

Boosting India's Exports by Linking LDCs into India's Potential Global Value Chains

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Executive Summary

India's global exports have increased at a steady pace since 2000, rising in absolute terms from US\$42 billion to US\$264 billion by 2015. However, imports have grown much faster during this period, from US\$53 billion to US\$391 billion. Accordingly, the country's trade balance has worsened over the years, falling to minus US\$126 billion in 2015. This has been aggravated by a continuous fall in exports since 2013. There is an urgent need to increase exports and reduce the value of imports in order to improve the balance of trade. In this context, the Department of Commerce at India's Ministry of Commerce and Industry requested the Trade Division of the Commonwealth Secretariat to provide technical assistance in the design, development and launch of a project aimed at identifying India's lead products in different markets in which India has a competitive advantage and therefore has the potential to increase its exports and form its own global value chains (GVCs), linking suppliers from least developed countries (LDCs) in to these value chains.

The five-year Foreign Trade Policy announced by India in April 2015 (FTP15) aims to promote the 'Make in India' initiative, grow India's participation in world trade and increase domestic value-added content in India's exports. One of the ways in which India can simultaneously achieve these objectives is by initiating its own GVCs, so that the GVCs not only increase India's share in world trade but also improve its trade competitiveness. The 'LDC package' offered by India provides an opportunity to strengthen India's GVCs by linking in competitive LDCs. In this context, the main objective of this study is to assist India in increasing the value and volume of its exports and making its exports more globally competitive. This study contributes to the 'Make in India' campaign by identifying India's lead products in 50 different markets (including Regional Comprehensive Economic Partnership countries, the EU, the USA and selected African countries) and estimating the potential market share that India can capture in these identified markets. The study

further identifies inputs that India can source from LDCs at more competitive rates than their current sources, thus linking LDCs in to its GVCs.

Using a rigorous methodology of competitive analyses, 35 unique lead products for India have been identified, with 71 lead product-market combinations. For each identified lead product, the potential market share has been estimated. The potential market share for India's lead products, identified in 50 markets, amounts to around 16 Billion. The existing exports in these products in the same period were 8.2 billion implying that there is a potential to increase exports of these lead products by 89 per cent. In the US market, annual exports of these lead products, worth 6.4 billion in the period of analysis, could increase to 18 billion per year, a rise of almost 180 per cent, while in UK exports of the lead products could increase to 2 billion from only 0.4 million. In the EU (minus the UK), annual exports of lead products have the potential to increase to 2 billion (a 180 per cent increase) from a mere 710 million.

To identify the inputs that could be sourced more competitively from LDCs, the study uses the unit cost methodology and identifies 20 LDCs that are more cost-competitive sources of inputs for India than the existing ones. **Together, these LDCs could export around US\$12 billion per year in inputs into India's lead export products.** Uganda was found to have maximum potential market access into India (US\$2.4 billion), followed by Tanzania (US\$1.9 billion). Furthermore, the study identified **30 inputs for potential regional investment in 10 LDCs and 29 inputs for potential Indian investment in 8 LDCs.** For example, packaging was identified as one of the areas where Indian investments could productively increase Africa's export capacity and help it to link in to India's GVCs. Wagons, leather, dyes, motors and carpets were identified as finished products for which inputs could be sourced more competitively from Africa.

To actualise the potential trade estimated by this study, it will be important to initiate a common sustainable platform where producers, exporters and importers from Africa and other LDCs can network with Indian firms. For this purpose, the Secretariat suggests initiating **India's Commonwealth Small and Medium-Sized Enterprise (SME) Association.** The main objectives of this association would be to provide a sustainable platform to enable exporters and importers to meet regularly and build awareness of existing global standards, as well as to encourage regional and extra-regional investments in areas where African LDCs are competitive but lack supply capacity.

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1. Introduction: Linking LDCs in to India's Potential Global Value Chains

India announced its five-year Foreign Trade Policy (FTP15) in April 2015, with the broad objective of promoting the 'Make in India' initiative. The FTP15 aims to grow India's participation in world trade and increase domestic value-added content in India's exports, along with promoting 'brand India'. One of the ways in which India can simultaneously achieve these objectives is by initiating its own global value chains (GVCs), so that the GVCs not only increase India's share in world trade but also improve its trade competitiveness. The increase in India's intensive margin of trade (volume of trade with existing partners) and extensive margin of trade (number of products traded) needs to be matched by a rise in its number of trading partners.

The 'LDC package' offered by India (Duty-free Tariff Preference scheme) provides an opportunity to strengthen India's GVCs and increase its number of trading partners. However, existing supply constraints, both in India and in partner LDCs, have led to underuse of the scheme, restricting India's engagement with potential trading partners. Furthermore, at present, India has a limited number of products for which it leads GVCs; as a result, the proportion of total value added created by trade is not more than 1 per cent in India, compared with 9 per cent for China (Banga, 2015). In terms of India's linkages in GVCs, evidence also suggests that India's backward participation has been higher than its forward participation.¹ The imported content of India's exports in fact increased from 13 per cent to 27 per cent between the mid-1990s and the mid-2000s.² Strong backward linkages can provide the opportunity to upgrade GVCs and increase the value of exports.

In this context, the main objective of this study is to **identify India's lead products**, for which India can form its own GVCs and **identify the LDCs that can link in to India's GVCs** by supplying inputs more competitively than existing sources. The study also estimates the potential market share that the lead products can capture in the identified markets.

Inputs that are currently being sourced domestically have not been included in the analysis, in order to leave the existing domestic supply chains intact. Only those inputs that are currently being imported in producing the lead products are examined, and LDCs that can link in to India's GVCs by supplying these inputs are identified.

The four main contributions of this study are the following:

- First, it identifies the **lead products of India**, through which India has the potential to increase its exports to the identified markets.
- Second, it estimates the **potential market share** that India can capture in the identified markets, which includes around 50 countries: **Regional Comprehensive Economic Partnership (RCEP) countries (15)** – Brunei, Myanmar, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam, Australia, China, Japan, South Korea and New Zealand; the **EU (28)** – Austria, Belgium, Bulgaria, Croatia, the Republic of Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom; **the United States of America**; and **African countries (6)** – Kenya, Ethiopia, Ghana, Nigeria, Tanzania and Uganda.
- Third, it identifies inputs that can be sourced more competitively from LDCs and also estimates the **potential market access that LDCs will have if they link in to India's GVCs by supplying inputs**.
- Fourth, it identifies **potential investment areas for regional investments and for Indian investments in LDCs** that will enable LDCs to link in to India's GVCs.

Section 2 reports the existing trends in India's exports to the 50 identified markets and the composition of products sourced. Section 3 reports the data sources. Section 4 discusses the methodology used to identify the lead products and the potential GVCs. Section 5 presents the results with respect to India's lead products. Section 6 presents the results with respect to linking LDCs. Section 7 discusses opportunities for investments in these LDCs. Finally, Section 8 summarises and concludes.

2. Existing Trends in India's Trade

2.1 India's global exports and imports

India's global exports have increased at a steady pace since 2000, rising in absolute terms from US\$42 billion to US\$264 billion by 2015. However, imports have grown much faster during this period, from US\$53 billion in 2000 to US\$391 billion in 2015 (Figure 1). Accordingly, the country's trade balance has worsened over the years, falling to minus US\$126 billion in 2015. The continuous fall in exports since 2013 urgently needs to be addressed. In this context, it becomes important to examine the potential market access that India can gain in other countries.

2.2 India's trade with the identified markets

We examine the existing trends in India's exports in the following 50 identified markets:

- RCEP countries (15) – Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam, Australia, China, Japan, South Korea and New Zealand;

Figure 1. India's global exports, imports and trade balance (US\$ billion)

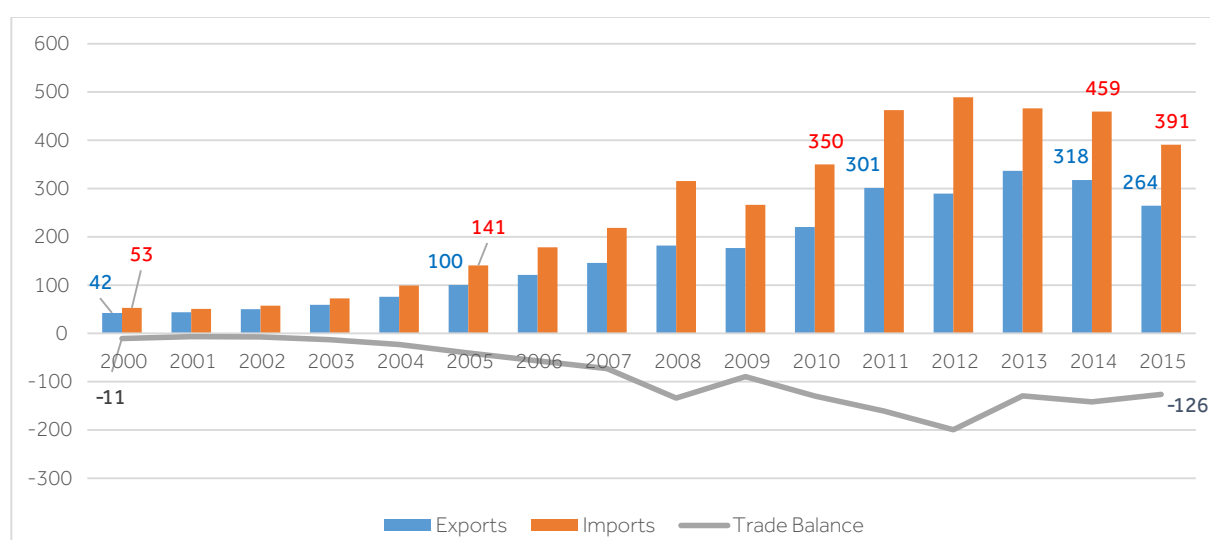


Table 1. Exports as a proportion of India's global exports (%), 2000 and 2015

	2000	2005	2010	2015
RCEP	14	22	23	18
EU-27	24	23	19	17
UK	5	5	3	3
USA	22	16	11	15
WTO LDCs	3	4	4	7
Total	69	70	60	60

Note: WTO LDCs, World Trade Organization LDCs (31 countries).

Figure 2. India's exports to the identified markets (US\$ million), 2000–2015



Figure 3. India's imports from the identified markets (US\$ million), 2000–2015

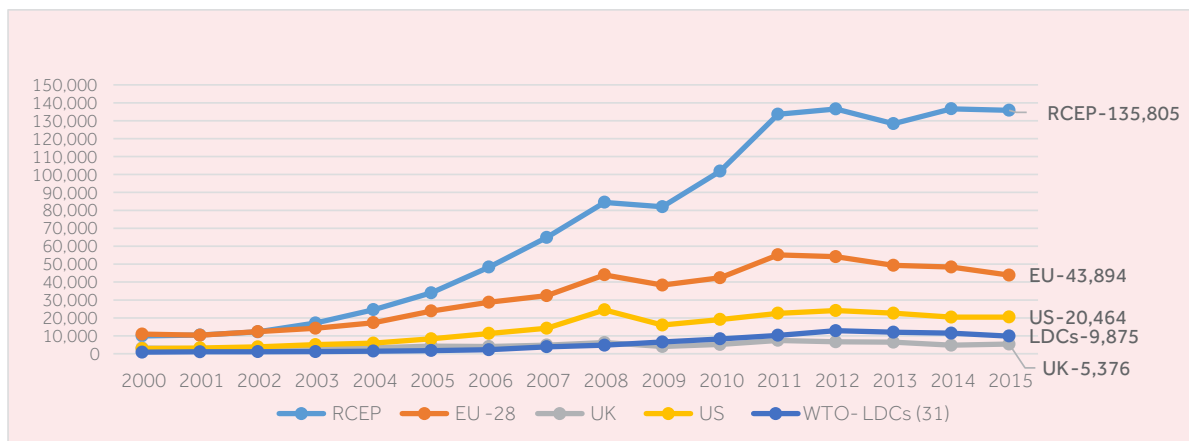
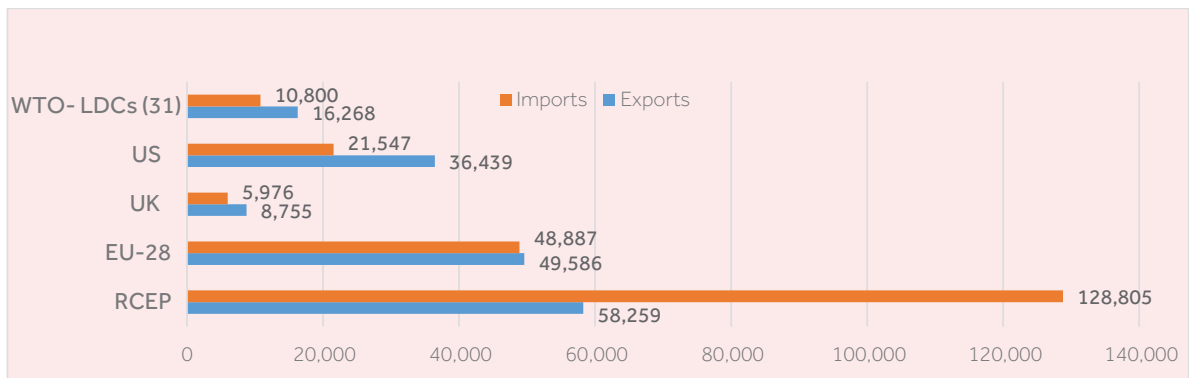


Figure 4. India's average exports and imports (US\$ million), 2010–2015



- the EU (27) – Austria, Belgium, Bulgaria, Croatia, the Republic of Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden;
- the UK;
- the USA; and
- African countries (6) – Kenya, Ethiopia, Ghana, Nigeria, Tanzania and Uganda.

Exports to the 50 markets as a proportion of India's global exports stood at 69 per cent in 2000 but fell to 60 per cent in 2010 and remained at this level in 2015 (Table 1). However, a clear shift is noticeable between the regional groups in terms of proportions of India's global exports. Exports to RCEP countries as a proportion of total exports increased from 14 per cent in 2010 to 18 per cent in 2015, although it declined from its initial rise of 23 per cent in 2010. The decline in India's exports to the EU as a proportion of its global exports has

been significant, from 24 per cent in 2000 to only 17 per cent in 2015. However, exports to LDCs increased in importance during the same period, increasing as a proportion of total exports from 3 per cent to 7 per cent. As of 2015, the RCEP countries as a whole remain the largest market for India, followed closely by the EU and the USA.

Figures 2, 3 and 4 present the trends in India's exports to and imports from these markets over the period from 2000 to 2015. Two trends are noticeable: first the rise in imports from RCEP countries, the EU and the USA over this period; and second the increase in India's exports to LDCs. It is important to note that India has a negative balance of trade with RCEP countries but a positive balance of trade with the USA, the UK and LDCs. On average, over the period from 2010 to 2015, India's exports in absolute terms to LDCs, the USA and the UK were higher than its imports from these countries. However, on average India's imports from RCEP countries were much higher than its exports to them.

Table 2. Exports to and imports from RCEP countries as proportions of India's total exports and imports (%), 2000 and 2015

Country	Exports		Imports	
	2000	2015	2000	2015
Australia	6	7	11	7
Brunei	0	0	0	0
Cambodia	0	0	0	0
China	12	11	15	45
Indonesia	6	7	10	10
Japan	30	20	22	7
Republic of Korea	7	8	8	10
Laos	0	0	0	0
Malaysia	9	10	13	7
Myanmar	1	1	2	1
New Zealand	1	2	1	0
Philippines	3	3	1	0
Singapore	13	16	14	5
Thailand	9	9	3	4
Vietnam	3	6	0	2

Figure 5. The composition of India's exports to RCEP countries

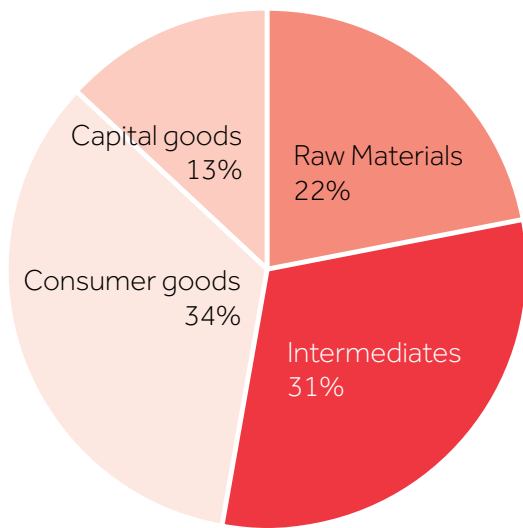
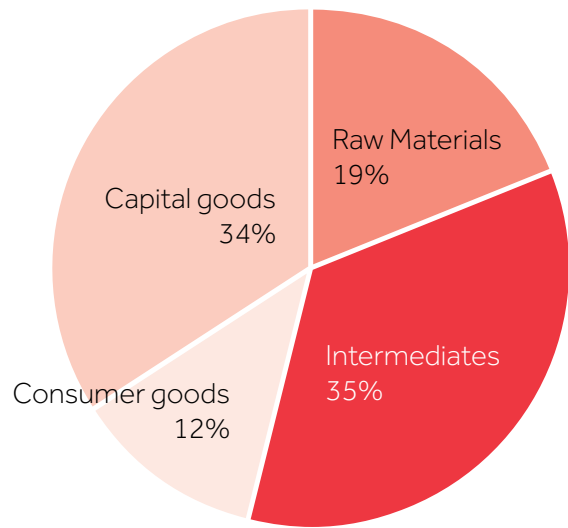


Figure 6. The composition of India's imports from RCEP countries



Note: Figures 5 and 6 were drawn by the authors based on the United Nations Conference on Trade and Development (UNCTAD) classification of goods into raw materials, intermediates, consumer goods and capital goods. The data is from World Integrated Trade Solution (WITS) COMTRADE.

Figure 7. Destination of India's exports to the EU by country (%), 2000 and 2015)

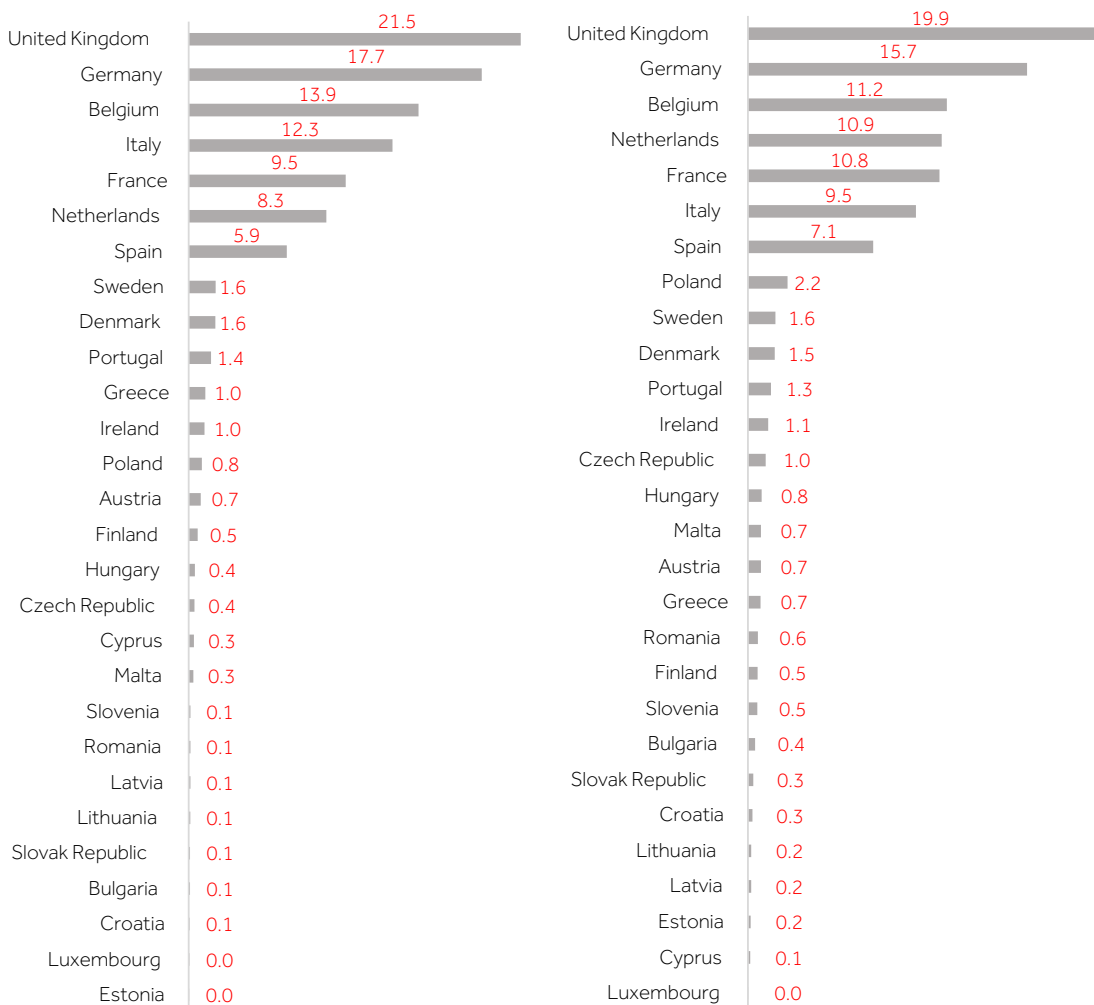


Figure 8. The composition of India's exports to the USA

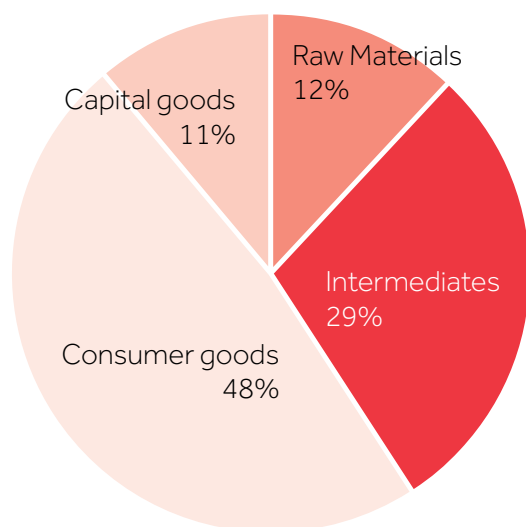
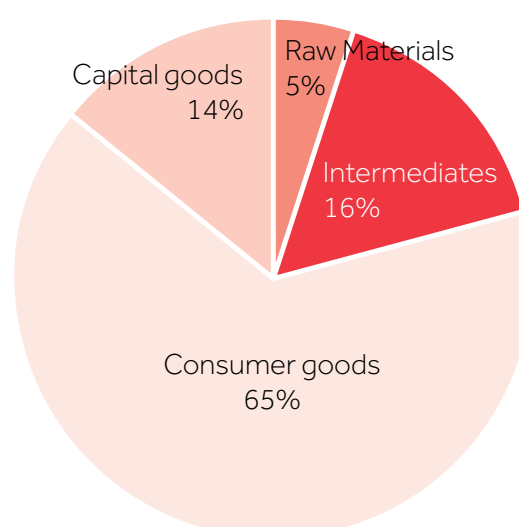


Figure 9. The composition of India's exports to the UK



Note: Figures 8 and 9 were drawn by the authors based on the UNCTAD classification of goods into raw materials, intermediates, consumer goods and capital goods. The data is from WITS COMTRADE; figures are averages for 2012–2014

2.3 India's trade with RCEP countries

Exports to and imports from individual RCEP countries as proportions of India's total exports and imports to RCEP countries are reported in Table 2. In 2015, exports to Japan made up the largest proportion of India's exports to RCEP countries, at 20 per cent, although this had declined from 30 per cent in 2000. Singapore is the next biggest destination for India's exports in RCEP countries, with a proportion of 16 per cent, followed by China (11%) and Malaysia (10%). On the import side, China is the largest source of imports to India among the RCEP countries, with imports from China as a proportion of all RCEP imports to India growing from 15 per cent to 45 per cent between 2000 and 2015, while imports from Japan and Malaysia both fell, from 22 per cent and 13 per cent, respectively, to only 7 per cent.

The compositions of India's exports to and imports from RCEP countries (average figures for 2012–2014) are shown in Figures 5 and 6. India mainly exported consumer goods, while those imported from RCEP countries were largely intermediate and capital goods.

2.4 India's trade with the EU

India's exports to and imports from individual EU countries as proportions of its total EU exports and imports in 2000 and in 2015 are depicted in Figure 7. India's top export destinations in the EU are the UK, Germany, Belgium, the Netherlands, France, Italy and Spain. Together, these seven countries account for around 80 per cent of India's exports to the EU.

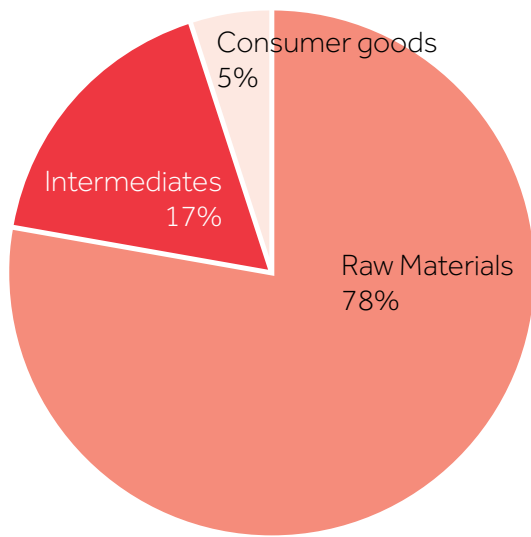
2.5 India's trade with the USA and the UK

India's exports to the USA and the UK are detailed in Figures 8 and 9, which show that the exports are mainly consumer goods.

2.6 India's trade with LDCs

The WTO list of LDCs consists of Angola, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, the Central African Republic, Chad Congo, Djibouti, Gambia, Guinea, Guinea Bissau, Haiti, Laos, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Solomon Islands, Tanzania, Togo, Uganda, Vanuatu, Yemen and Zambia.

Figure 10. The composition of India's imports from LDCs



Note: Figure 10 was drawn by the authors based on the UNCTAD classification of goods into raw materials, intermediates, consumer goods and capital goods. The data is from WITS COMTRADE; values are averages for 2012–2014.

India's imports from LDCs comprise mainly raw materials (Figure 10), proving that India could possibly switch from other input sources to LDCs, possibly at lower unit values.

India's dependence on some LDCs as import sources increased significantly during the period from 2000 to 2015 (Figure 11). For example, India's imports from Tanzania increased from only US\$100 million in 2000 to nearly US\$1 billion in 2015.

Turning to import composition, India's dependence on LDCs as sources of raw materials and intermediate products has risen (Figure 12). Note that India imported an average of nearly US\$780 million in raw materials and intermediates from Tanzania during 2012–2014. Dependence on LDCs such as Guinea, Mozambique, Zambia and Burkina Faso increased substantially between 2000 and 2015. Figure 12 shows the composition of India's imports from LDCs. It is mainly intermediate products that are imported from Tanzania, Zambia, Senegal and Nepal, while raw materials make up a much larger proportion of imports from Guinea, Mozambique, Togo and Benin.

Figure 11. India's imports from LDCs by country (US\$ million), 2000 and 2015

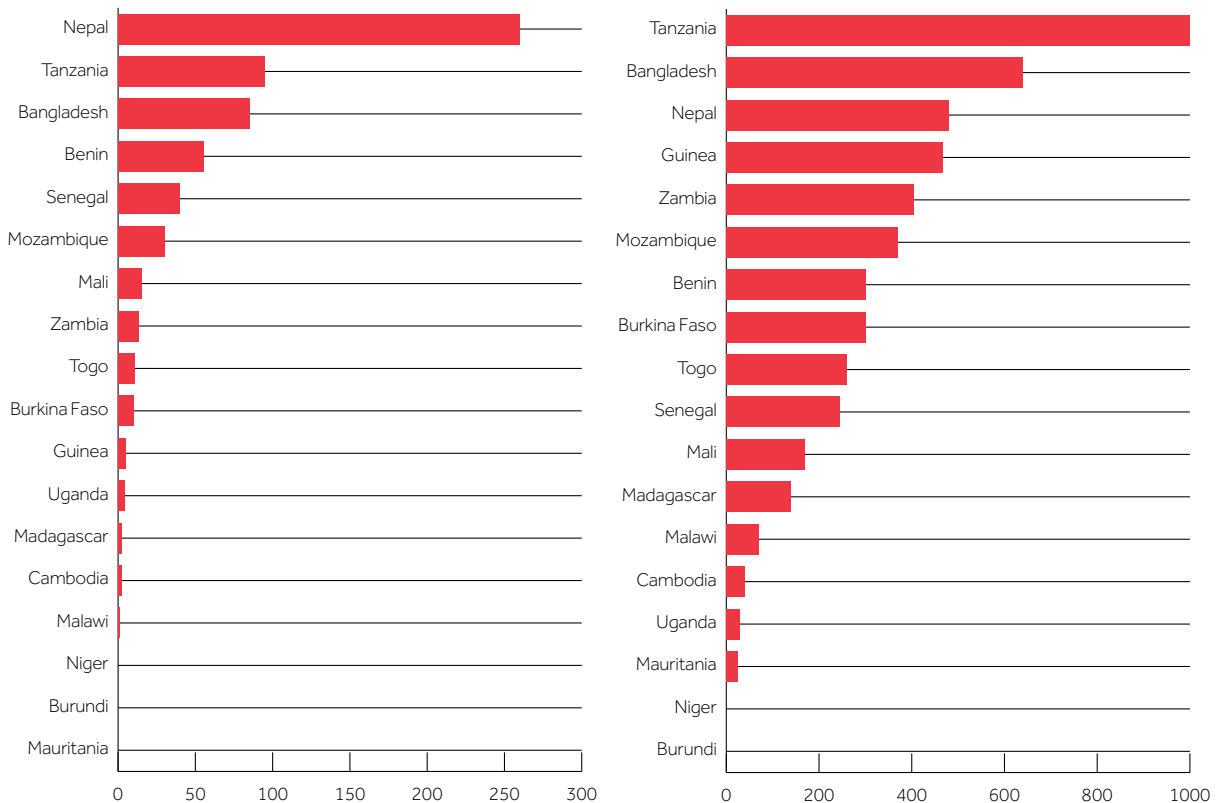
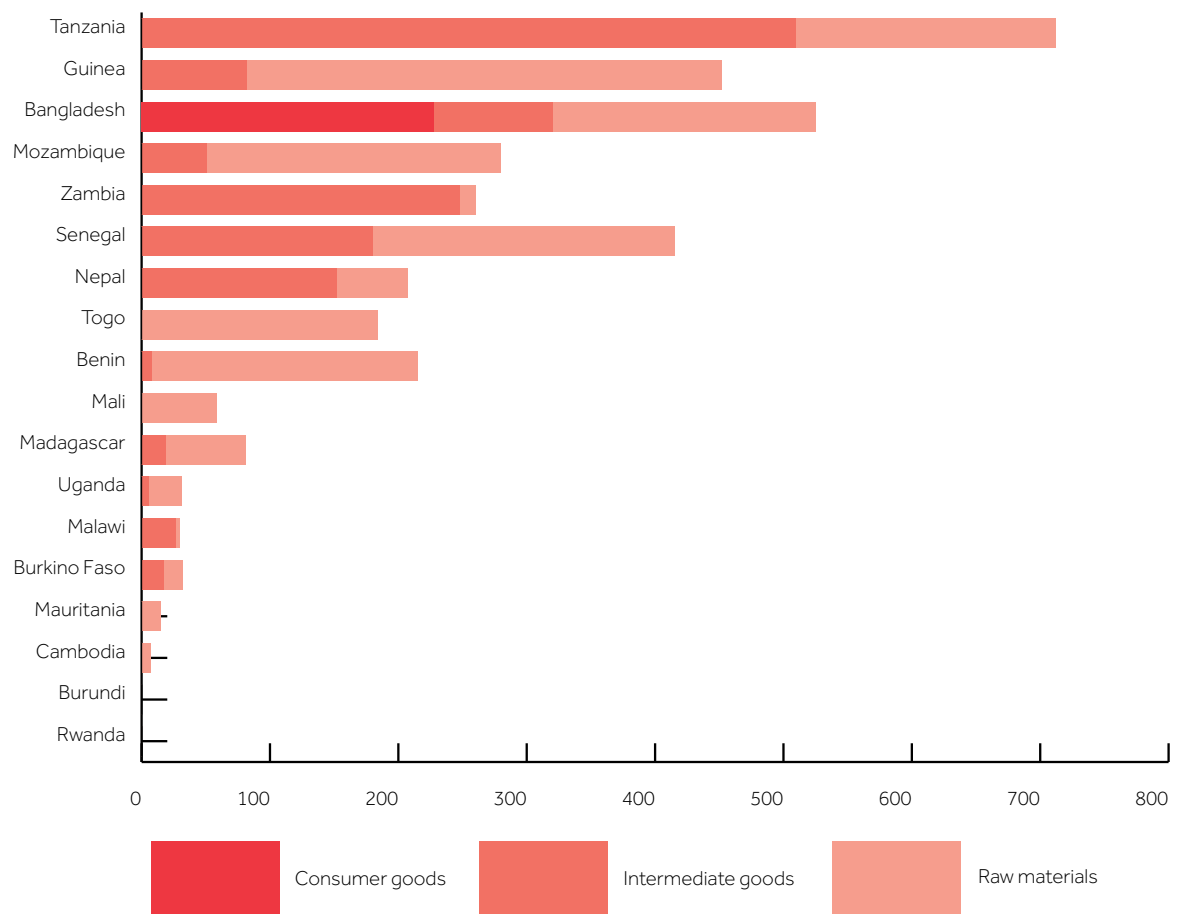


Figure 12. India's imports from LDCs (US\$ million), 2012–2014



Note: Figure 12 was drawn by the authors based on the UNCTAD classification of goods into raw materials, intermediates, consumer goods and capital goods. The data is from WITS COMTRADE; values are averages for 2012–2014.

3. Data Sources

The following sources of data were used to identify the lead products for India, the potential market shares for those products and the corresponding potential GVCs:

- Trade data from WITS COMTRADE for 2012, 2013 and 2014. All estimates were made using three-year averages.
- Correspondence tables:
 - UN Broad Economic Categories (BEC) harmonised system (HS) 2007;
 - Concordance of Standard Input Output Norms (SION) and HS 2007 using the BEC;
 - World Input–Output Database (WIOD).

The list of inputs was identified using SION. The SION inputs were matched with the HS 6-digit descriptions. The BEC provided the distribution of India's inputs at the HS 6-digit into primary and processed inputs. This generated the first list of potential inputs for the final products in our analysis. Using a systematic search procedure, the descriptions of the HS products were matched with those from SION. It is important to note that the BEC provided specific criteria for identifying inputs that are used in manufacturing final goods and was therefore the first criterion for generating the potential list. The SION provided more specific information for India and gave an idea of India's imported inputs for specific inputs.

In addition, this study used data from the WIOD (Marcel P. Timmer 2015) to examine India's imported content for inputs used for the final goods identified above at a broad level. The year taken for comparisons between these databases was 2011. While this is a preliminary comparison, it gives an insight into matching data with the input–output analysis.

4. Methodology

The methodology used for the study can be broadly categorised into two components:

1. identifying the lead products;
2. identifying LDCs that can link in to India's GVCs for lead products.

To identify the lead products, a three-step methodology was applied:

- **Step 1:** identify the finished consumer and capital goods that are exported by India to the identified markets.
- **Step 2:** undertake a competitiveness analysis comparing India's products with those of the lead exporters in the identified markets.
- **Step 3:** identify lead products and estimate their potential market share.

4.1 Identification of India's lead products

To identify India's lead products for export, two strategies were followed:

1. A quantitative analysis was undertaken at the HS 6-digit product level to identify the lead products across the 50 identified markets. A competitiveness analysis was combined with a matching exercise to obtain the list of these lead products.
2. An industry consultation was undertaken, with big firms asked to identify further lead products. This was essentially a qualitative component of our study, which revealed additional lead products based on industry opinion about export markets.

The steps are further detailed below.

Step 1: Identify the finished consumer and capital goods that are exported by India to the identified markets

The first stage of the analysis was to identify lead products for which India has a competitive position and a correspondingly high potential market share and could thus form its own GVCs. For this purpose, it was important that the products were finished products for purchase by consumers

or capital goods to be consumed by industry. Finished products among India's exports were identified on the basis of the UN BEC.³ A threshold of US\$50 million exports was applied along with the criterion that the product is exported to more than four markets. Trade data from WITS using HS 2007 at the 6-digit level for the years 2012 to 2014 was used to identify the finished products. The analysis was based on average trade flows over three years to avoid any year-to-year fluctuations in Indian exports, and the four-market criterion was used to avoid products that are exported to only some markets in some periods to overcome supply shortages.

The analysis to identify lead products needed to be market based, as the lead products need to be competitive and able to capture global market share for India. Therefore, a market intelligence study was conducted to examine the competitiveness of the lead products in 50 identified markets.⁴

The markets considered are: RCEP countries (15) – Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam, Australia, China, Japan, South Korea and New Zealand; EU (28) – Austria, Belgium, Bulgaria, Croatia, the Republic of Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK; the USA; and African countries – Kenya, Ethiopia, Ghana, Nigeria, Tanzania and Uganda.

Using these markets and the identified finished products that India exports above the threshold of US\$50 million and to more than four markets, 289 product–market combinations at the HS 6-digit level were identified initially. Following additional robustness analysis, further product–market combinations were added.

Step 2: Undertake a competitiveness analysis to identify lead products

To estimate whether or not India is competitive in the identified markets, we examined three indices of competitiveness, comparing India with the top five exporters of the product to the identified market.

The literature generally uses bilateral revealed comparative advantage (BRCA) to compare countries' comparative advantages. However, RCA uses only export data and ignores the import content that goes into exports. To overcome this limitation, we use bilateral RCA in conjunction with contribution to trade balance (CTB) and market position (POS). The CTB index is based on imports of a product as well as exports of it. If a product makes a positive contribution to trade balance, it is identified. This index helps to exclude those products that are mainly traded (i.e. imported and then exported with little value addition).

Bilateral revealed comparative advantage

BRCA compares the proportion of a country's exports of a specific commodity (k) in its overall exports to a partner country (j) with the proportion of the country's exports of that specific product in its overall exports to the world. A country is said to have a comparative advantage in exports of product k to country j if its BRCA is greater than 1. BRCA can also be used to make cross-country comparisons. If a country has a higher BRCA than a competitor, it has a greater comparative advantage.

Algebraically, it can be written as:

$$BRCA = \frac{X_{ij}^k / X_{ij}}{X_{iw}^k / X_{iw}}$$

Where X = exports, i = exporter country, j = destination country, w = world, and k = commodity.

Contribution to trade balance

The Centre d'Études Prospectives et d'Informations Internationales has developed an analytical indicator of comparative advantage based on trade balance rather than relative export structures. A country j has a comparative advantage in product i if CTB is positive, meaning that product i is a strong point of country j, as it contributes positively to trade balance.

The contribution of product k to trade balance, in relation to total trade flows (X = exports and M = imports), is defined by:

$$CTB = f_{ik} = y_{ik} - g_{ik} \times y_i$$

Where:

$$y_i = 1000 \times \frac{X_i - M_i}{X_i + M_i} \quad g_{ik} = \frac{X_{ik} + M_{ik}}{X_i + M_i}$$

$$POS = 1000 \times \frac{X_{ik} - M_{ik}}{X_{iw} + M_{iw}}$$

Market position

The POS of each country i on product k measures its international competitiveness. POS greater than zero would imply that the product is competitive in the international market, while a POS of less than zero would imply that the product is not competitive. POS is defined as follows:

Step 3: Identify lead products and their potential market share

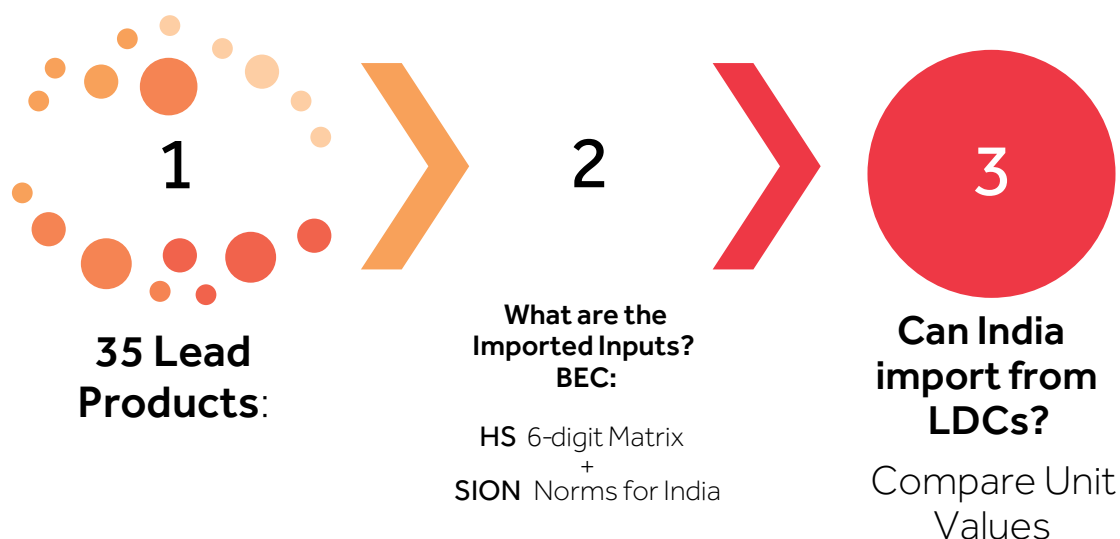
For each of the 289 product–market combinations, we identified India's top five competitors and then carried out the competitiveness analysis described above. Where India had a higher value in two of the three indices, RCA, POS and CTB, than the identified competitors, the products were identified as lead products.

4.2 Methodology for identifying LDCs for linking in to India's GVCs

4.2.1 Identify all inputs of lead products

In order to identify which LDCs can link in to India's potential GVCs for the lead products, we first traced the existing value chains for the identified lead products. The domestic value chains were removed from the analysis (i.e. inputs sourced domestically were removed from the total inputs sourced for production of the lead products). Only imported inputs were considered. An analysis was then undertaken to identify those LDCs that could provide India's imported inputs at a lower unit cost. This would enable LDCs to link in to India's GVCs

Figure 13. Methodology



and also enable India to source its inputs more competitively, increasing its cost competitiveness in the world market.

To undertake this exercise, we used the technique of matching, using the two concordances of HS 2007 6-digit classification to BEC classification and SION classification to HS 6- and 4-digit classifications. The methodology is summarised in Figure 13.

4.2.2 Identify imported inputs to lead products

To identify the potential imported inputs used in the production of lead products exported by India, inputs were classified as primary inputs or processed inputs that add value to the final goods, as shown in Figure 14.

This entailed identifying the underlying value chain where India sources inputs from other countries. An exhaustive list of India's inputs with HS 6-digit classifications corresponding to the BEC codes shown in Figure 14 was created for the period from 2012 to 2014.

Figure 14. Imported inputs for consumer goods

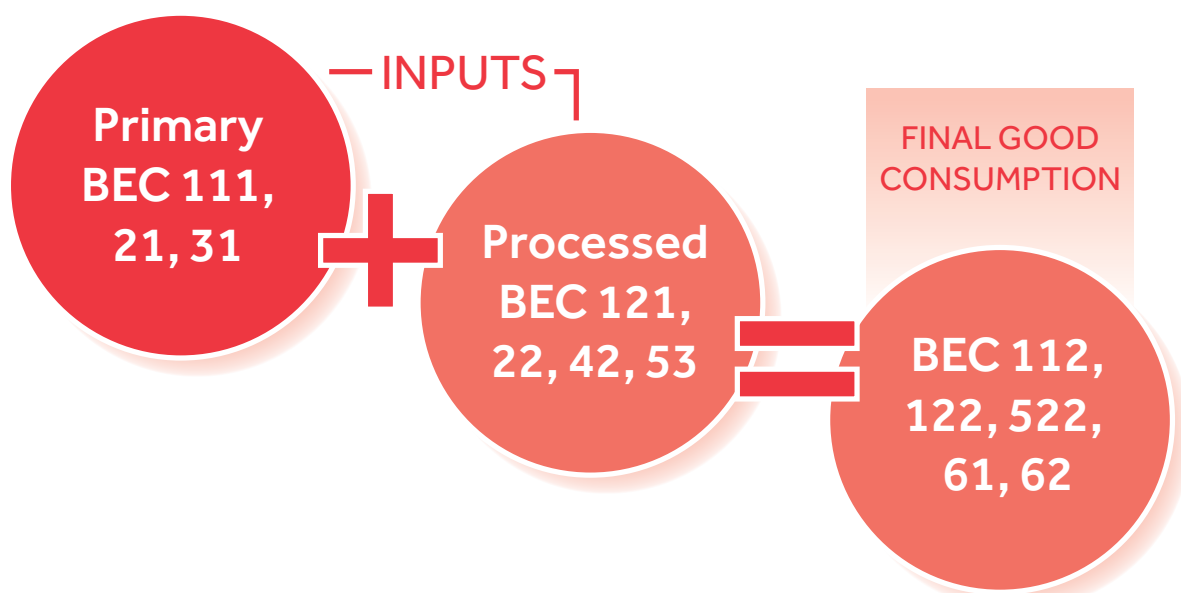
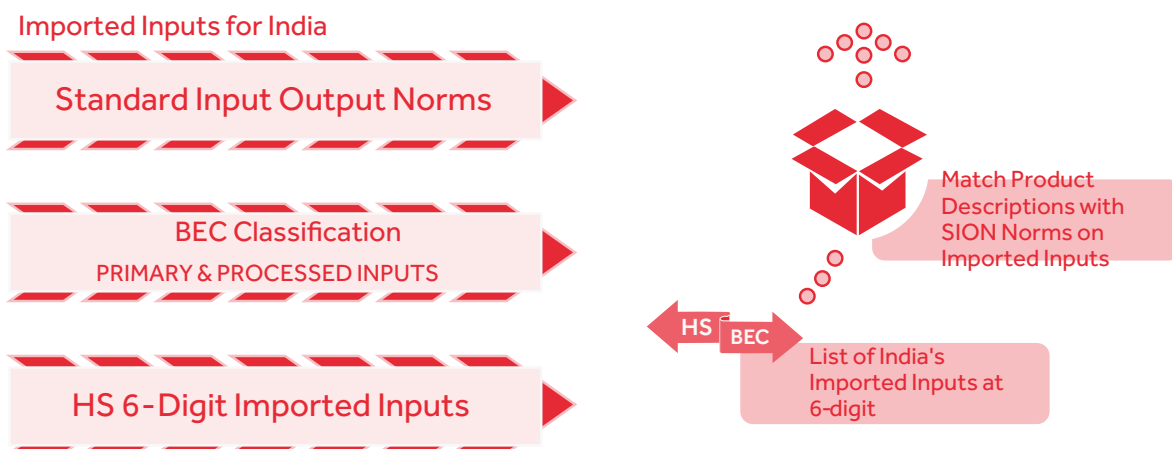


Figure 15. Tracing India's imported inputs



In addition, for capital goods, the BEC code for intermediate goods was BEC 42, while those for final goods were BEC 41 and BEC 521. However, tracing actual products used in the production of final goods is not straightforward. There are several issues arising from the fact that one input may be used for more than one final good. To deal with these issues, a new measurement framework is proposed for India to minimise possible errors resulting from the fact that a specific input is used for several final goods.

This method was developed based on two benchmarks: SION⁵ and the list of HS descriptions at the 6-digit level mapped to the BEC. SION gave the potential list of inputs that can be imported for use in production of the final goods for export. This list is matched with the complete list of imported products from the HS 6-digit classification mapped to the BEC. The BEC classification enables us to identify the inputs as primary or processed inputs (and also as capital goods). This step-wise process is outlined in Figure 15.

4.3 Unit Value Analysis

The next step was to undertake a unit value analysis of India's imported inputs to assess the cost component. Export or import unit value is defined as the ratio of the value of exports or imports to the quantity of exports or imports. Average import unit values were estimated for the three-year period from 2012 to 2014.

The import unit value for a potentially imported input from an LDC into India was compared with the existing import costs of India's imports. The global export unit value for the input from the LDC

was estimated. To this, a cost, insurance and freight (CIF) component was added, which was calculated as the difference between the export unit value to the country of the input to India and the import unit value to India of the input from the country. The difference is the adjustment factor. Using the adjustment factor, the final import unit value for the identified input from the LDC country was estimated. If the import unit value from the LDC was found to be lower than the import unit value from the current source, the input was identified as a potential export to India for the identified LDC.

The LDCs considered were Angola, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, the Central African Republic, Chad Congo, Djibouti, Gambia, Guinea, Guinea Bissau, Haiti, Laos, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Solomon Islands, Tanzania, Togo, Uganda, Vanuatu, Yemen and Zambia.

An additional exercise was undertaken to support the analysis and check if the results on the identified LDCs in terms of unit values were robust. This was done by undertaking a similar analysis using the HS 4-digit classification. This analysis generated a similar list of LDCs.

5. Identified Lead Products

Using the for identifying lead products described above, a competitiveness analysis was undertaken for each of the 50 identified markets; the competitiveness of India's exports was compared with that of the exports of the top five exporters in the market. Three indices were used for comparing competitiveness, namely RCA, CTB and POS. Using minimum thresholds for the competitiveness indices, **a list of 35 unique lead products of India was created, as well as a list of 71 lead product-market combinations where India has the potential to capture additional market share from the existing exporters and form its own GVCs.**

Potential market share was estimated for each of the identified lead products in each of the identified markets. The total estimated potential market share of 35 lead products in 50 markets amounts to US\$16 billion per annum. The existing exports of these products to the identified markets amounted to US\$8.2 billion in 2015. This implies that India can increase its exports of the 35 identified products to these 50 markets by 89 per cent

Table 3 lists the identified lead products for which India can form its own GVCs. The analysis also identified the markets where India would be

more competitive than the existing exporters of these products. The potential market share was estimated by adding up the existing market shares of the weak competitors.

The lead products are from 16 broad HS chapters. These cover processed agriculture products, such as processed fish, cashew nuts, etc.; appliances; dyes; leather articles; footwear; carpets; women's dresses; textile furnishing articles; jewellery; machinery; turbines; transformers; and tractors. Although the lead products were identified at the 6-digit level, the potential export basket could be much broader if the 4-digit level were considered.

The total potential market share for the identified lead products was estimated at almost 16 billion a year, compared with India's existing annual exports of these products of 8.2 billion. In the US market, existing annual exports of 6.4 billion, could increase to 18 billion per year, a rise of almost 180 per cent, while in UK exports of the lead products could increase to 2 billion from only 0.4 million. In the EU (minus the UK), annual exports of lead products have the potential to increase to 2 billion (a 180 per cent increase) from a mere 710 billion.

Table 3. Lead Products of India

Study No	HS 2007	HS Description	Total Potential Market Share across All Markets (1000 USD)	Markets	Additional Potential Market Share from Competitors* (1000 USD)	India's current Exports (1000 USD)	Total Potential Market Share (1000 USD)
1	710239	Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted	9,966,278	United States	9,101,058	5,800,000	14,901,058
				United Kingdom	865,220	98,897	964,117
				United States	793,678	5,977	799,655
				United Kingdom	102,017	1,020	103,037
3	620640	Women's/girls' blouses, shirts & shirt-blouses (excl. knitted/crocheted), of man-made fibres	645,755	United States	645,755	128,779	774,534
				Belgium	49,679	14,223	63,902
4	620630	Women's/girls' blouses, shirts & shirt-blouses (excl. knitted/crocheted), of cotton	589,688	Czech Republic	17,822	1,868	19,690
				Denmark	18,598	14,102	32,700
				Finland	16,083	2,969	19,052
				France	137,196	40,337	177,533
				Germany	223,477	97,073	320,550
				Portugal	23,527	2,556	26,083
				Sweden	25,123	14,663	39,786
				United Kingdom	78,183	83,211	161,394
				Belgium	34,403	10,409	44,812
				France	104,239	43,459	147,698
5	620442	Women's/girls' dresses (excl. knitted/crocheted), of cotton	487,460	Greece	10,702	1,992	12,694
				Japan	131,902	27,371	159,273
				Poland	24,606	5,272	29,878
				Portugal	13,949	2,922	16,871
				Slovak Republic	5,107	765	5,872
				Spain	56,645	42,056	98,701
				Sweden	15,616	9,921	25,537
				United Kingdom	90,291	93,716	184,007
				Austria	32,499	22,943	55,442
				Nigeria	386,654	238,866	625,520
				Kenya	47,830	33,578	81,408
				United Kingdom	444,671	93,716	538,387
6	871120	Motorcycles (incl. mopeds) & cycles fitted with an auxiliary motor, with/without side-cars, with reciprocating internal combustion piston engine of a cylinder capacity >50cc but not >250cc	466,983	United Kingdom	466,983	93,716	560,699
				United Kingdom	466,983	93,716	560,699
7	420222	Handbags, whether/not with shoulder strap, incl. those without handle, with outer surface of plastic sheeting/textile materials	444,671	United Kingdom	444,671	93,716	538,387
				United Kingdom	444,671	93,716	538,387

Study No	HS 2007	HS Description	Total Potential Market Share across All Markets (1000 USD)	Markets	Additional Potential Market Share from Competitors* (1000 USD)	India's current Exports (1000 USD)	Total Potential Market Share (1000 USD)
8	850421	Liquid dielectric transformers having a power handling capacity not >650kVA	322,351	United States	265,941	4,631	270,573
				United Kingdom	56,409	3,769	60,179
9	820559	Hand tools (incl. glaziers' diamonds), n.e.s.	269,456	United States	269,456	23,347	292,803
10	570500	Carpets & other textile floor coverings, n.e.s. in Ch.57, whether/not made up	247,844	Australia	23,361	11,740	35,101
				Croatia	1,465	769	2,234
				Greece	3,292	2,453	5,745
				Japan	190,137	14,997	205,134
				Malta	1,196	152	1,348
				New Zealand	6,850	1,639	8,489
				Portugal	4,895	6,089	10,984
				Slovak Republic	2,757	638	3,395
				Sweden	13,891	9,960	23,851
				United States	162,007	798	162,805
11	850422	Liquid dielectric transformers having a power handling capacity >650kVA but not >10000kVA	223,584	United Kingdom	61,577	8,234	69,811
				Austria	83,020	5,445	88,465
12	420310	Articles of apparel, of leather/composition leather	173,659	Czech Republic	11,372	2,129	13,501
				Italy	79,267	64,394	143,661
13	630492	Textile furnishing articles other than bedspreads (excl. of 94.04), not knitted/crocheted, of cotton	150,605	Australia	5,640	28,095	33,735
				Croatia	160	1,000	1,160
				Germany	64,960	51,543	116,503
				Greece	956	1,708	2,664
				Ireland	2,242	1,951	4,193
				Japan	17,262	13,799	31,061
				Latvia	615	1,121	1,736
				New Zealand	509	3,526	4,035
				United States	58,261	258,769	317,030
				United States	128,114	14,359	142,473
14	820411	Hand-operated spanners & wrenches, non-adjustable	128,114	Cyprus	402	265	667
				Greece	1,594	3,564	5,158
				Italy	65,865	33,410	99,275
				Portugal	11,097	4,759	15,856
				Spain	37,397	66,255	103,652
15	30741	Cuttle fish & squid, live/fresh/chilled	116,355	Cyprus	402	265	667
				Greece	1,594	3,564	5,158

Study No	HS 2007	HS Description	Total Potential Market Share across All Markets (1000 USD)	Markets	Additional Potential Market Share from Competitors* (1000 USD)	India's current Exports (1000 USD)	Total Potential Market Share (1000 USD)
16	320411	Disperse dyes & preparations based thereon	62,066	United States	47,974	4,013	51,987
17	570310	Carpets & other textile floor coverings, tufted, whether/ not made up, of wool/fine animal hair	56,505	United Kingdom	14,092	909	15,001
18	90420	Fruits of the genera Capsicum/Pimenta, dried/crushed/ ground	55,126	United States	56,505	155,472	211,977
19	320412	Acid dyes, whether/not pre-metallised, & preparations based thereon; mordant dyes & preparations based thereon	39,336	China	2,067	11,214	13,281
20	320414	Direct dyes & preparations based thereon	37,329	Indonesia	9,766	20,742	30,508
21	621143	Track suits (excl. knitted/crocheted), women's/girls'; other garments, n.e.s. (excl. knitted/crocheted), women's/girls', of man-made fibres	27,207	Malaysia	25,197	69,978	95,175
22	320413	Basic dyes & preparations based thereon	20,405	Thailand	18,096	67,487	85,583
23	80132	Cashew nuts, shelled	21,377	United States	25,148	12,675	37,823
24	630419	Bedspreads other than knitted/crocheted	20,586	United Kingdom	14,188	3,870	18,057
25	320415	Vat dyes (incl. those usable in that state as pigments) & preparations based thereon	17,168	United States	30,052	12,569	42,621
26	840681	Steam turbines & other vapour turbines (excl. for marine propulsion), of an output >40MW	12,948	United Kingdom	7,277	2,436	9,713
				Bulgaria	881	880	1,761
				Denmark	26,326	35,619	61,945
				United States	13,698	3,302	17,000
				United Kingdom	6,707	2,217	8,924
				Brunei	20	830	850
				Luxembourg	21,357	223	21,580
				Croatia	377	1,358	1,735
				Czech Republic	1,120	1,448	2,568
				Denmark	2,413	9,639	12,052
				Germany	11,284	55,655	66,939
				Latvia	433	2,610	3,043
				Slovenia	256	795	1,051
				Sweden	4,703	9,446	14,149
				United States	14,155	3,860	18,015
				United Kingdom	3,013	2,071	5,084
				United Kingdom	12948	10,461	23,409

Study No	HS 2007	HS Description	Total Potential Market Share across All Markets (1000 USD)	Markets	Additional Potential Market Share from Competitors* (1000 USD)	India's current Exports (1000 USD)	Total Potential Market Share (1000 USD)
27	640351	Footwear (excl. waterproof) with outer soles & uppers of leather, covering the ankle (excl. of 6403.12- 6403.40)	11,126	Cyprus	2,804	255	3,059
				Finland	3,033	529	3,562
				Luxembourg	3,973	69	4,042
				Slovenia	1,316	1,940	3,256
28	843830	Machinery for sugar manufacture	10,569	Ethiopia	10,569	12,592	23,161
29	870190	Tractors n.e.s. in 87.01 (excl. of 87.09)	9,383	Tanzania	9,383	12,814	22,197
30	420231	Articles of a kind normally carried in the pocket/the handbag, with outer surface of leather/composition leather/patent leather	4,711	Cyprus	840	323	1,163
				Greece	3,871	2,101	5,972
31	711319	Articles of jewellery & parts thereof, of other precious metal (excl. silver), whether/not plated/clad with precious metal	2,300	Slovenia	2,300	573	2,873
32	90930	Seeds of cumin	1,186	Bulgaria	71	655	726
				Myanmar	69	1,632	1,701
				Vietnam	1,046	72,863	73,909
33	620412	Women's/girls' suits (excl. knitted/crocheted), of cotton	427	Nigeria	427	12,013	12,440
34	300691	Appliances identifiable for ostomy use	6	Ghana	6	11,079	11,085
35	860610	Tank wagons & the like, railway/tramway, not self-propelled		Tanzania		15,596	15,596
		TOTALS			15,538,257	8,224,782	23,763,040

*Calculated based on exports of Top 5 Competitors for India in UK.

6. Identified Least Developed Countries with Potential Inputs to Link in to India's Global Value Chains

Using the unit cost methodology, 20 LDCs were identified as cost-competitive sources of inputs for India compared with the existing sources of those inputs. Table 4 lists the 20 potential LDC partners identified, along with their potential market access in India. These 20 LDCs could export around US\$12 billion of inputs into exports of India's lead products, with potential market access of US\$22.8 billion to India. These inputs are currently being sourced from less competitive suppliers, which implies that India will benefit from facilitating market access for LDCs. Uganda is found to have maximum potential market access (US\$2.4 billion), followed by Tanzania (US\$1.9 billion).

The list of LDCs, along with the inputs that they could export to India more competitively than the current supplier in terms of unit cost analysis, is presented in Table 5. There are 20 LDCs that could export 129 unique inputs at HS 6-digit level (55 at HS 4-digit level) more competitively for India's GVCs in the identified lead products. There are 192 LDC-input combinations identified at the HS 4-digit level (281 at HS 6-digit level). Of these, Appendix 1 reports those LDC-input combinations for which LDCs export more than US\$100,000.

Table 4. List of identified LDCs with lower unit values

Study No.	Potential LDC Partners	New market access in India (US\$1,000)
1	Uganda	2,400,000
2	Tanzania	1,900,000
3	Benin	972,348
4	Nepal	892,764
5	Madagascar	824,275
6	Senegal	808,973
7	Malawi	675,028
8	Zambia	633,148
9	Guinea	607,973
10	Cambodia	573,366
11	Mali	398,957
12	Burkina Faso	364,770
13	Mauritania	346,013
14	Rwanda	99,843
15	Bangladesh	98,482
16	Mozambique	95,742
17	Burundi	82,384
18	Niger	77,025
19	Sierra Leone	44,293
20	Togo	19,468
	Total market access	11,914,852

Study No.	Country list	Input	Final Good
1	Benin	Ferrous waste & scrap	Wagons
		Recovered paper/paperboard	Cuttle Fish & Squid
2	Bangladesh	Sewing thread of man-made filaments; Boxes, cases, crates, sacks & bags, similar articles, of plastics; Binder; Twine	Articles of Apparel: Leather
		Natural rubber latex	Carpets
		Cotton Yarn; Yarn other than High Tenacity Yarn; Textured Yarn; Synthetic staple fibres	Dresses & Bedspreads
		Gummed/adhesive paper	Footwear
		Balls, needles & rollers for the bearings; Hubs; Brakes; Pedals; Other Parts	Motorcycle
3	Burkina Faso	Cotton yarn	Dresses & Bedspreads
		Sodium hydroxide; Hydrogen peroxide	Dyes
		Flat-rolled products of iron/non-alloy steel	Hand Tools
		Sterile surgical materials	Appliances identifiable for ostomy use
		Ferrous waste & scrap	Wagons
4	Burundi	Parts suit. for spark-ignition IC piston engines	Transformers
5	Cambodia	Packing containers of paper; Sewing Thread; articles, of plastics	Articles of Apparel: Leather
		Natural rubber latex, Technically spec. Natural Rubber	Carpets
		Tarred/bituminised/asphalted paper, paperboard, coated, impregnated,	Footwear
		Cotton Yarn; Yarn other than High Tenacity Yarn; Synthetic staple fibres	Dresses & Bedspreads
6	Guinea	Ferrous waste & scrap	Wagons
		Parts & accessories of motorcycles	Motorcycle
7	Madagascar	Sodium sulphites; Hydrogen peroxide	Dyes
		Plates, sticks, tips & the like for tools, unmounted, of cermets	Hand Tools
		Sterile surgical materials	Appliances identifiable for ostomy use
		Gaskets & similar joints of metal	Tractors
		Parts suit. for spark-ignition IC piston engines; Valves; Electrical Apparatus	Transformers
8	Malawi	Products suit. for use as glues/adhesives	Appliances identifiable for ostomy use
		Compression-ignition IC piston engines	Tractors
		Parts suit. for spark-ignition IC piston engines; Valves; Electrical Apparatus	Transformers
		Parts suit. for use solely/principally with the engines; Electrical insulators	Steam Turbines

Study No.	Country list	Input	Final Good
9	Mali	Flat-rolled products of iron/non-alloy steel; Plates, sticks, tips & the like for tools	Hand Tools
		Ferrous waste & scrap	Wagons
		Gaskets & similar joints of metal	Tractors
		Parts suit. for spark-ignition IC piston engines; Electrical apparatus for switching	Transformers
		Parts suit. for use solely/principally with the engines	Steam Turbines
10	Mauritania	Ferrous waste & scrap	Wagons
11	Mozambique	Sodium sulphites	Dyes
		Products suit. for use as glues/adhesives	Appliances identifiable for ostomy use
		Synthetic monofilament, of polypropylene; Strip & the like of synthetic textile materials	Footwear
12	Nepal	Citric Acid; Recovered paper/paperboard	Cuttle Fish & Squid
		Citric Acid; Recovered paper/paperboard	Articles of Apparel: Leather
		Natural rubber latex	Carpets
		Gummed/adhesive paper; Nails, tacks,	Footwear
		Waste & scrap of precious metal	Jewellery
		Flat-rolled products of iron/non-alloy steel; Rock drilling/earth boring tools with working part of cermets for hand tools	Hand Tools
		Products suit. for use as glues/adhesives; Adhesive	Appliances identifiable for ostomy use
		Ferrous waste & scrap	Wagons
		Cotton Yarn; High Tenacity Yarn; Textured Yarn; Synthetic staple fibres	Dresses & Bedspreads
		Cotton Yarn; Synthetic staple fibres	Dresses & Bedspreads
13	Niger	Products suit. for use as glues/adhesives; Sterile surgical materials	Appliances identifiable for ostomy use
		Valves	Transformers
		Parts suit. for use solely/principally with engines	Steam Turbines
14	Rwanda	Recovered paper/paperboard	Cuttle Fish & Squid
		Clasps, buckles, hooks	Footwear
		Ferro-manganese; Ferro-silicon	Wagons
		Plates, sticks, tips	Hand Tools
		Folding cartons, boxes & cases	Articles of Apparel: Leather
15	Sierra Leone	Folding cartons, boxes & cases	Articles of Apparel: Leather

Study No.	Country list	Input	Final Good
16	Senegal	Ferrous waste & scrap	Wagons
		Sodium hydroxide; Sodium sulphites; Hydrogen peroxide	Dyes
		Flat-rolled products of iron/non-alloy steel; Bars & rods of iron/non-alloy steel; Rock drilling/earth boring tools for hand tools; Plates, sticks, tips & the like for tools	Hand Tools
		Products suit. for use as glues/adhesives; Adhesives; Sterile surgical materials	Appliances identifiable for ostomy use
		Ferrous waste & scrap	Wagons
		Carboxylic acid, added oxygen & anhy etc, hal etc	Cuttle Fish & Squid
		Boxes, cases, crates & similar articles, of plastics; Sacks & bags; Spools, cops, bobbins & similar supports, of plastics; Twine	Articles of Apparel: Leather
		Styrene-butadiene rubber (SBR), latex; Synthetic monofilament,	Footwear
		Acid dyes; Artificial filament yarn	Dresses & Bedspreads
		Parts, other than balls, needles & rollers, for bearings; Lighting/visual signalling equip. ; Balls, needles & rollers for bearings	Motorcycle
	Natural rubber other than latex	Carpets	
17	Tanzania	Carboxylic Acid; Recovered paper/paperboard	Cuttle Fish & Squid
		Synthetic Filament; Binder/baler twine, cordage, ropes & cables of polyethylene/polypropylene; Twine; Sinkers, needles; Press-fasteners, snap-fasteners; Spools, cops, bobbins & similar supports, of plastics; Sewing thread of man-made filaments; Binder/baler twine; Buttons	Articles of Apparel: Leather
		Natural rubber, Natural rubber other than latex	Carpets
		Finishing agents, dye carriers to accelerate the dyeing/fixing of dyestuffs; High tenacity yarn other than textured yarn; Acid Dyes; Pigments & Preparations; Synthetic organic products; Finishing agents; Cotton Yarn; High Tenacity Yarn, Textured Yarn; Synthetic staple fibres	Dresses & Bedspreads
		Hooks, eyes & eyelets of a kind used for footwear; Butadiene Rubber	Footwear
		Balls, needles & rollers for bearings; Parts & Accessories of Motorcycles; Pedals & crank-gear, & parts; Parts & accessories of motorcycles; Hubs; Parts & Accessories	Motorcycle
		Technically Spec. Natural Rubber	Carpets
		Fluorine; bromine; Sodium hydroxide; Hydrogen peroxide	Dyes
		Hollow drill bars & rods of alloy/non-alloy steel; Plates, sticks, tips & the like for tools; Rock drilling/earth boring tools	Hand Tools
		Products suit. for use as glues/adhesives; Sterile surgical materials	Appliances identifiable for ostomy use
		Transmission belts	Machinery for Sugar
		Road wheels & parts & accessories	Tractors

Study No.	Country list	Input	Final Good
18	Togo	Strip & the like of synthetic textile materials	Footwear
		Twine	Articles of Apparel: Leather
		Synthetic staple fibres	Dresses & Bedspreads
		Sodium hydroxide	Dyes
		Flat-rolled products of iron/non-alloy steel	Hand Tools
19	Uganda	Transmission belts; Roller chain of iron/steel; Bars & rods	Machinery for Sugar
		Textile hosepiping; Articles for the conveyance/packing of goods; Cases & Boxes, Sewing thread of man-made filaments; Binder/baler twine; Twine; Press-Fastners; Sacks & Bags; Stoppers	Articles of Apparel: Leather
		Tools; Strip & the like of synthetic textile materials ; Clasps, frames with clasps, buckles	Footwear
		Compression-ignition IC piston engines; Spherical roller bearings; Balls, needles & rollers for bearings; Parts & Accessories of Motorcycles; Hubs, Brakes, Pedals	Motorcycle
		Waste & scrap of precious metals	Jewellery
		Sodium Hydroxide	Dyes
		Flat-rolled products of iron/non-alloy steel; Bars & rods of iron/non-alloy steel; Rock drilling/earth boring tools for hand tools; Plates, sticks, tips & the like for tools	Hand Tools
		Products suit. for use as glues/adhesives; Sterile surgical materials	Appliances identifiable for ostomy use
		Road wheels & parts & accessories; Clutches	Tractors
		Carboxylic Acids	Cuttle Fish & Squid
		Basic Dyes; Synthetic organic colouring matter; Synthetic Organic products; Finishing Agents; Cotton Yarn; Textured Yarn; Yarn other than High Tenacity Yarn; Synthetic Filament Yarn; Synthetic Staple Fibres	Dresses & Bedspreads
		Parts & Accessories of Motorcycles; Hubs, Brakes, Pedals	Motorcycle
		Waste & scrap of precious metals	Jewellery

Study No.	Country list	Input	Final Good
20	Zambia	Twine; Spools, cops, bobbins & similar supports, of plastics	Articles of Apparel: Leather
		Zinc ores	Carpets
		Cotton Yarn	Dresses & Bedspreads
		Synthetic Rubber; Other fabricated asbestos fibres for footwear	Footwear
		Pedals & crank-gear, & parts thereof	Motorcycle
		Fluorine; bromine; Sodium hydroxide; Hydrogen peroxide	Dyes
		Flat-rolled products of iron/non-alloy steel; Bars & rods of iron/non-alloy steel; Rock drilling/earth boring tools for hand tools; Plates, sticks, tips & the like for tools	Hand Tools
		Adhesive Tape	Appliances identifiable for ostomy use
		Ferro-manganese; Ferro-silicon; Ferrous waste & scrap	Wagons
		Road wheels & parts & accessories; Clutches	Tractors
Waste & scrap of platinum	Jewellery		

To illustrate the analyses, two examples are presented in Figures 16 and 17.

Figure 16 depicts India's potential GVC in women's/ girl's dresses and bedspreads, where India has a high market potential of around US\$2 billion. Currently, the imported inputs used by India are packing and preserving materials. The major import partners are, among others, Hong Kong, Indonesia, Thailand, Malaysia, Turkey, Korea and Singapore. The opportunity exists for India to import these from LDC partners that are also exporting these inputs to the world, albeit at a lower capacity, such as Tanzania, Uganda, Senegal, Cambodia, Malawi and Zambia and Burkina Faso, potentially at lower unit values than those provided by current import partners. India could also import these inputs from Bangladesh and Sri Lanka. This would offer the opportunity both to achieve a high value for these products and to identify avenues for investment in the identified LDCs to upgrade value chains.

Figure 17 depicts India's potential GVC in transformers, where India has a potential market share of US\$1.8 billion. Currently, the imported inputs are IC engines, electrical equipment, valves, bearings and clutches, which are imported from Japan, Korea, the Netherlands, Brazil and the UAE, among other partners. However, the opportunity exists for India to import these inputs from LDC partners, such as Niger, Mali, Burundi, Malawi and Madagascar, potentially at lower unit values than those provided by the current import partners.

Figure 16. India's GVC in women's/girls' dresses and bedspreads: representation using Sonoma network mapping software; based on calculations from WITS; correspondence developed using India's SION and HS 6-digit classifications

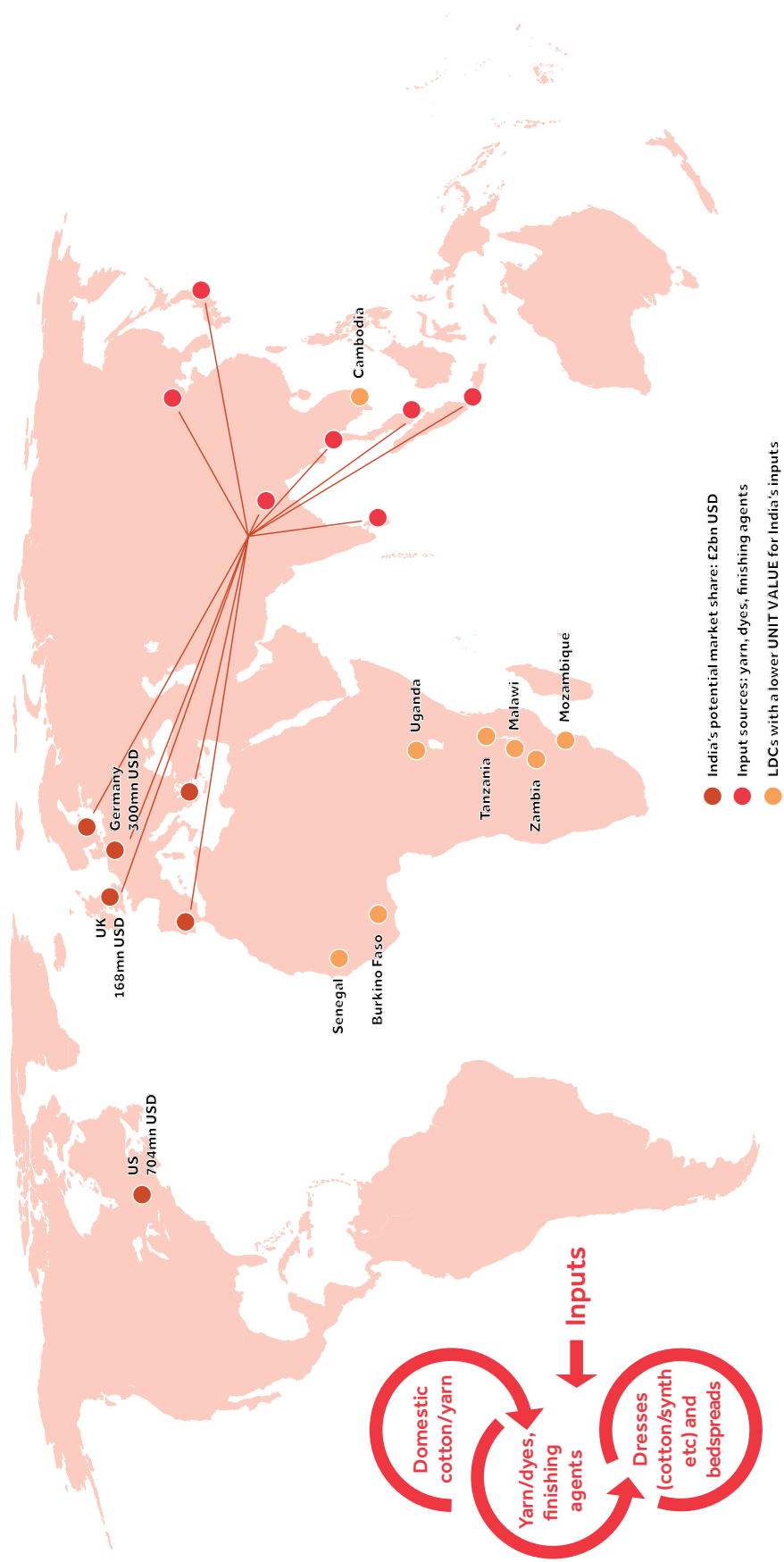
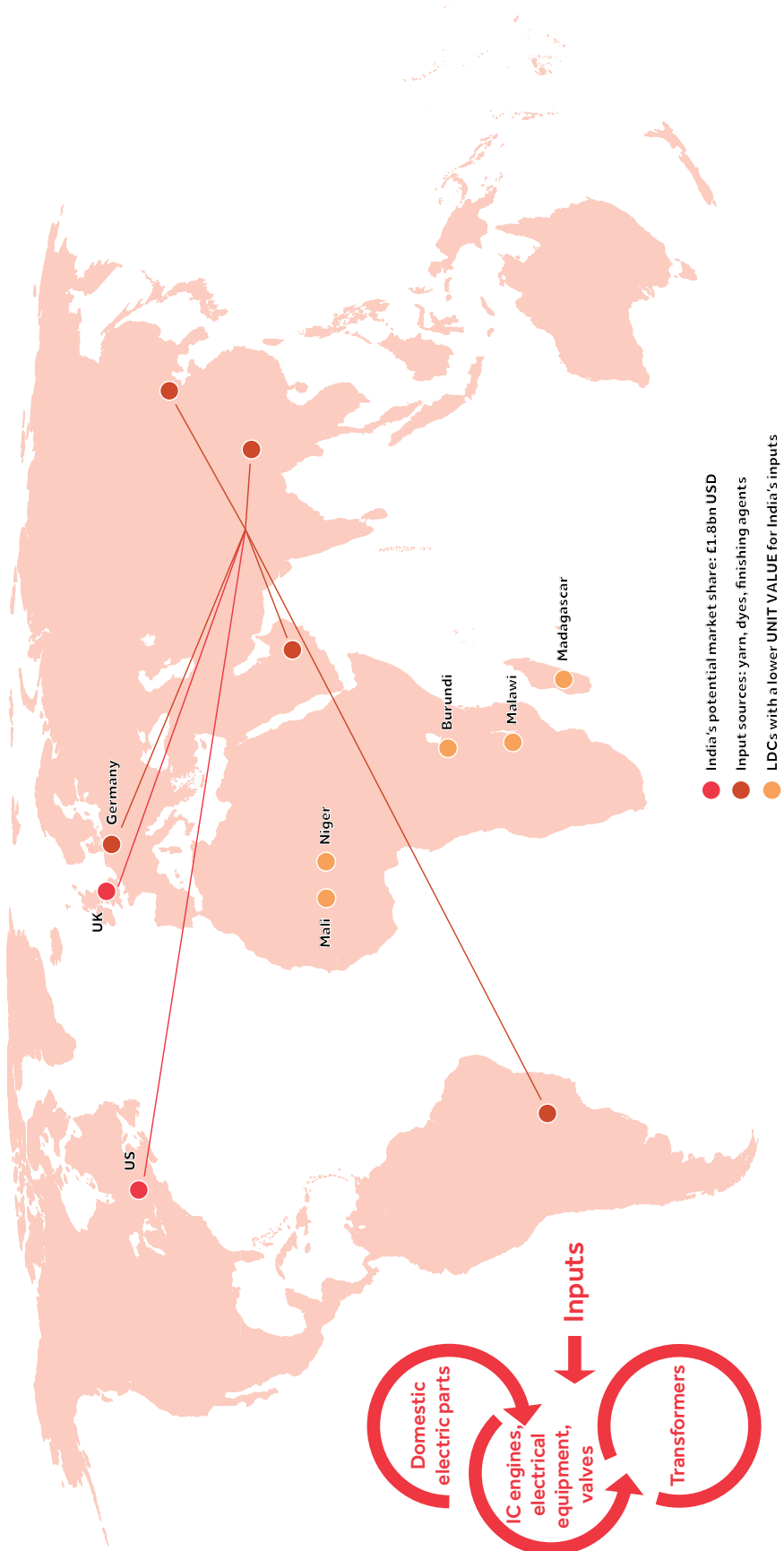


Figure 17. India's GVC for transformers: representation using Sonoma network mapping software; based on calculations from WITS; correspondence developed using India's SION and HS 6-digit classifications



7. Identified Potential Investments

7.1 Identified regional potential investments in African LDCs

One of the major reasons for low linking of African LDCs in to India's GVCs has been the limited supply capacity in the identified LDCs. Investments in the areas where these LDCs have competitiveness but lack supply capacity is needed. Both regional and extra-regional investments need to be attracted to these areas.

To identify potential areas for investments in African LDCs that can be undertaken regionally by other African countries such as Kenya, Ethiopia, Nigeria and South Africa, we selected those inputs for which India's global imports are greater than the

identified LDC's global exports (indicating supply constraint) but less than African countries' global exports. Regional exports that are higher than India's global imports of the identified input suggest that the region as a whole has the required supply capacity and therefore these are potential areas for investment.

Table 6 reports 30 inputs at HS 4-digit level in relation to which regional investments could help to build the capacity of the identified LDCs to export the input into India's GVCs.

Table 6. Identified potential regional investments in African LDCs for linking in to India's GVCs

Study No.	LDCs	HS 4-digit	Description	India's imports (US\$1,000)	African countries' exports (US\$1,000)	Final product
1	Burkina Faso	5607	twine, cordage, rope & cables, coated etc or not	654	39,127	Leather
2	Burkina Faso	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	12,549	Hand Tools
3	Madagascar	5607	twine, cordage, rope & cables, coated etc or not	612	39,127	Leather
4	Madagascar	3923	containers (boxes, bags etc), closurers etc, plast	58,308	134,678	Leather
5	Mali	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	12,549	Hand Tools
6	Rwanda	4819	cartons etc paper, office box files etc, paper etc	22,110	35,602	Leather
7	Senegal	5607	twine, cordage, rope & cables, coated etc or not	612	39,127	Leather
8	Senegal	7214	bars & rods, iron & na steel nesoi, h-r etc	8,087	98,235	Hand Tools
9	Senegal	5906	rubberized textile fabrics, other than tire cord	2,458	2,913	Ostomy
10	Sierra Leone	3923	Containers (boxes, bags etc), closurers etc, plast	44,078	134,678	Leather
11	Tanzania	8207	interchange tools for hand- or machine-tools, bmpt	2,746	21,333	Hand Tools
12	Tanzania	3923	Containers (boxes, bags etc), closurers etc, plast	75,126	134,678	Leather
13	Tanzania	5906	rubberized textile fabrics, other than tire cord	2,458	2,913	Ostomy

Study No.	LDCs	HS 4-digit	Description	India's imports (US\$1,000)	African countries' exports (US\$1,000)	Final product
14	Togo	5607	twine, cordage, rope & cables, coated etc or not	612	39,127	Leather
15	Togo	7214	bars & rods, iron & na steel nesoi, h-r etc	8,087	98,235	Hand Tools
16	Togo	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	12,549	Hand Tools
17	Uganda	7112	waste & scrap of prec. metal or metal clad w prec. metal	1,729	91,156	Jewellery
18	Uganda	5607	twine, cordage, rope & cables, coated etc or not	3,888	39,127	Leather
19	Uganda	8207	interchange tools for hand- or machine-tools, bmpt	2,746	21,333	Hand Tools
20	Uganda	5205	cotton yarn (not sewing thread) nu 85% cot no retail	1,439	8,089	Dress
21	Uganda	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	12,549	Hand Tools
22	Uganda	5906	rubberized textile fabrics, other than tire cord	2,458	2,913	Ostomy
23	Zambia	5607	twine, cordage, rope & cables, coated etc or not	612	39,127	Leather
24	Zambia	7112	waste & scrap of prec. metal or metal clad w prec. metal	1,559	91,156	Jewellery
25	Zambia	5205	cotton yarn (not sewing thread) nu 85% cot no retail	268	8,089	Dress
26	Zambia	3923	Containers (boxes, bags etc), closurers etc, plast	6,159	134,678	Leather
27	Zambia	7214	bars & rods, iron & na steel nesoi, h-r etc	8,087	98,235	Hand Tools
28	Zambia	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	12,549	Hand Tools
29	Zambia	8714	parts & access for cycles & invalid carriages	750	1,269	Motor
30	Zambia	5906	rubberized textile fabrics, other than tire cord	2,458	2,913	Ostomy

7.2 Identified potential investments for India in African LDCs

We identified the inputs for which African LDCs need supply capacity to be built to export the required quantities to India, but lack the capability to do so. This was done by selecting those inputs for which the LDC's exports, as well as the region's global exports, were lower than India's global

imports. These inputs need Indian investments and joint ventures if inputs are to be supplied to India's GVCs.

Table 7 reports 29 identified inputs for Indian investments for which Africa may lack the required supply capacity. Packaging is identified as one Indian investment that can productively increase Africa's capacity, while wagons, leather, dyes, motors and carpets are finished products for which inputs can be sourced from Africa.

Table 7. Identified Potential Indian Investments in African LDCs for Linking in to India's GVCs

Study No.	LDC	HS 4-digit	Description	India's imports (US\$1,000)	African countries' Exports (US\$1,000)	Final product
1	Benin	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	56,057	Wagons
2	Burkina Faso	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	56,057	Wagons
3	Burkina Faso	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	2,945	Dyes
4	Burkina Faso	2847	hydrogen peroxide, whether/not solidified w/ urea	21,450	949	Dyes
5	Guinea	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	56,057	Wagons
6	Madagascar	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	56,057	Wagons
7	Madagascar	2847	hydrogen peroxide, whether/not solidified w/ urea	21,450	949	Dyes
8	Madagascar	8481	taps, cocks, valves etc for pipes, tanks etc, pts	50,986	11,706	Transformers
9	Mauritania	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	56,057	Wagons
10	Senegal	3923	Containers (boxes, bags etc), closurers etc, plast	158,261	134,678	Leather
11	Senegal	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	56,057	Wagons
12	Senegal	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	2,945	Dyes
13	Senegal	4001	natural rubber, balata, gutta-percha, guayule, chicle and similar natural gum	44,200	31,782	Carpets
14	Tanzania	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	2,945	Dyes
15	Tanzania	8482	ball or roller bearings and parts	187,429	3,053	Motor
16	Tanzania	2847	hydrogen peroxide, whether/not solidified w/ urea	21,450	949	Dyes
17	Tanzania	3204	syn org coloring matter & prep, syn org brit agent	102,201	625	Dress
18	Tanzania	8708	parts & access for motor vehicles (head 8701-8705)	121,714	10,736	Tractors
19	Tanzania	7228	alloy steel nesoi bars, angles etc, hol dr st bars etc	30,076	2,541	Hand Tools
20	Uganda	3923	Containers (boxes, bags etc), closurers etc, plast	217,444	134,678	Leather
21	Uganda	8714	parts & access for cycles & invalid carriages	373,198	1,269	Motor
22	Uganda	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	2,945	Dyes
23	Uganda	7315	chain & parts, of iron or steel	14,067	3,031	Sugar
24	Uganda	5402	synthetic filament yarn (no sew thread), no retail	155,659	1,601	Dress

Study No.	LDC	HS 4-digit	Description	India's imports (US\$1,000)	African countries' Exports (US\$1,000)	Final product
25	Uganda	4415	packing cases etc of wood, pallets etc of wood	11,383	5,417	Leather
26	Zambia	7202	ferroalloys	150,292	13,155	Wagons
27	Zambia	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	2,945	Dyes
28	Zambia	2608	zinc ores and concentrates	53,142	837	Carpets
29	Zambia	8708	parts & access for motor vehicles (head 8701-8705)	207,969	10,736	Tractors

8. Summary and Conclusions

The main objective of this study is to assist India in increasing the value and volume of its exports and making its exports more globally competitive. This study contributes to the 'Make in India' campaign by identifying India's **lead products** in 50 different markets (including RCEP countries, the EU, the USA and selected African countries) where Indian products have a competitive edge and could capture a higher market share. The study further identifies inputs that India could source from LDCs at more competitive rates than those provided by the current sources. This would help to increase take-up of India's 'LDC package' and to integrate LDCs into India's GVCs.

The four main contributions of this study are: firstly, it identifies lead products of India **in 50 identified markets** where India has the potential to capture additional market share and form its own GVCs. Secondly, it estimates India's potential market share in each of the identified markets. Thirdly, **it identifies LDCs that could link in to India's GVCs** by supplying inputs and estimates the potential market access for identified LDCs. Fourthly, **it identifies and estimates product-wise investment potential in LDCs** and categorises inputs that may require regional investments and those where Indian investments could go to help LDCs link in to India's GVCs.

The study adopted a rigorous methodology to undertake the analyses described above. The methodology used in the study can be broadly categorised as follows:

1. identifying the lead products;
2. identifying LDCs that can link in to India's GVCs for lead products.

To identify the lead products, a three-step approach was adopted:

Step 1: Identify the finished consumer and capital goods that are exported by India to the identified markets.

Step 2: Undertake a competitiveness analysis comparing India's products with those of the top five exporters in the identified markets.

Step 3: Identify lead products and estimate their potential market share as a sum of the market shares of weak competitors.

The above analyses were undertaken at the 6-digit HS product level using three-year averages. Earlier studies have generally used RCA to compare the comparative advantages of countries. However, RCA uses only export data and ignores the import content that goes into exports. To overcome this limitation, we use BRCA in conjunction with CTB and POS. The CTB index is based on imports of the product as well as exports. If a product makes a positive contribution to trade balance, it is identified. This index helps to exclude those products that are mainly traded (i.e. imported and then exported with little value addition). In addition to the competitiveness analyses, industry consultations were undertaken with big Indian firms to identify more lead products for which the industry is confident of establishing value chains.

Using the methodology described above, **a list of 35 unique lead products for India, with 71 lead product-market combinations, was identified.** For each of the identified lead products, the potential market share was estimated. The potential market share for India's lead products in the 50 identified markets amounts to around US\$16 billion. The existing exports in these products in 2015 were US\$8.2 billion implying that there is a potential to increase exports of these lead products by 89 per cent. In the US market, existing annual exports of 6.4 billion could increase to 18 billion per year, a rise of almost 180 per cent, while in UK exports of the lead products could increase to 2 billion from only 0.4 billion. In the EU (minus the UK), annual exports of lead products have the potential to increase to 2 billion (a 180 per cent increase) from a mere 710 billion.

To identify the inputs that can be sourced more competitively from LDCs, the study used the unit cost methodology. The analysis was conducted only for those inputs that are imported by India, and therefore the analysis does not in any way affect the existing domestic supply chains for the lead products. The study identified **20 LDCs** that are a cost-competitive source of inputs for India compared with its existing sources of imports.

Together, **these LDCs could export around US\$12 billion of inputs into India's lead products for export.** Uganda was found to have the greatest potential market access (US\$2.4 billion) into India, followed by Tanzania (US\$1.9 billion).

The study further identified potential areas for investments in African LDCs, for regional investments, namely from other African countries such as Kenya, Ethiopia, Nigeria and South Africa, and for Indian investments. Those inputs were selected from the list of inputs identified using a unit cost analysis; those chosen were those for which India's global imports are greater than the identified LDC's global exports, indicating supply constraint in the LDC. However, if the region's global exports (i.e. the sum of exports from the African countries for that product) were found to be higher than India's global imports, then the input was identified for potential regional investments. If the regional global exports were lower than India's global imports, on the other hand, the input was selected for potential Indian investments. **Using these criteria, 30 inputs were identified for potential regional investments in 10 LDCs, while 29 inputs were identified for potential Indian investments in 8 LDCs.** For example, packaging was identified as one of the areas where Indian investments could productively increase Africa's capacity to export and link in to India's GVCs, while wagons, leather, dyes, motors and carpets are finished products for which inputs can be sourced more competitively from Africa.

To actualise the potential trade estimated by this study, it will be important to initiate a common sustainable platform where producers, exporters and importers from Africa and other LDCs can network with Indian firms. For this purpose, the Secretariat suggests initiating **India's Commonwealth SME Association.** The main objectives of this association would be to provide a sustainable platform to enable exporters and importers to meet regularly and build awareness of existing global standards, as well as to encourage regional and extra-regional investments in areas where African LDCs are competitive but lack supply capacity. This association could be beneficial for both India and African LDCs, as it would enable Indian firms to source their inputs more competitively while helping African LDCs to improve their supply capacity and diversify their export baskets.

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Appendix 1

Identified LDCs for Sourcing Inputs into the GVCs of India's Lead Products

Study No.	LDC	HS 4-digit	4-digit description	India imports (US\$1,000)	LDC exports (US\$1,000)	African LDC exports (US\$1,000)	Lead products
1	Bangladesh	4819	cartons etc paper, office box files etc. paper etc	12,778	1,374	35,602	Leather
2	Bangladesh	5205	cotton yarn (not sewing thread) nu 85% cot no retail	829	308	8,089	Dress
3	Benin	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	1,266	56,057	Wagons
4	Burkina Faso	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	98	2,945	Dyes
5	Burkina Faso	3006	Pharmaceutical goods (specified sterile prod etc.)	10,800	157	405	Ostomy
6	Burkina Faso	5205	cotton yarn (not sewing thread) nu 85% cot no retail	5,286	2,763	8,089	Dress
7	Burkina Faso	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	247	56,057	Wagons
8	Cambodia	3923	Containers (boxes, bags etc), closurers etc, plast	83,196	612	134,678	Leather
9	Cambodia	4001	natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary forms or in plates, sheets or strip	357,655	3,129	31,782	Carpets
10	Cambodia	5205	cotton yarn (not sewing thread) nu 85% cot no retail	785	122	8,089	Dress
11	Guinea	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	379	56,057	Wagons
12	Madagascar	2847	hydrogen peroxide, whether/not solidified w/ urea	21,450	322	949	Dyes
13	Madagascar	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	4,069	56,057	Wagons
14	Madagascar	8481	taps, cocks, valves etc for pipes, tanks etc, pts	50,986	153	11,706	Transformers
15	Mauritania	7204	ferrous waste & scrap, remelt scrap iron/steel ingot	2,300,000	11,173	56,057	Wagons
16	Mozambique	5205	cotton yarn (not sewing thread) nu 85% cot no retail	4,869	3,040	8,089	Dress
17	Mozambique	5404	syn monofil not un 97 dec, cr-sect n/ov1 mm, stno5mm	17,144	114	323	Footwear
18	Nepal	3923	Containers (boxes, bags etc), closurers etc, plast	152,102	3,376	134,678	Leather
19	Nepal	5402	synthetic filament yarn (no sew thread), no retail	207,519	2,868	1,601	Dress
20	Nepal	5607	twine, cordage, rope & cables, coated etc or not	2,589	3,792	39,127	Leather
21	Rwanda	8308	clasps, buckles, hooks etc, beads & spangles, b metal	56,474	175	221	Footwear
22	Senegal	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	190	2,945	Dyes
23	Senegal	3923	Containers (boxes, bags etc), closurers etc, plast	158,261	7,978	134,678	Leather
24	Senegal	4001	natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary forms or in plates, sheets or strip	44,200	107	31,782	Carpets
25	Senegal	5403	artificial filament yarn (no sew thread), no retail	88	232	234	Dress
26	Senegal	5607	twine, cordage, rope & cables, coated etc or not	612	169	39,127	Leather

Study No.	LDC	HS 4-digit	4-digit description	India imports (US\$1,000)	LDC exports (US\$1,000)	African LDC exports (US\$1,000)	Lead products
27	Senegal	5906	rubberized textile fabrics, other than tire cord	2,458	118	2,913	Ostomy
28	Senegal	7204	ferrous waste & scrap, remelt scrap iron/steelingot	2,300,000	3,635	56,057	Wagons
29	Senegal	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	2,263	12,549	Hand Tools
30	Senegal	8207	interchange tools for hand- or machine-tools, bmpt	2,746	3,328	21,333	Hand Tools
31	Tanzania	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	608	2,945	Dyes
32	Tanzania	3923	Containers (boxes, bags etc), closurers etc, plast	75,126	7,178	134,678	Leather
33	Tanzania	5205	cotton yarn (not sewing thread) nu 85% cot no retail	6,412	2,337	8,089	Dress
34	Tanzania	5607	twine, cordage, rope & cables, coated etc or not	8,366	4,974	39,127	Leather
35	Tanzania	8482	ball or roller bearings and parts	187,429	145	3,053	Motor
36	Togo	5404	syn monofil not un 97 dec, cr-sect n/ov1 mm, stno5mm	16,654	130	323	Footwear
37	Togo	5607	twine, cordage, rope & cables, coated etc or not	612	145	39,127	Leather
38	Togo	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	433	12,549	Hand Tools
39	Uganda	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	149	2,945	Dyes
40	Uganda	3923	Containers (boxes, bags etc), closurers etc, plast	217,444	9,720	134,678	Leather
41	Uganda	5205	cotton yarn (not sewing thread) nu 85% cot no retail	1,439	336	8,089	Dress
42	Uganda	5607	twine, cordage, rope & cables, coated etc or not	3,888	114	39,127	Leather
43	Uganda	7209	flat-roll iron & na steel n/un600mm wd cold-rl, no clad	3,362	203	12,549	Hand Tools
44	Uganda	7315	chain & parts, of iron or steel	14,067	109	3,031	Sugar
45	Uganda	8714	parts & access for cycles & invalid carriages	373,198	277	1,269	Motor
46	Zambia	2608	zinc ores and concentrates	53,142	152	837	Carpets
47	Zambia	2815	sodium hydrox, potass hydrox sod or potass perox	15,721	662	2,945	Dyes
48	Zambia	7202	ferroalloys	150,292	6,286	13,155	Wagons
49	Zambia	7214	bars & rods, iron & na steel nesoi, h-r etc	8,087	240	98,235	Hand Tools
50	Zambia	8207	interchange tools for hand- or machine-tools, bmpt	2,746	1,155	21,333	Hand Tools
51	Zambia	8708	parts & access for motor vehicles (head 8701-8705	207,969	101	10,736	Tractors

Note: Only those LDCs that export the identified input at values greater than US\$100,000 globally are reported.

Endnotes

1. Backward participation refers to the use of foreign intermediates in India's exports. Forward participation is the use of Indian intermediates in other country's exports.
2. Figures based on data from the Organisation for Economic Co-operation and Development input-output tables that describe the sale and purchase relationships between producers and consumers within an economy. These are produced by illustrating flows between the sales and purchases (final and intermediate) of industry outputs.
3. A concordance was undertaken using the 6-digit HS 2007 classification and the BEC classification to identify intermediate and final goods. For this purpose, we mapped the HS 2007 products to the BEC Revision 4 products using the concordance available on WITS.
4. The choice of market was based on the inputs from the Department of Commerce at the Ministry of Commerce and Industry, India.
5. The Standard Input Output Norms (SION) of the Directorate General of Foreign Trade (DGFT) India are the standard norms that define the amount of inputs required to manufacture a unit of output for export. The SION are notified by the DGFT in the Handbook (Vol. 2), 2002-07, and are approved by its Board of Directors; it issues notifications for amendments or additions of SION for particular export products.

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