international aviation and shipping will be provided by India in 2025 then this is likely to compensate for the losses from MBMs for international aviation and shipping and result in 0.055% increase of Indian GDP.

VI.8. Similar Countries

Geographically, developing economies with a large coastline would be similarly impacted owing to their dependence on maritime trade, especially those for whom the EU is a large export or import destination. Also, developing economies where tourism forms an important portion of GDP and employment, would be impacted.

Evaluating the BASIC[50] group of rapidly developing economies, Brazil and South Africa both rely heavily on Europe for trade (China is not considered here as it is a separate case study)
South Africa counts tourism as an important revenue stream, it contributing 8.7% to GDP and employing 7% of the population directly and indirectly. The UK, France, Germany, Netherlands are among the 9 countries that account for 55% air arrivals and 61% foreign direct spend (Department of Trade and Industry, South Africa)[51]. EU's importance in South African trade is notable. The EU is the South Africa's largest trading partner, both in imports (EU 30% of the total) comprising machinery, transport equipment and chemicals, and in exports (EU 22% of the total) comprising fuels and mining products, machinery and manufactured goods (WTO; European Commission)[52]. The EU accounts for 20% of Brazil's exports and 20% of its imports, imports being mainly machinery and manufactured goods; and exports constituted mainly by crude materials and food (WTO; European Commission)[53].

Additionally, other countries likely to be affected are developing island states like Sri Lanka, where three-fourths of shipping trade volumes are transshipments, and for whom the UK is the largest trading partner by volume. (Sri Lankan Embassy to Belgium; UK Foreign Commonwealth office)[54]

[50] Brazil, South Africa, India and China
[51] Tourism http://www.thedti.gov.za/trade_investment/tourism.jsp Accessed on 20 October 2012
[52] South Africa country profile. http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=S&Country=ZA; South Africa profile http://ec.europa.eu/trade/creating-opportunities/bilateral-relations/countries/south-africa/ Accessed on 20 October 2012
[53] Brazil country profile http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Country=BR&Language=S; Brazil profile http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113359.pdf Accessed on 20 October 2012
[54] http://www.srilankaembassy.be/EUTables/Table4.pdf; http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/country-profile/asia-oceania/sri-lanka?profile=tradeInvestment Accessed on 20 October 2012.