ESTONIA IN FOCUS 11/2012

# ESTONIA-INDIA

## THE FUTURE OF RELATIONS


ESTONIAN DEVELOPMENT FUND

**Estonian Development Fund** (EDF) is an independent foresight think-tank and national venture capital fund of the Republic of Estonia, established and supervised by the Riigikogu, Estonia's national parliament. Its role in foresight is to scan global trends and drivers, and identify future economic opportunities for Estonia.

Foresight projects take an in-depth analytical look into the future directions of the world economy and business, initiating discussions among high-level business and governmental stakeholders and generating experimental actions to tap the opportunities.

The authors of this report are the experts of
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The report might not represent the full views of these people, nor does it represent the positions of their employers.

# Contents

# Forewords

It is a fact that India and Estonia are situated geographically far apart from each other. In today's world, however, with each passing day the physical distance matters less and less – business, tourism, and people-to-people contacts have been globalised for some time already.

India, with its impressive economic growth, great ambitions, and innovative vision for the future, has to a large extent been a country and a market yet to be discovered by Estonian people and enterprises. The Estonia-India Foresight Project is therefore a valuable tool for laying the foundation for the future co-operation between the business communities of Estonia and India.

Innovation and new technologies are the key words that unite Estonia and India today. I believe that there is much that we can share with each other, be it in ICT, biotechnology, cleantech, science co-operation, or other fields. And one should by no means disregard tourism, as it affords Estonians with better knowledge and understanding of what India is and vice versa.

In the beginning of this year, the Estonian government decided to establish an embassy in New Delhi. This decision was taken in view of the potential for developing the relations with India, an increasingly important actor in the world. The timing of this report could not be better – not only because it outlines the main fields of mutual interests coupled with practical co-operation initiatives, but it also provides the embassy the possibility to play a major role in facilitating these initiatives for the benefit of both Estonia and India.

I would like to express my gratitude to the authors of this Estonia-India Foresight Report for their dedicated work, the Estonian Development Fund and the Embassy of India for initiating this project, and the Ministry of External Affairs of India for their excellent co-operation in working out this vision for the future.

Urmas Paet
*Minister of Foreign Affairs*
*Government of Estonia*

I am pleased to learn that the Embassy of India, Investment and Technology Promotion Division of the Ministry of External Affairs and the Estonian Development Fund have completed the Estonia-India Foresight Project, which was launched in March 2011 during my visit to Estonia. The aim of the Project was to build bridges between India and Estonia, so that we can share the fruits of the progress that each of us have achieved.

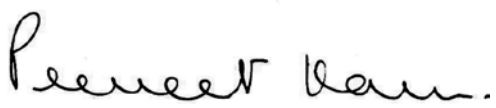
India is the fourth largest economy in the world today on purchasing power parity basis. The soundness and the resilience of our economy is evident from the fact that it suffered much less from the global financial crisis than most other countries. The steady growth trajectory of the Indian economy in the past decade has generated keen investor interest in India which has been further boosted by the progressive liberalisation of the Foreign Direct Investment regime in India, with gradual removal of restrictions on foreign investments and simplification of procedures. The size of our market taken together with this enabling environment and the availability of skilled manpower make India an unmissable opportunity.

With the steady growth of the Indian economy and its integration into the global economy, the Indian entrepreneur has gained in confidence and the footprint of Indian business in the world has expanded and diversified. Estonia is strategically located and can be a good base for doing business with Nordic countries, countries of European Union and Russia. It also has niche technological capabilities that can be utilised by India.

What is needed to tap the many opportunities for profitable business linkages between the two countries is mutual awareness which can help identify the areas and ventures which hold the maximum potential. The Foresight project was undertaken to address this need. This Report presents the results of the analysis and discussions undertaken within the Estonia-India Foresight Project and presents an agenda for advancing the bilateral economic partnership.

By opening a resident Embassy in New Delhi the Government of Estonia has already taken a major step towards facilitating business interaction which would add substance and momentum to the economic relations. We welcome this positive development and are ready to extend full co-operation towards achieving this target.

I compliment the Estonian Development Fund, the Embassy of India and the Investment and Technology Promotion Division of the Ministry of External Affairs for this collaborative effort. I am confident that this report will help in pointing the way towards the most promising areas for bilateral co-operation and towards further steps that need to be taken by both sides to achieve the full potential of this promise.



**Preneet Kaur**
*Minister of State for External Affairs*
*Government of India*

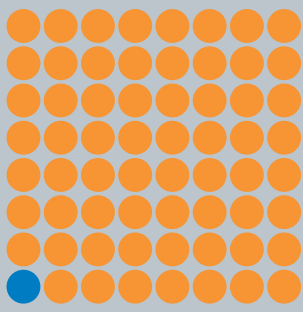
# Estonia and India in Figures

23 LANGUAGES

46% 11.4%

English speakers

POPULATION

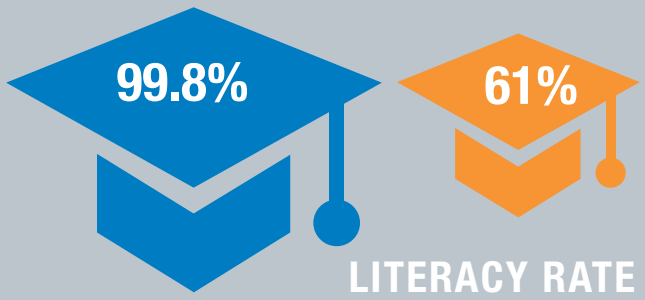


1.2 BN

1.3 M

growth rate

-0.6% 1.3%

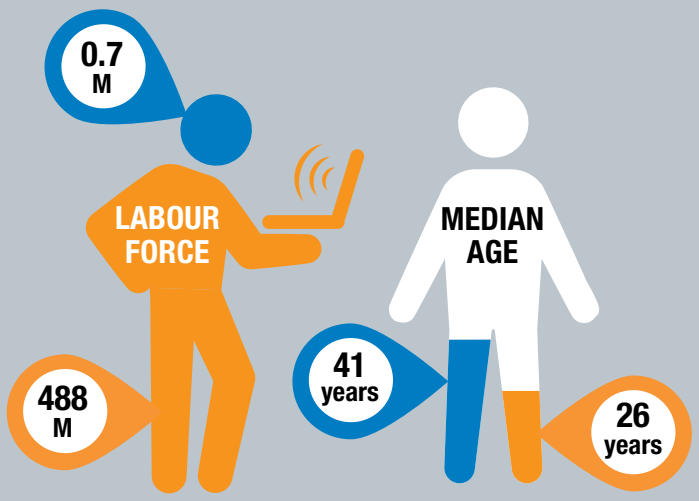



LITERACY RATE

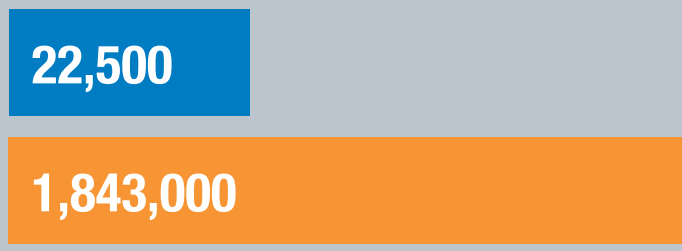
GDP per capita (PPP)

20,182 (45th in the World)

3,703 (125th in the World)




GDP (M $US)



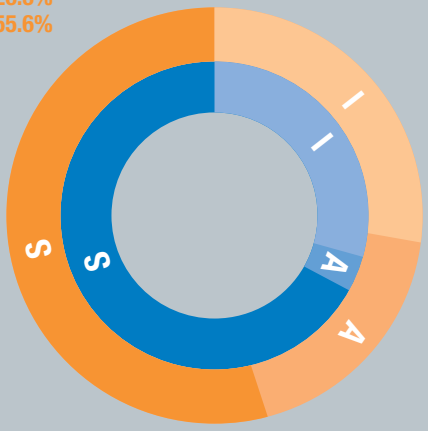


REAL GDP GROWTH

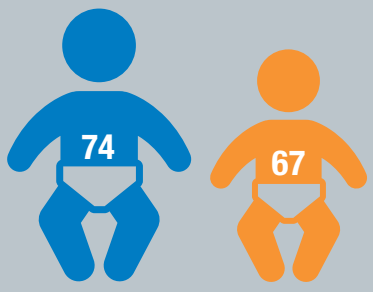

URBAN POPULATION

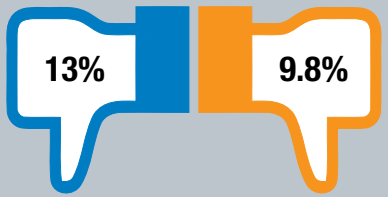
COMPOSITION OF GDP

| | | |
|---|---|---|
| Agriculture | 2.6% | 18.1% |
| Industry | 29.2% | 26.3% |
| Services | 68.2% | 55.6% |

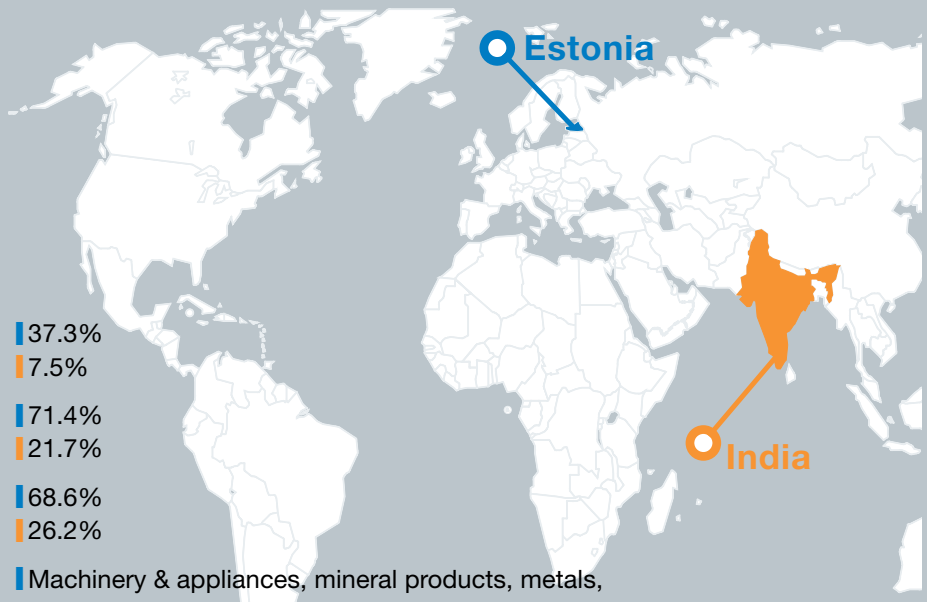



LIFE EXPECTANCY




UNEMPLOYMENT




| | |
|---|---|
| Annual FDI inflow (% of gross fixed capital formation, avg. of 2008–10) | 37.3%<br>7.5% |
| Export of goods and services (% of GDP, avg. of 2008–10) | 71.4%<br>21.7% |
| Import of goods and services (% of GDP, avg. of 2008–10) | 68.6%<br>26.2% |
| Main exports | Machinery & appliances, mineral products, metals, agriproducts & food preparations, wood<br>Petroleum products, precious stones, machinery, iron and steel, chemicals, vehicles, apparel |
| Main imports | Machinery & appliances, mineral products, agriproducts & food preparations, metals, transport equipment<br>Crude oil, precious stones, machinery, fertiliser, iron and steel, chemicals |
| Main trading partners (combined import and export of goods) | Sweden, Finland, Russia, Latvia, Germany<br>UAE, China, USA, Saudi Arabia, Switzerland |
| Gross R&D expenditure (% of GDP PPP) | 1.6%<br>0.9% |
| Ease of Doing Business ranking | 24<br>132 |
| Days to set up a business | 7<br>29 |
| Global Competitiveness Index ranking | 33rd (1st in Eastern Europe)<br>56th (14th in Asia and Oceania) |
| Global ranking in the Index of Economic Freedom | 16<br>123 |
| IMD World Competitiveness ranking | 33<br>32 |
| Networked Readiness Index ranking | 24th<br>69th |
| Internet access in schools | 3rd in the World<br>74th in the World |
| Share of Internet users | 76.5%<br>10% (450M internet users projected by 2015) |
| Mobile phone subscriptions (per 100 people) | 126<br>43.8 (1,250M subscriptions by 2015) |
| Renewable share of total electricity production | 10.8%<br>4% (2020 target 15%) |

**SOURCE:** Batalle.org; CIA World Factbook; Department of Commerce, Government of India; Eurobarometer report 2006; Heritage Foundation 2012; IMD World Competitiveness 2011; International Monetary Fund estimates, September 2011; Internet and Mobile Association of India estimates for December 2011; KPMG. The Rising Sun: A point of view on the solar energy sector in India. Mai 2011; McKinsey Digital Consumer Survey 2010; Statistics Estonia; Telecom Regulatory Authority of India December 2011 figures and forecast for 2015; UNCTAD; United States Census Bureau; World Bank; World Bank Doing Business 2012; WEF Global Competitiveness Report 2011–2012; WEF Global Information Technology Report 2011–12.

Data from 2011, except averages, forecasts and if stated otherwise in the reference.

# Executive Summary: Key Findings and Recommendations

Despite large differences in size, Estonia and India have great potential as partners – they have symbiotic strengths as well as challenges. Both countries can offer what the other increasingly needs.

Estonia is a small country, but very open to the outside world with its economy. It attracts foreign investors from across the world with its good business environment, location and cost-competitive labour. At the same time, it has gained strength in innovation and research, especially in the information and communications technology (ICT) and biotech areas.

However, Estonia is faced with the challenges of economic upgrading towards higher value-added business as well as a declining population and work force. This creates the need for Estonia to seek synergic partnerships with countries that could ease its labour pool challenges, offer new markets and investments, and collaborate as partners in innovation.

As with Estonia, India has been on a fast growth and development track. Its demographic base combined with the implemented and on-going efforts in key economic areas are leading this country towards a rapid rise in the global economic landscape. In the coming decade, India is projected to be on the verge of large-scale globalisation of its companies, have a continued boom in its domestic market, as well as grow remarkably its R&D and innovation capacity.

Nevertheless, many significant economic challenges still remain for India, too. To fulfil its potential, it also needs new markets like Europe, technology development and research collaboration partners, continued flows of foreign investors and imports.

However, the snapshot overview of business and economic relations between Estonia and India reveals that the current level of trade, investment, research co-operation and educational exchange has been rather low. Still, the foundation has been laid in terms of general cordial governmental relations, several bilateral agreements and small advances in exchanges in various areas. Indeed, there are many encouraging signs, as mutual trade and the interest of Indian students in studying in Estonia have risen. Therefore, the current state of affairs is not the ceiling of possibilities – merely the beginning of them.

The main findings of Estonia-India foresight: the most promising co-operation paths

| 1. INVESTMENT | 2. TRADE | 3. EDUCATION AND RESEARCH | 4. TOURISM |
|---|---|---|---|
| Estonia offers a gateway to the Nordic, Russian and other European markets for Indian companies | India offers a variety of market opportunities for Estonian companies; especially in ICT, biotech and cleantech business | Collaboration can solve the skills and innovation needs of both countries; while paving the way for future business relations | Importantly facilitates other business and exchange opportunities |
| **5. HORIZONTAL SUPPORT BY GOVERNMENTS** | | | |
| Leading the way to closer relations and enhancing the enabling factors | | | |

These are the general findings of the foresight project that the Estonian Development Fund (EDF) carried out in co-operation with the Embassy of India to Finland and Estonia. The project was aimed at specifically identifying the mutual business and co-operation potential between Estonia and India. It also sought to highlight the action steps necessary to realise this potential and build a contact network of potential partner institutions/companies to advance collaborations.

In each promising co-operation area, EDF together with relevant partners has identified a set of initial steps and pilot initiatives that can serve as bridgeheads towards developing further exchange, business and relations. They offer venues for establishing contacts and testing out new approaches to help get broader collaborations off the ground.

### 1. INVESTMENTS: BUSINESS OPPORTUNITIES FOR INDIAN COMPANIES IN ESTONIA

For Indian companies that are increasingly attracted to the Northern European region, Estonia has the potential to serve as the best possible base in the region. It is located right in the heart of this promising market area, directly in-between the Russian and Nordic markets, and it has locational advantages over both of these.

This is especially true of the niches within the industries of machinery and electrical equipment manufacturing and engineering (including cleantech), ICT and other business services. In all of these areas, Estonia has developed a good competence base (especially in terms of technology use), clusters of local companies, and existing partnership linkages with Nordic companies.

Due to such benefits, the growth in Indian investments to Estonia can support a growth of exports from India to the Baltic Sea region and the EU as a whole. For the Estonian side, it also brings new jobs and connections to Indian business circles, which can be useful for local companies for their own India market entry. Therefore, Indian investments to Estonia have the potential to bring large direct and also relatively fast benefits to both sides.

**Recommendations for priority actions:**

- Enterprise Estonia, the national investment promotion agency, should work towards **identifying Indian companies that are already active in the Nordic and Russian markets**. The next step is to proactively establish contact to offer attractive value propositions to such companies for relocating or expanding to Estonia.
- Enterprise Estonia and the soon-to-open Embassy of Estonia in India should cooperate to establish **a programme of annual or biannual targeted promotion work** in business circles and target regions in India.
- **Indian governmental representatives should involve delegations of Indian companies more in their visits** to Estonia, including the visits planned in 2012-2013 and in co-operation with the relevant business associations.
- **Indian companies should also visit Estonia more to seek out business and partners there** as well as promote their own products and services (including, for outsourcing) – especially in the identified most promising tech-related business areas.

### 2. TRADE: BUSINESS OPPORTUNITIES FOR ESTONIAN COMPANIES IN INDIA, ESPECIALLY IN THREE TECHNOLOGY AREAS

The Indian market will be in rapid growth mode in the years to come, offering Estonian companies much wanted new market opportunities. However, India is not an easy market to enter and many Estonian companies will not be able to take up the chance due to their business model, size or limited finances. For such companies, the main way to enter India is by conducting more valuable or simply more subcontracting work within the value-chains of Nordic (or other) partners who sell to India.

India remains a good opportunity for Estonian companies that have specific valuable competences like technological or process know-how – or the capacity to develop innovative, high-quality products and novel service models in specific niches. Such opportunities are the greatest in niches, which will be in high demand due to the future trends of India (e.g. infrastructure-related business areas, cleantech, etc.).

The technology industries are the main business areas in which India offers market potential for more than just a few Estonian companies. These industries are: ICT, biotech, and cleantech. In these, Estonia has significant core competences and innovative solutions to offer. The Indian side can bring to the partnership in the same areas its sufficient labour and talent pool together with local market know-how and contacts. As such, collaboration with Indian partners can offer Estonian technology companies the much-needed scale to enable them to unleash their full business potential – in India or any other markets.

In addition, the leading Estonian manufacturing and service companies can stand to gain much in terms of the efficiency, margins and scale of their operations if they source more non-core work and parts from India.

**Recommendations for priority actions:**

- Leading and innovative Estonian **companies should start researching the Indian market and seeking partnership** (including outsourcing) opportunities more actively – especially in co-operation with each other within cluster groups. A large general business delegation should visit India at the launch of the Embassy of Estonia in New Delhi.
- The planned **Asian information centre at Enterprise Estonia should offer market intelligence and information services about India**, at least in the most promising technology-related business areas.
- The planned Asian information centre and the Estonian Chamber of Commerce and Industry **could commission and publish a guide for Estonian companies on doing business in India**, made available electronically.
- Enterprise Estonia should work towards **establishing consulting arrangements with market-entry service providers in the Indian market**, using the assistance of the soon-to-open Embassy of Estonia.
- Both **governments should jointly prepare and sign agreements or memorandums of co-operation in the most promising technology business areas**. These would lay down the foundation for sourcing demo solutions from each other's companies – starting in the ICT and biotech fields.
- **Pilot projects** could be undertaken by groups of Estonian companies or associations **to jointly gain outsourcing experience with Indian partners**.

### 3. EDUCATIONAL EXCHANGE AND RESEARCH ARE THE CENTRAL CO-OPERATION AREAS

Educational exchange can offer Estonia much-needed skills and knowledge if talented Indian students or researchers conduct their studies or work in Estonia. At the same time, the Indian side benefits from a better skilled labour force if these people return home. In the study or research process, personal connections and networks are created that can later become a good foundation for joint business or research projects. Therefore, educational and research exchange paves the way for future collaborations and trade.

In addition, it also brings direct benefits to the research or technological base of both countries when joint research and innovation is undertaken. This allows India to tap into Estonia's small but significant strengths in ICT, biotech or other sciences. At the same time, it gives Estonia the chance to become more connected to the future global research powerhouse that India promises to be. This is all particularly important in the most promising technology business areas (ICT, biotech, cleantech): joint innovation can unleash the business potential there.

That is why educational exchange and research co-operation are central to advancing the bilateral economic co-operation between Estonia and India, and should be at the forefront. A good starting platform also exists based on current state of relations. The exchanges must now become more frequent and systematic, and the enabling conditions enhanced for emerging joint initiatives to take off.

**Recommendations for priority actions:**

- Institutions from both countries should **search more for partners and begin (thematic) collaboration discussions with institutions in the other country**, based on their core areas of interest and strength – leading to practical co-operation projects and institutional agreements thereafter.
- Both **governments could facilitate the partner search and efforts to make contacts** between individual institutions by arranging joint visits. This should start with the Estonian Minister of Education and Research leading a delegation from Estonian universities and institutes to India in autumn 2012.
- Both **governments and the institutions themselves should arrange more bilateral (or multilateral) scientific events**, especially in the most promising collaboration areas of ICT, biotech and cleantech (but also medicine and others).
- In order to attract more Indian students to study in Estonia, **the universities should start (joint) marketing activities in India**, especially over Internet-based channels.
- One particular opportunity is that **Estonian universities could organise and offer more summer study and internship programmes to students from India**. A relevant pilot project with a top-level Indian university has been initiated by Development Fund in this regard.
- Archimedes Foundation and the newly-established Estonian Research Agency should **coordinate the individual institutions towards joint marketing and partnership search efforts**. This could

include the creation and implementation of an India-orientated marketing strategy, providing information centre services and arranging joint networking events.
- The governments should **offer more stipends for talented students to study in priority areas in both countries**, based on bilateral governmental agreements.
- The initiative of **bringing an Indian cyber security professor to the Tallinn University of Technology**, which has been agreed in principle between the educational ministers of Estonia and India, should be followed through on as soon as possible.
- The Estonian government should establish a **collaboration platform** for companies and universities **to offer Indian students internship, job or study positions** at Estonian companies and universities prior to their graduation.
- In the research sphere, **both governments should start the work of the joint scientific committee** foreseen in the existing bilateral governmental agreement.
- The **Estonian and Indian governments could jointly develop a funding scheme pilot aimed at bilateral projects** – with a focus on the most promising technology areas, such as biotechnology, where the greatest interest for such a pilot currently exists.

### 4. DEVELOPING TOURISM AS AN ENABLER

Mutual tourism development and increased travel opportunities can facilitate trade and FDI flows, educational and research exchange. A pleasant (business or study) trip is always conducive for further interest and collaborations, and both India and Estonia offer scenic sights and memorable encounters.

As outbound tourism from both countries stands to grow in general, there is a good opportunity to raise the bilateral tourist exchange to a higher plateau. This should enable or 'channel' further business and exchange accordingly.

**Recommendations for priority actions:**
- The aim should be to establish **direct flight connectivity between India and Estonia**, which first requires the signing of a bilateral aviation agreement between the governments.
- **Indian tourism agencies or outbound tourism operators** should consider investing directly into **setting up an office in Estonia**.
- **For the Estonian side**, a particularly attractive promotion opportunity would be to **become a shooting location for a popular Bollywood movie** – a pilot promotion project should be developed and launched to make this happen.

### 5. HORIZONTAL SUPPORT FOR ALL THE OTHER AREAS AND INITIATIVES

There are quite a few general ways by which both governments can make the already cordial governmental relations even closer, as well as enhance the factors that enable mutual business and relations to flourish.

**Recommendations for priority actions:**
- There should be **more frequent high-level official governmental visits** in both directions, with a tentative calendar agreed in advance.
- Governments should consider establishing an inter-governmental high-level **joint economic commission** to coordinate and advance economic cooperation on all fronts.
- Both countries should move forward fast towards the **full ratification of the signed Agreement for the Avoidance of Double Taxation**.
- The soon-to-open **Embassy of Estonia in India should serve as an active centre of bilateral networks** and exchanges, with an appropriate mission, methods of operation and staff level granted for it. ■

# Introduction: Estonia-India Foresight Project Aims and Set-up

The rise of Asia is one of the megatrends of the global economy, and Estonia needs to position itself strategically in relation to it, to make use of the opportunities it opens up and the risks it may pose. In order to identify the best opportunities for Estonia, it might be best not to focus solely on the current main players in Asia. Instead, building future-orientated bridges with the leaders of the future can bring the largest gains in the long term.

This is particularly true for small countries like Estonia. In more mature markets there is much more competition for small country companies to face; and with more developed partners, it is much harder to establish mutually beneficial co-operation. Therefore, it is best to look for partners with whom to grow together along the way, from the early stages onwards.

As such, in spring 2011 Estonian Development Fund (EDF) decided to launch a foresight project to identify mutual business and co-operation potential with India: a country that is already an important player in Asia, but whose ascent is still only picking up pace.

>> The aim is to build bridges with India, one of the future leaders of the world economy

In addition, interest in mutual economic relations potential was rising within the administrations of both countries, creating support momentum for the project. In Estonian policy-making circles, proposals had been circling for some time in regard to opening an embassy in New Delhi, with no decision yet made. The decision-makers sought a clearer economic and business rationale for the proposed embassy – what could be the true potential of economic relations between the countries, beyond general interest?

At the same time, the Embassy of India to Finland and Estonia had an interest in launching a background study to determine possible Estonia-India business opportunities. Therefore, EDF and the Embassy of India combined forces to carry out the current foresight project, with daily project management and research work done by EDF.

The specific objectives of the Estonia-India foresight project have been the following:

- to identify through analysis and discussion ways to enhance business and economic relations between Estonia and India – to make proposals on the most promising business and co-operation areas as well as the necessary action steps, from the perspective of both countries involved;
- to advance through background reports, articles and events the knowledge about the Indian economy in Estonia, among both businesspeople and governmental representatives;
- to build a contact network of potential partner institutions/companies in both countries and prepare specific pilot initiatives for collaboration in the most promising areas, based on which further co-operation and relations could develop in future.

In order to reach these set objectives, the work was structured into several stages that lasted from February 2011 to April 2012 and covered activities from background analysis to the crafting of specific collaboration initiatives. A detailed overview of the project stages as well as the main events can be found in Annex 1.

Within the foresight project, the scope of work has been established on economic relations in a wide sense. As the project logo also exhibits, three broad areas are covered in the project: mutual trade (exports from both countries to each other); mutual

foreign direct investment; and educational exchange and scientific co-operation. While the first two represent the usual core of economic exchange, the latter has become crucially important in line with the increasing value of knowledge-based business in the world.

Throughout the project, EDF has collaborated with a range of Estonian and Indian stakeholders from both government, academic and business circles: to include their ideas, engage them in discussion, and ensure commitment to the proposed recommendations and initiatives. These have included relevant ministries and state agencies, business associations and specific universities or research institutions.

Besides identifying the future potential of Estonia-India relations, the current foresight project intends to be a pilot for the Estonian side in a wider sense. Its working approach should offer a model for identifying economic collaboration interests in other new and distant markets as well. In addition, its recommendations should offer insights for advancing those interests with other Asian countries – although, naturally, being specific to India in the current report.

**CONTENTS OF THIS REPORT: A GUIDE**

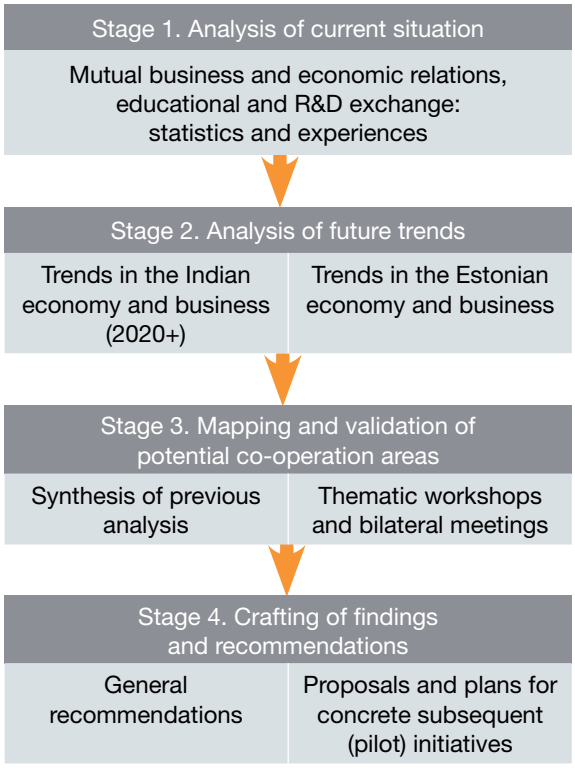
The current report presents the results of analysis and discussions undertaken within the Estonia-India foresight project. The structure of the report reflects the general project set-up.

In Chapter 1, the current situation in relation to economic relations and mutual business between Estonia and India is presented and analysed. Accordingly, the foundation for future co-operation is explained and specific conditions are identified that need to be taken into account within the final recommendations. Importantly, the context of relations between India and the European Union is presented as a wider framework to keep in mind for advancing business and co-operation between Estonia and India.

Chapter 2 gives an overview of the current situation and future trends of the Estonian economy. It highlights the major interests for co-operation as well as the most promising areas and stimuli for mutual business from the Estonian perspective. Chapter 3 does the same from the Indian perspective. Both of these chapters have been written in a manner that makes them suitable as short introductions to the business environment and collaboration opportunities in both countries, whether by governmental or business executives.

ESTONIA-INDIA FORESIGHT
EXPORT · INVESTMENTS · KNOWLEDGE

Figure 1.
Stages of the Estonia-India foresight project




» The report proposes an agenda for advancing bilateral economic relations

Following on from the previous sections, Chapter 4 goes on to synthesize the research findings and the various discussions held during the foresight project to present the conclusions and recommendations. These have been separately presented for all major promising areas for co-operation. In addition, several overarching or horizontal recommendations are presented.

The recommendations are targeted separately for the governments and enterprises/universities of both countries, with highlighting of possible concrete next steps. Altogether, they are planned to form an agenda proposal for both the Indian and Estonian sides on how to advance economic relations for significant mutual future benefit. ■

# 1 Economic Relations Between Estonia and India to Date: A Foundation Has Been Laid

The snapshot overview of business and economic relations between Estonia and India reveals that the current level of trade, investment, research co-operation and educational exchange is rather low.

Nevertheless, the foundation has been laid in terms of general cordial governmental relations and several bilateral agreements as well as small advances in exchanges in various fields. Indeed, there are encouraging signs, as mutual trade and interest among Indian students in studying in Estonia have been rising.

Therefore, the current low levels do not reflect the ceiling of possibilities. In fact, they show that the potential routes to collaboration have either been under-utilised to date or are still waiting to be tapped.

## GOOD BILATERAL GOVERNMENTAL RELATIONS

The Republic of India and the Republic of Estonia have had cordial governmental exchanges since diplomatic relations were established in 1991, following Estonia's restoration of independence. This has led to occasional high-level visits, including one by Estonian President Lennart Meri to India in 1999 and the Speaker of the Estonian Parliament, Ms Ene Ergma, in 2010.[1] In 2011, several Indian Cabinet members paid short visits to Estonia to discuss specific collaboration matters.

Among them was H.E. Shri Kapil Sibal, the Minister of Communications and Information Technology and the Minister of Human Resource Development, who on 19 September 2011 on behalf of the Government of India signed the Agreement for the Avoidance of Double Taxation with the Estonian Minister of Finance, Mr Jürgen Ligi. This is among the most significant bilateral treaties between Estonia and India to date; currently awaiting ratification by both sides. The other treaties in force include general framework co-operation agreements of science and technology (since 1999), culture and education (since 1999), economic co-operation (since 2000) and trade (2004).[2]

>> The foundation for relations is good: key treaties are in place and an Estonian embassy is soon to open in New Delhi

At present, neither country has full official representation in the other's capital. India manages Estonian relations through its embassy in Helsinki, Finland. Estonia has nominated an Ambassador to India who resides in Tallinn. This will change in 2012, as Estonia plans to open an embassy in New Delhi. There was an Estonian consul temporarily in India from 2006 to 2008 and, since then, visa matters have been handled through the local Hungarian Embassy. Estonia has also two honorary consuls in India who assist in consular as well as business promotion matters: one in New Delhi since 1993 and one in Mumbai since 1999.

As part of general relations, a few delegations of Indian central and state-level government high officials have visited Estonia for week-long e-governance training programmes at e-Governance Academy – most recently in April 2012.

## SMALL EXPAT COMMUNITIES, BUT NO BUSINESS ASSOCIATIONS

No reliable figures exist on the number of Estonians who are living and working in India. Based on anecdotal evidence, their number seems to have increased over the years. More (especially young) people have taken up jobs in international companies there or travelled or studied for extended periods of time in India. The total figure is most likely less than 100 and they are spread out over different regions, states and cities in India.

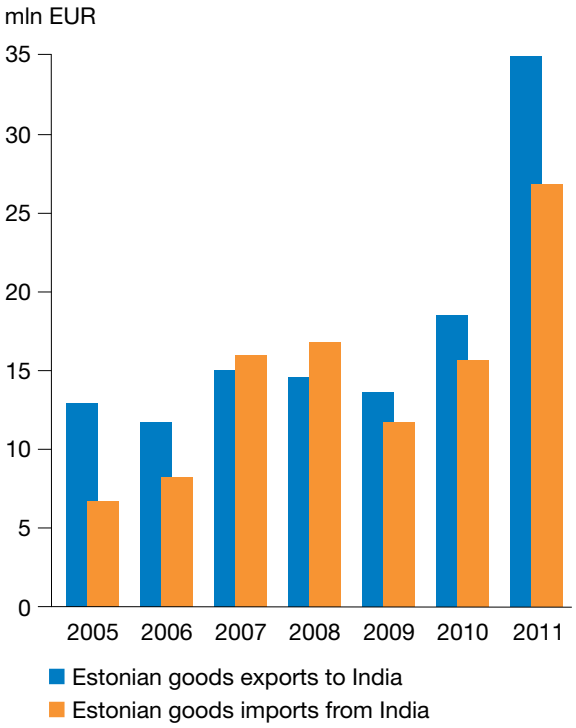
>> A few hundred Indians reside in Estonia, whilst the number of Estonians in India is unknown

The number of Indians living and working in Estonia is similar. The Indian Ministry of External Affairs has put the number at about 200[3]. According to the Estonian Police and Border Guard Board, as of 1 January 2012, 169 Indian citizens have received Estonian residence permits (up from 151 one year ago). Of these, 137 are temporary and 32 permanent permits.[4] Almost all of these Indians live in the cities of Tallinn or Tartu, where most business and educational opportunities exist.

The small numbers of expatriates reflect the low levels of mutual business to date. However, the local Indian community in Estonia has an active cultural association that organises mutual cultural events and can serve as a social entry 'platform' for newly arriving Indians[5]. On the other hand, to date no bilateral business association, chamber of commerce or other forum has emerged in either of the countries that could unite and provide networking opportunities for businesspeople and investors interested in mutual business. The Estonian Chamber of Commerce and Industry and the Federation of Indian Chambers of Commerce and Industry (FICCI) have signed a Memorandum of Understanding to set up a joint business council and collaboration for hosting mutual business delegations. Yet, this initiative has never been realised or followed through on, remaining only on paper so far.

1 Estonian Ministry of Foreign Affairs, *Estonia and India bilateral relations* http://www.vm.ee/?q=en/node/95
2 Ibid.
3 Government of India, Ministry of External Affairs, *India–Estonia Relations* http://www.mea.gov.in/mystart.php?id=50042458
4 Estonian Police and Border Guard Board, *List of Recidence Permits by Nationalites*, 2012 http://www.politsei.ee/dotAsset/61215.pdf
5 Indian Cultural Association of Estonia http://indsocest.wordpress.com/

**Figure 1. Estonia-India goods trade has increased, although not steadily**




**SOURCE:** Statistics Estonia data[6]

Overall, it has indeed been the cultural sphere that has seen the most active bilateral exchange[7]. The Indian government has been supporting festivals and Indian culture studies in Estonia. In 2011, the Estonian national epic "Kalevipoeg" was also translated into Hindi (under the name of "Kalevputra").

## TRADING OF GOODS ON THE RISE

Prior to Estonia joining the European Union in 2004, India's share in Estonian commodity trade was around 0.05–0.06%[8]. Since then, the volume of bilateral trade has been rising at an increasing pace in terms of both exports and imports. The only exceptions were the peak years of the global economic crisis, when trade growth first slowed in 2007–2008 and then shortly reversed in 2009. Nevertheless, 2010 already saw a strong recovery with exports in goods from both countries reaching new record levels.

Aside from a few years when Estonian exporters focused strongly on neighbouring markets, the trade balance of goods has been in Estonia's favour, perhaps surprisingly. This means that India has exported less to Estonia than the other way around, which is not representative of the general exporting capacity of India and its share in the world market.

However, considering the compound annual growth in the 2005–2011 period (even with the intermittent slump in 2008–2009), Estonian imports from India have grown faster than Estonian exports in return – 26% versus 18%, respectively[9]. This suggests that the trade gap may narrow again soon, some larger individual deals might alter the outcome significantly, given the low total volume.

Although the overall trading levels are still rather low and not very diversified, 2011 saw a particularly strong hike in mutual trade. Estonian exports grew 89% to 34.8 mln euros, while Indian exporters traded in return to the value of 26.8 mln euros, up 71% from the previous year[10]. 2011 was indeed a record trading year for Estonia overall, signalling a strong economic rebound after the crisis[11].

» 2011 saw a record level of goods exchange both ways

The stronger-than-average increase in trade volumes with India also raised their relative importance for Estonia, albeit slightly. Their share had largely remained around 0.2% in exports and 0.14–0.17% in imports of Estonia – now both rose by half, to 0.29% and 0.21% respectively. As such, India ranks 29th in the list of Estonia's export destinations (36th in 2010) and 31st among countries of origin for imports (25th in 2010).[12] Given India's importance in the world economy, the size of its market and overall exports, these figures are still rather low. Looking at the significance of mutual trade from an Indian perspective, the numbers are indeed even more modest. Based on official data, trade

6 Statistics Estonia, *Exports and Imports of Goods by Countries* (in Estonian) http://bit.ly/JiFlri
7 Estonian Ministry of Foreign Affairs, *Estonia and India bilateral relations* http://www.vm.ee/?q=en/node/95
8 Based on data from Statistics Estonia, *Foreign Trade 1993–2003* (in Estonian) http://bit.ly/JoM5gx
9 Annex 2.1 and Annex 2.2 at the end of this report
10 Annex 2.1 and Annex 2.2 at the end of this report
11 Statistics Estonia, *Record high trade in Estonia in the previous year*, 2012 http://www.stat.ee/57496
12 Estonian Development Fund calculations based on Statistics Estonia, *Exports and Imports of Goods by Countries* (in Estonian) http://bit.ly/JiFlri

with Estonia represents 0.02% of total goods exported and 0.01% of imports annually[13].

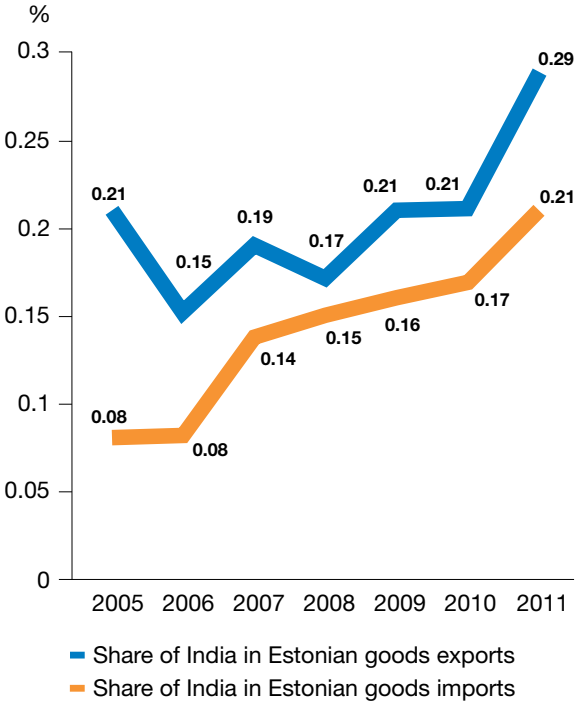
Among the Estonian export commodities to India, pulp and paper products together with metal products have been prominent throughout the years. These same pulp, wood and metal articles exhibited strong growth in 2011 (while paper exports fell), contributing to a record rise in export levels. However, the biggest contribution was the 860% year-on-year growth in the export of electrical machinery and equipment, making it by far the single largest export commodity group with a 38% share in total exports to India. Overall, machinery and electrical equipment accounted for 40% of exports to India in 2011, followed by wood and paper with 25% and base metals with 18%.[14]

» The main exports of Estonia to India are electrical equipment and machinery, pulp and paper as well as metal products

Therefore, a large majority of Estonian commodities exported to India are concentrated into just a few categories. This reflects the narrow base of Estonian business activity in India with most of the remaining export categories holding only a small share in total volumes. Therefore, the high annual growth (or decline) rates can also misrepresent the trends. A statistical effect can come to play where-by a small absolute change in small total volumes can cause a large relative change.

This conclusion of a small exporting base is reinforced by the fact that in 2010 only 97 Estonian companies engaged in some exporting activity with India. 80 of them are fully domestic, while the remainder are international traders operating via Estonia. In many of the larger export commodity groups, only 2–3 companies accounted for most if not all of the trade volume. Only in electrical machinery and equipment has the India-orientated exporter base been more diverse and numbered, with 29 companies in 2010.[15] That said, even in this category it is thought that the vast export growth of 2011 came from just a handful of exporters of specific equipment who found new partners and deals in India. This may not mean sustainable higher trade levels for future years, though. The latter will be mainly achieved by expansion of trading base in terms of the number of companies involved exports on both sides.

Figure 2. The relative importance of Estonia-India trade has fluctuated, remaining low




SOURCE: Statistics Estonia data[16]

» For Estonian export companies India is not yet a strategic market

For most Estonian companies exporting to India, this market has been just one of many and has mainly been of second-rate importance to date. Based on background research and a rough general survey of such companies within this study, most admit that they have not targeted the Indian market separately or at least not intensively. Even statistics show that the Indian market holds a somewhat larger significance only for Estonian leather and metal exporting companies, if the relevant India export volumes are compared to total commodity group exports[17].

13 Government of India, Ministry of Commerce & Industry, Department of Commerce, *Export-Import Data Bank version 6.0*, 2011 http://commerce.nic.in/eidb/default.asp
14 Annex 2.1 at the end of this report
15 Based on data obtained specifically for this current study from Statistics Estonia.
16 Statistics Estonia, *Exports and Imports of Goods by Countries* (in Estonian) http://bit.ly/JiFIri
17 Annex 2.1 at the end of this report

**Table 1. Indian exports to Estonia are more diversified, but still strongly concentrated into a few groups of goods**

| *Group of imported goods* | *Value of imports in 2011 (mln euros)* | *Share in total Estonian goods imports from India in 2011* |
|---|---|---|
| Machinery and equipment (mostly electrical) | 12.1 | 45.4% |
| Textile products (including mainly fabrics and cotton) | 3.1 | 11.6% |
| Base metals (including mainly iron and steel) | 2.8 | 10.4% |
| Vegetable food products (including tea and spices) | 2.2 | 8.4% |
| Chemical products (including mainly cosmetics and pharmaceuticals) | 1.8 | 6.8% |

**SOURCE:** Statistics Estonia data[18]

Most large Estonian manufacturing companies are foreign-investor-owned and in them, the direct sales activity itself has been undertaken by the parent offices. In such cases, the Estonian managers have not had practical experience with the Indian market or partners. To date, sales to India by Estonian-owned companies have mostly been in small patches, based on one contract or for preliminary market testing. Often, these exports or single deals have occurred based on chance encounters with or as a reaction to accidental interest from Indian importers.

Nevertheless, talking to several Estonian company owners and managers showed that interest towards India is in general on the rise among the more internationalising enterprises. The size and growth of this market are gaining (although slowly) the attention of Estonian businesspeople. An increasing number of Estonian companies are already looking for market representatives in India or are aiming to do so in the future. In particular, this group includes importantly several companies in technology-related business areas.

A rough survey of companies with at least some exposure to and experience of the Indian market reveals the main hardships that current or future Estonian exporters have to deal with. The biggest obstacle is to find good and trustworthy local partners and build networks, which are crucial for engaging in trade, especially for small and less-experienced companies. The large distance between the countries, together with certain cultural differences, amplifies this concern. Good partnerships would make it easier to overcome bureaucratic and regulatory as well as logistics and distribution hurdles. Several companies have also encountered little overall awareness of Estonia resulting in little interest in their products or services, unless they are truly innovative and offer excellent value-for-money. Furthermore, a lack of the financing needed for sustained marketing efforts in a new and far-off market or for large-scale production and trade (which a big market would demand) have also held Estonian exporters back.

The commodity imports from India to Estonia are more diversified than has been the case with Estonian exports, as more commodity categories have been recorded moving across the borders. Given the lower overall value, it means that imports are quite fragmented in terms of categories. As with exports from Estonia, just a few article groups also carry most of the trade volume in imports. Machinery and equipment imports are by far the largest in terms of share, comprising 45.4% of total Indian goods entering Estonia in 2011[19].

» Machinery and electrical equipment, textiles, metals and food products are the main exports of India to Estonia

Most of these main import commodities also experienced strong growth, with machinery and equipment and chemical products leading the pack in 2011. The only commodity category in which India holds a noteworthy share of Estonian imports is silk products, 30% of which come from there. In the remainder of the categories, India's share remains below 5%, if not below 1% of the total imports of a particular commodity group.[20]

18 Statistics Estonia, *Exports and Imports of Goods by SITC commodity categories* (in Estonian) http://bit.ly/JiFIri
19 Annex 2.2 at the end of this report
20 Annex 2.2 at the end of this report

There are no figures available for the number of companies actively involved in exports from India to Estonia. Given the very low total volume of Indo-Estonian trade, the figure must be quite small. In many ways, it is a natural consequence of the small size of the Estonian domestic market and the fact that Indian enterprises have to date focused on other foreign markets instead (mostly even outside Europe).

Most of the imports flow in through trading companies, which are either Estonia or India-based. At the same time, several companies, among them a few leading Estonian manufacturers, have attempted to source input materials directly from India (e.g. textiles). Still, such activity does not constitute the majority of imports as the companies have so far found high-quality sourcing and reliable partnerships hard to establish due to little contacts and relevant experience. However, background research has shown interest among Estonian manufacturers in considering more sourcing from India, should the conditions and quality be suitable.

As in several trading groups, there are trade flows in both directions between the two countries, and analysis of the trade balance by each commodity group could shed further light on the mutual business patterns. In the case of India and Estonia, the results repeat the above story. Statistics reveal that the current trade balance between the countries is mainly in Estonia's favour in terms of pulp, paper and wood products; base metals, especially iron and steel products; machinery and equipment of various sorts (mostly optical and electrical). At the same time, India's largest trade benefit with Estonia lies in textile products, vegetable food products, stone materials, plastics and chemical products.[21]

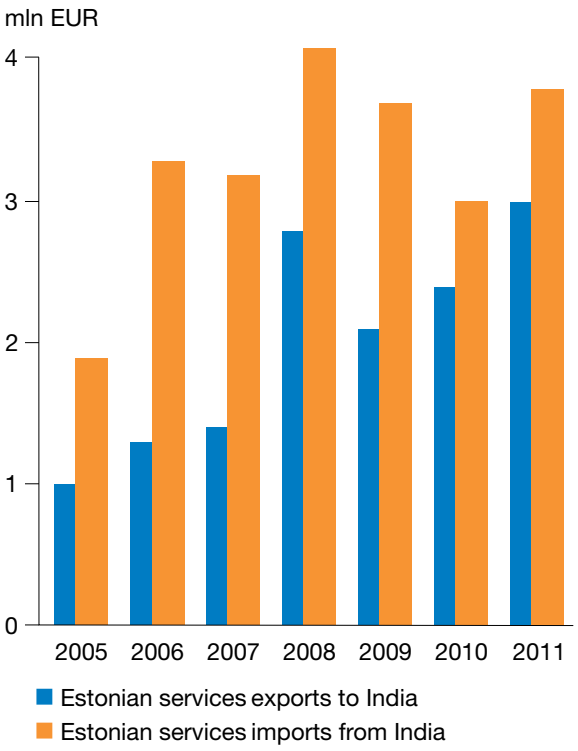
## LITTLE TRADING ACTIVITY IN SERVICES, MOSTLY IN TOURISM

While the goods trade balance has largely been tilted towards Estonia, India has been constantly exporting more to Estonia than the other way around in terms of services. This is to be expected, given the very strong position that India holds in the global service trade, including tourism and IT services.

Service trade peaked in 2008 with 4.1 mln euros worth of services provided by Indians to Estonia and 2.8 mln euros worth of services in return. This trade then fell due to the global crisis and is yet to fully recover. Nevertheless, in 2011 Estonian service providers have raised their exports to a record annual level of 3 mln euros and Indian service exporters bounced back to 3.8 mln euros of trade, too. The total levels and relative importance of service trade has been very low, though. The share of India in total Estonian service exports in recent years has been around 0.07–0.08%, with India's share in Estonian service imports varying between 0.14–0.2% of the total.[23] The reasons for low mutual business are the same as identified for the trade of goods: ranging from hitherto strategic orientation to other markets to little contacts and financial might.

While no detailed statistical view exists for the composition of services between the two countries, it is possible to identify certain characteristics through rough background research in the field (by talking to companies directly). For example, a low but growing

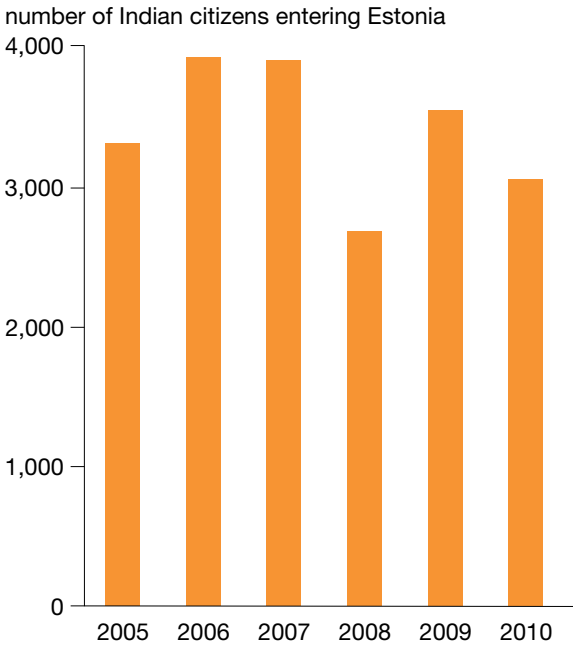
Figure 3. Estonia-India service trade has grown, although not constantly




**SOURCE:** Bank of Estonia data[22]

21 Annex 2.3 at the end of this report
22 Bank of Estonia, *External sector statistics* http://statistika.eestipank.ee/?lng=en#treeMenu/MAKSEBIL_JA_INVPOS
23 Ibid.

Figure 4. Number of Indian tourists to Estonia has fallen somewhat over the years




**SOURCE:** data obtained from Estonian Police and Border Guard Board

level of exchange of business services occurs between India and Estonia, especially, for example, in the fields of information and communications technology (ICT) and logistics.

By far the largest part of trade in services should come from tourism. However, even in this area no reliable figures are available from either country. The mutual visa issuance numbers do not reflect actual tourism and neither country currently gathers statistics on the overnight stays of citizens from the other country (e.g. in hotels). Discussions with travel agents reveal that trips to India have become more popular among Estonians over the years – particularly since tour operators began their first direct charter flights to India a few years back.

» Tourism is probably the highest service trade sector, for both countries

For reverse tourism, some inferences can be made from the data of border crossings. The number of Indian citizens entering Estonia has fluctuated between 2,700 and 3,900 in 2005–2010, having fallen in recent years compared to the previous peaks[24]. This number includes people with residence permits (therefore, not actual tourists) and their multiple entries, as well as businesspeople and others coming for just a day to Estonia and leaving the same night. Moreover, the figures are probably distorted by Estonia joining Europe's borderless area (Schengen) at the end of 2007, causing the fall as shown in the statistics. Since 2008, Indian citizens arriving to Estonia that have visited some other Schengen country first (including Finland, in particular) do not pass through border controls and do not get counted. Hence, the current actual scale of India's tourism and its change patterns remain unknown.

## FOREIGN DIRECT INVESTMENT HAS BEEN VERY LOW

Despite the growing mutual trade, foreign direct investment (FDI) flows between Estonia and India have been very modest. Most of Indian direct investment into Estonia has been towards trading offices and retail, real estate and restaurants. This is why, in official statistics, capital flows stand close to nil, as such business entry requires little capital – most is borrowed locally and profits are reinvested or remitted. The latter explains why capital flows from India to Estonia have been negative in the statistics in the past, as happened each year from 2005 to 2009.[25]

Larger Indian investors have preferred to focus on markets other than Estonia, or have primarily sought merger and acquisitions that have been in limited offer in Estonia, as opposed to greenfield opportunities. This might be a reason also why no large business delegations of Indian businesspeople have visited Estonia to date.

More recently, some IT and shared services companies of Indian-origin have begun to look at investing in Estonia, in order to serve the Nordic markets from there. However, this general interest is yet to materialise in the form of actual investments. The Indian investments to Estonia have been somewhat hampered also by difficulties of attaining visa and residence permits to live and work in Estonia, which is often necessary to carry out the investment.

At the same time, a few multinational companies with some Indian background have invested into manu-

24 Based on data obtained specifically for this current study from the Estonian Police and Border Guard Board.
25 Bank of Estonia, *ODI flows by countries* (in Estonian) http://bit.ly/zGlDov

facturing in Estonia. For example, Arcelor Mittal produces hot dipped galvanised steel sheet in coils in Muuga port. Such companies are incorporated and active outside India, thereby not contributing to official investment flows between India and Estonia. However, they still create trade between the two countries, in the way that the Arcelor Mittal investment has led to a good share of Estonian metal products being exported to India.

» FDI flows have gone mainly into retail and real estate in both countries

As of 31 December 2011, the accumulated stock of Indian investments to Estonia was about 200,000 euros – 0.0016% of total FDI stock in Estonia. By the same time, Estonian companies had made total direct investments to the Indian market in the value of about 100,000 euros.[26] This is a negligible amount with respect to the total FDI that has been injected into India in recent years. Most of the Estonian investments have been in real estate and retail or trading. However, Estonian companies have also set up a few manufacturing facilities in India, such as for the production of matches, flax and some machinery.

All of these investments have been small-scale and mostly orientated to the local market, often undertaken together with financial input coming from local investors. For the majority of Estonian companies, their financial strength has been too low or their business models and strategic orientation too limited to consider entering India (or any other emerging markets) with their own local facilities.

Neither Estonia nor India has been in focus for each other's investment promotion agencies so far. In the past, the Estonian Investment and Trade Agency has undertaken occasional road shows, including some joint marketing activities together with other Baltic and Nordic countries in 2005–2006. Due to the one-off nature of these endeavours, no investments have so far resulted.

## SCIENCE AND RESEARCH CO-OPERATION HAS BEEN PIECEMEAL

Co-operation between Estonia and India in the field of science and research received a framework footing in 1999 when the two governments signed the Agreement on Co-operation in the Fields of Science and Technology came into force. This agreement stated the aim to exchange more researchers and information, arrange seminars and symposiums, carry out joint research and share facilities. It was also foreseen that a joint committee of scientific community representatives from both countries would be established to implement the Agreement.[27] Although the committee was to gather at least once every two years in either of the capital cities, it has yet to meet. Therefore, the implementation of the Agreement has not begun, in effect.

Most of the practical collaboration between Estonian and Indian scientists and researchers has occurred through multilateral research projects, mostly funded under several EU initiatives. Almost all such projects have been run by third country experts, who have invited the respective Indian and Estonian institutions or individual researchers to participate. Consequently, these projects should not be considered as genuine research collaborations between the two countries.

But they have possibly allowed for the benefit of some first (even if limited) individual contact between the representatives of both research communities. Half of such projects have been in the humanities and social sciences areas, with most of the remainder in several disciplines of life sciences.[28] Naturally, scientists and researchers have also made some contacts and interacted during occasional conferences and seminars, but not with the result of significant joint research.

» Joint bilateral research projects have not emerged to date, but several Indian post-docs work in Estonian institutes

Post-graduate exchange has emerged as the primary current vehicle for contacts and practical co-operation. It also has the potential to lead to joint scientific findings as well as tighter research ties between India and Estonia at some point in the future. No Estonian researchers have currently applied for state funding for post-doc work in India, yet in 2011 at least 7 Indian researchers availed of this in Estonian institutes. Most of them have done work in research groups and labs related to the University of Tartu. In terms of disciplines, most of Indian post-docs have worked in life

26 Bank of Estonia, *ODI position by countries* (in Estonian) http://bit.ly/yNQUEd
27 Estonian Ministry of Foreign Affairs, *Database of foreign agreements* (in Estonian) http://vlepingud.vm.ee/et/contract_view/1386
28 Based on data obtained specifically for this study from the Archimedes Foundation, based on Estonian Research Portal

Table 2. Number of Indian students admitted to Estonian higher education institutions has slightly risen, especially at PhD studies level

| *Admitted Indian students* | *2005* | *2006* | *2007* | *2008* | *2009* | *2010* | *2011* | *Totals* |
|---|---|---|---|---|---|---|---|---|
| PhD studies | 2 | 1 | 0 | 1 | 1 | 5 | 5 | 15 |
| Master's degree studies | 1 | 0 | 3 | 1 | 3 | 1 | 4 | 13 |
| Bachelor's degree studies | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| Totals | 4 | 1 | 3 | 2 | 4 | 7 | 9 | 30 |

**SOURCE:** Estonian Education Information System (EHIS) data from Archimedes Foundation

sciences (genetics, medicine, related material sciences), with the remainder focusing on ICT.[29] Several of the current post-docs previously completed their PhD degrees in Estonia.

Although governmental stipends also exist for the exchange of top professors and faculty, according to present information it has not actually occurred between Estonia and India. Some limited exchange has taken place in medical fields only, which has been funded by international medical technology companies. Several Indian doctors have undergone additional professional training in the University of Tartu to practice working with innovative equipment and methods; specialist Estonian doctors have also performed sample procedures in a few Indian hospitals.[30]

## BEGINNINGS OF EDUCATIONAL EXCHANGE

As in the field of science and research, there is also a framework governmental agreement in place to advance co-operation between Estonia and India in the field of education. The aim of this 1999 agreement was to promote and facilitate contacts, exchange and collaboration between the educational and science institutions of both countries, as well as the exchange of academic materials[31].

>> Tourism has probably the highest share in service trade, for both countries

The stipulated bilateral facilitation of contacts has not taken root. To date, no institutionalised relations or bilateral treaties (e.g. Memorandums of Understanding) exist between any Estonian and Indian universities or institutes. However, the Indian government has been supporting Sanskrit and Hindi courses in Estonian universities. In addition, it has made contributions to the Estonian Humanitarian Institute, the National Library and the Centre for Oriental Studies at the University of Tartu in the form of books about India's history and culture.

Despite the lack of bilateral institutional relations, several Indian students have come to study in Estonian higher education institutions. In 2010–2011, there was a doubling of the number of students of Indian origin admitted to study in Estonia, albeit from a very low previous level. In the 2011/12 academic year, 9 students started their studies in doctoral and master's level programmes.

The total number of Indian students enrolled in Estonian institutions in this academic year was 16. In terms of study and admissions figures, India ranks 12th among countries of origin for foreign students studying in Estonia.[32] The share of Indian students among admission figures for foreign students is the highest at PhD level, where they have constituted 10–11% of new students in the last two years.

Over the years, the University of Tartu has admitted the largest number of Indian students – 15. Altogether, 11 of these have been admitted to doctoral level studies – 5 in 2010 alone. Tallinn University of Technology received 11 Indian students in 2005–2011, of whom 4 entered doctoral and 6 entered master's programmes.

A big obstacle to a larger entry of Indian students has been the long-standing difficulty in obtaining an Estonian visa or residence permit (e.g. very complex pro-

29 Based on data obtained specifically for this study from the Estonian Science Foundation, based on Estonian Research Portal
30 Tartu University Hospital, *Indian doctors visited the clinic*, 20.05.2009 (in Estonian) http://www.kliinikum.ee/leht/kliinikud-teenistused/235-kliinikumi-vaeisasid-india-arstid
31 Estonian Ministry of Foreign Affairs, *Database of foreign agreements* (in Estonian) http://vlepingud.vm.ee/et/contract_view/1146
32 Data obtained specifically for this study from Archimedes Foundation, based on the Estonian Education Information System (EHIS)

cedures and formerly no Estonian embassy in India, requiring travel to Beijing, China, for interview). Estonian educational opportunities and excellences are also not yet widely known internationally, with the exception of the research excellence in specific ICT or natural sciences fields. Furthermore, in the past, there were also not enough attractive English language-based study programmes from which to choose.

The recent increases in interest among and admissions of Indian students have been a reflection of improvements in several of these factors. Firstly, the visa and living permit application processes have become slightly easier. Secondly, several new state-funded stipend schemes have opened up, making the studies more attractive. Thirdly, new high-quality Master's level programmes have been launched (e.g., in cyber security and software engineering). The doctoral level students have been attracted by the opportunity to work with particular researchers or topics that are at a high level in Estonia.

» Indian students have been interested in studying computer, bio- and material sciences in Estonia

Overall, the majority of students have been interested in studying computer sciences in Estonia – particularly the new Master's level programmes launched in recent years. In doctoral studies, interest in biosciences and physical natural sciences (mostly material science) hold noteworthy shares. These are also the core areas for Estonian higher education and R&D development as defined in the national strategy documents.

Therefore, the current interest among Indian students coincides, quite importantly, with Estonian strategic higher education and R&D interests. This should create a good basis for attempting to attract even more students from India to these disciplines, while also facilitating future research co-operation based on the connections made during these studies.

During the background research of this project, it was not possible to attain a similar overview of Estonians studying for their degrees in Indian institutions. No such data exists, as the Estonians going to study abroad are not obliged to report on that, unless they go with support of a governmental scholarship programme – and currently none have done so for India. It is only known that several Estonian students have done mid-study internships or volunteer work in India through AIESEC, the global student organisation.

For Estonian students, a particular useful channel for study in India has been the International Technology and Economic Co-operation (ITEC) programme. Under the programme, the Government of India offers scholarships for short courses or term study or internship at several Indian higher education and governmental institutions.[33] There are presently 25 slots available annually for Estonian participants, but the programme has been under-filled in recent years.

Table 3. Computer sciences has been the most popular study area among Indian students in Estonian universities, followed by biosciences

| *Study area* | *Total in 2005–2011* | *Including PhD studies* | *Including Master's level studies* |
|---|---|---|---|
| Computer sciences | 11 | 5 | 6 |
| Biosciences | 4 | 4 | 0 |
| Physical natural sciences | 3 | 3 | 0 |
| Business and management | 3 | 1 | 2 |
| Humanities | 2 | 1 | 1 |
| Social and behavioural sciences | 2 | 1 | 1 |
| Journalism and communications | 2 | 0 | 2 |
| Technical fields | 1 | 0 | 1 |
| **Total** | **28** | **15** | **13** |

**SOURCE:** Estonian Education Information System (EHIS) data from Archimedes Foundation

33 Government of India, Ministry of External Affairs, Technical Cooperation Division http://itec.mea.gov.in/

In 2005–2010, a total of 82 Estonians participated in the ITEC programme in courses ranging from ICT and entrepreneurship to cultural and developmental studies (the scope of courses on offer is even wider yet).[34]

## EVOLVING INDIA-EU RELATIONS: USEFUL CONTEXT FOR ESTONIA-INDIA CO-OPERATION

As Estonia has been a member of the European Union (EU) since 2004, the wider context of EU and India relations should be considered as an important backdrop to identifying ways for bilateral co-operation between the two countries.

Namely, EU-level initiatives and co-operation programmes can provide useful funding opportunities and partnership channels for exchanges between Estonia and India. However, in areas that fall under EU joint decision-making (such as trade or immigration to a large extent), there can be limits on how far bilateral relations and initiatives can be developed between individual countries.

Although general relations date back to the European Economic Community era in the 1960s, broader dialogue and collaboration began with the 1994 EU-India Co-operation Agreement that set the general aims and terms. In 2004, India became one of the EU's strategic partners[35]. There are now regular bilateral summits taking place, the most recent of which occurred on 10 February 2012[36], together with a variety of interim ministerial and expert-level meetings in different (policy) areas.

The core of EU-India relations has been in areas of trade and investment, where bilateral trade dialogue has been long-standing. In recent years, a free-trade agreement (officially called "India-EU Broad-based Trade and Investment Agreement") has been on the table to encourage more business between EU and India. Although the interim aim was to conclude the talks by 2011, progress on the agreement has been hampered due to several sensitive issues such as agricultural tariffs, intellectual property rights, opening of financial markets and other matters[37]. In their latest summit, the leaders of the EU and India announced the talks to be "close to completion"[38].

Both parties hope that this agreement will lead to a significant rise in mutual business. Trade between the EU (meant here as a trading bloc of 27 countries, also known as EU27) and India has been gathering pace in recent years. In 2010, about 86 billion euros worth of goods and services were traded between the two, which increased by another 20% in 2011. 2.6% of EU's exports go to India and 2.2% of imports come from there, ranking India 8th among EU's trading partners (up from merely 15th in 2002).

This relationship is even much more important for India. The EU as a whole is both the main destination for Indian exports as well as the main source of imports, with respective shares of 19% and 14% in the country's total trade flows.[39]

>> EU-India trade is rapidly increasing; a free-trade agreement would boost it even more

About 3/4 of India s trade with the EU takes place with 5 countries, which represent the biggest national markets within the EU and with whom India has had long-standing trade relations. Therefore, EU-India trade relations are heavily concentrated in terms of individual partner countries. The overall trade balance is in EU's favour, having increased in each of the past number of years and reaching 2.2 billion euros most recently.[40]

All of the major multinationals of EU origin operate in India, making the EU as a whole the biggest foreign investor in India with a total of 20 billion euros invested since 2000.[41] The investment flows decreased significantly in 2008–2009 due to the global crisis, but they bounced back in 2010 reaching 4.7 billion

34 Data obtained specifically for this study from Archimedes Foundation, the ITEC partner institution in Estonia.
35 European Union, *European External Action Service*, India http://eeas.europa.eu/india/
36 EU-India Summit, *India-European Union Joint Statement*, 2012 http://eeas.europa.eu/india/sum02_12/docs/20120210_joint_statement_en.pdf
37 Based on a background overview of India-EU relations commissioned specifically for this study.
38 EU-India Summit, *India-European Union Joint Statement*, 2012, page 1 http://eeas.europa.eu/india/sum02_12/docs/20120210_joint_statement_en.pdf
39 EU-India Summit, *Factsheet*, 2012, page 2 http://eeas.europa.eu/delegations/india/documents/press_corner/20120207_eu_india_summit_factsheet_en.pdf
40 Eurostat Newsrelease, *EU27 trade in goods with India increased by 20% in the first ten months of 2011*, 2012, page 2 http://bit.ly/zo1wi8
41 EU-India Summit, *Factsheet*, 2012, page 2 http://eeas.europa.eu/delegations/india/documents/press_corner/20120207_eu_india_summit_factsheet_en.pdf

Table 4. India-EU trade in goods is dominated by 5 European countries

| *Exports in first 10 months of 2011: country rankings* | *Share in EU27 exports to India* | *Imports in first 10 months of 2011: country rankings* | *Share in EU27 imports from India* |
|---|---|---|---|
| 1. Germany | 26.3% | 1. United Kingdom | 16.7% |
| 2. Belgium | 19.7% | 2. Germany | 16.6% |
| 3. United Kingdom | 15.0% | 3. Belgium | 14.0% |
| 4. Italy | 9.2% | 4. Italy | 12.3% |
| 5. France | 7.4% | 5. France | 10.1% |
| **Total share of TOP5:** | **77.5%** | **Total share of TOP5:** | **69.8%** |
| 25. Estonia | 0.1% | 26. Estonia | 0.1% |

**SOURCE:** Eurostat data[43]

euros. At the same time, Indian investment in Europe plummeted to a mere 0.5 billion euros in 2010 from the level of 10.1 billion euros in 2007.[42] This is a direct reflection of Europe's troubles with growth and public debt, which have made Indian investors look for opportunities elsewhere (especially in emerging markets).

The EU has financed several initiatives to support the entry of European companies (especially SMEs) to the Indian market. Most European countries operate their own trade agencies and market entry centres in India, offering services for their companies to establish themselves in the market, find partners, etc.

In addition, European Business and Technology Centre offers in the major Indian cities market intelligence, incubation and other entry services at a discounted fee to companies from all European countries who have joined its network (as Estonia has)[44]. Also, a representative body of European businesses operating in India has been established. Called European Business Group India, it offers an advocacy and networking platform with a free membership for companies from EU member-states.[45]

Since the strategic partnership began between the EU and India in 2004, there have been joint action plans in place to extend and broaden the collaboration into several mutually beneficial areas beyond general trade and investment. Most recently, the focus has moved from the traditional humanitarian assistance and development co-operation to dialogue and initiatives in international security, energy and the environment, academic mobility and cultural exchange, research and development (R&D) collaboration areas[46]. On average, the EU is spending about 67 million euros annually between 2007 and 2013 for these various activities[47].

In the area of international security, there has been much recent focus on counter-terrorism and anti-piracy matters, as well as combating nuclear proliferation. Also, interest in co-operation in the realm of cyber-security is emerging.[48] In the area of sustainable development, a new declaration was signed in February 2012 between the EU and Indian leaders to move energy-related co-operation to the next level. This will build on the existing "Joint Work Programme on Energy, Clean Development and Climate Change", which has seen technical co-operation and other joint activities. With the new initiative, more financial support might be geared towards mutually beneficial (cleantech) projects as well business-to-business co-operation, with a specific focus on SMEs (the full details are yet to be determined).[49]

42 Eurostat Newsrelease, *EU27 trade in goods with India increased by 20% in the first ten months of 2011*, 2012, page 4 http://bit.ly/zo1wi8
43 Eurostat Newsrelease, *EU27 trade in goods with India increased by 20% in the first ten months of 2011*, 2012, page 2 http://bit.ly/zo1wi8
44 European Business and Technology Centre http://www.ebtc.eu/. Its partner organisation in Estonia is Baltic Innovation Agency http://www.bia.ee/
45 European Business Group India http://www.europeanbusinessgroupindia.com/
46 EU-India Summit, *The EU-India Joint Action Plan*, 2008, http://eeas.europa.eu/india/sum09_08/joint_action_plan_2008_en.pdf
47 European Union, *European External Action Service, India* http://eeas.europa.eu/india/
48 EU-India Summit, *India-European Union Joint Statement*, 2012, page 2 http://eeas.europa.eu/india/sum02_12/docs/20120210_joint_statement_en.pdf
49 EU-India Summit, *Joint Declaration of Enhanced Cooperation on Energy between the European Union and the Government of India*, 2012 http://eeas.europa.eu/india/sum02_12/docs/20120210_jdenergy_en.pdf

The main vehicle for academic mobility has been the so-called 'India Window' of the EU's Erasmus Mundus higher education exchange programme. Consortia of European and Indian universities receive funding to establish scholarship schemes, joint events, etc. for the staff and students of participating institutions[50]. Through such projects, a total of 1,380 master-level students from India studied in the EU between 2004 and 2011, as well as 27 doctoral students since the 2010/11 academic year[51]. In addition, the EU intends to finance the establishment and operation of EU study centres in India as well as centres for India studies in European educational institutions[52].

### Science and technology areas are becoming a major focus for EU-India co-operation

Co-operation in science and technology is an area that is strongly emerging to complement the previous primary focus on trade, as India is gaining much strength in its technological development and R&D capacity. Indeed, India has become the fourth largest partner in the EU R&D framework programme for 2007–2013, with Indian researchers taking part in projects ranging from health and wellbeing to environment and agriculture, ICT and biotechnology.[53]

In total, India and the EU have jointly allocated 60 million euros to joint research projects since 2007 through coordinated calls for proposals. Multiple information and collaboration platforms have emerged across the EU to support research co-operation through soft measures such as partner search, learning from experiences, training in co-operation skills, joint strategy-making and others[54].

The current aim is to establish a wide-scale "Indo-European Research and Innovation Partnership" by the end of 2012 that will be jointly funded by the Indian government and the EU. It will facilitate more networking and twinning as well as more joint financing and supportive co-operation framework development[59].

In addition, a pan-EU initiative "Europe-India Strategic Agenda on Research and Innovation" is being drafted, whereby member states are planning to move towards combining more of their national funding and networking activities towards India[56]. For example, it is envisioned that the existing bilateral agreements for joint calls between EU member states and India could be opened up to allow third-party EU member states to fund their researchers to take part in the calls. The strategic agenda draft foresees water, bio resources, energy, health and ICT as the thematic priority areas for co-operation[57].

In conclusion, relations between the EU and India seem to be intensifying in ways that are quite beneficial for advancing Estonia-India co-operation, by lending it support (such as the opening of new financing channels) and providing impetus. However, as is highlighted by the on-going free trade agreement negotiations and low levels of investments or the still-to-be-determined nature of various initiatives, there is still much more that can be done at EU level to create enabling conditions for relations between Estonia and India. ■

50 European Comission, *Action 2: Partnerships with Third Country higher education institutions and scholarships for mobility* http://bit.ly/yG82s8
51 European Comission, *Erasmus Mundus Statistics* http://bit.ly/ymUylE
52 EU-India Summit, *The EU-India Joint Action Plan*, 2008, page 5 http://eeas.europa.eu/india/sum09_08/joint_action_plan_2008_en.pdf
53 EU-India Summit, *Factsheet*, 2012, page 3 http://eeas.europa.eu/delegations/india/documents/press_corner/20120207_eu_india_summit_factsheet_en.pdf
54 EUINEC, *EU-India scientific cooperation* http://www.euinec.org/Home/euinechome.jsp
55 EU-India Summit, *India-European Union Joint Declaration on Research and Innovation Cooperation*, 2012 http://eeas.europa.eu/india/sum02_12/docs/20120210_joint_declaration_research_en.pdf
56 European Comission, *International Cooperation: International Research Update*, 2011, page 2 http://ec.europa.eu/research/iscp/pdf/newsletter/newsletter_number_18_november_2011.pdf
57 Ibid.

# 2 The Estonian Economy: Trends and Challenges

The future potential of economic co-operation and business between India and Estonia can be identified once their future directions and needs are studied and understood – in order to determine which focus to take and in what ways to advance from the current base.

For this purpose, it is necessary to analyse the trends and challenges that both economies and societies will likely face in the years to come, as these will highlight the areas of highest demand and interest for cooperation. In addition, of course, the current state of development cannot be overlooked. The present strengths and weaknesses are the foundation for the future, creating the base on which the (future) opportunities open up and can be harnessed.

Since breaking away from the Soviet Union and restoring independence in 1991, Estonia has been on the track of fast economic growth and rapid development. It joined the World Trade Organisation in 1999, the European Union (EU) and North Atlantic Treaty Organisation (NATO) in 2004, the Organisation of Economic Co-operation and Development (OECD) in 2010, adopted the EU common currency euro in 2011. These are all signposts and recognition of the progress achieved in both economic and other spheres.

Estonia does not have significant natural resources to rely on or a big domestic market to keep its economic engine humming. As such, the solution has been to open up as much as possible to the outside world, attracting foreign investors and increasing the success of Estonian companies in international markets by promoting their competitiveness. In addition, the country has punched far above its weight in moving forward with innovation and technological development, especially in the information and communications technology (ICT) area.

Still, the size presents its challenges – even faster development would be possible with more people available for business and work. Without a sufficient availability of high-level skills and knowledge, it will be harder to meet the economic restructuring challenge that Estonia faces – the need to move towards higher value-added industries, activities and exports. The demographic trends currently make the situation even more troublesome. At the same time, moving towards higher productivity and value added will also allow for mitigating the demographic effects on well being. Therefore, there is a need to continuously focus on innovation, the upgrading of industries, attracting foreign investors for this purpose, etc. This will pave way for increasing revenues from foreign markets and continue on the growth path, even in the harsh external business climate of next few years.

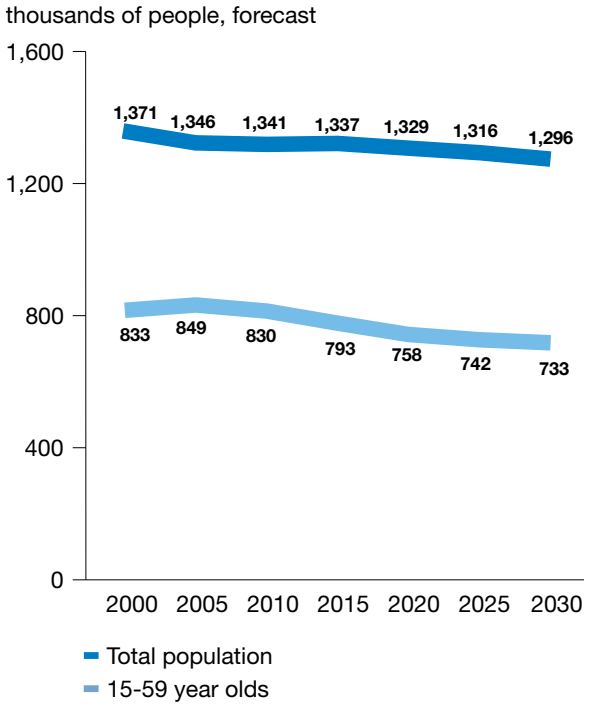
The challenges ahead that can hinder a further boost to the success story experienced to date. This leads Estonia to seek synergic partnerships with other countries that can offer relief to the labour pool challenges, new markets and investments, innovation partners. And this is why India shows high promise as a potential partner for Estonia.

## ESTONIA NEEDS MORE SKILLED LABOUR AND TALENTS

In terms of natural resources, Estonia is rich in two: oil shale, which makes the country self-sufficient in electricity production, and wood, which has given rise to related industries. However, this is not enough to sustain the country and the economy. As the market economy was only kick-started in 1991 after separation from the USSR and no previous significant private capital accumulation was possible, Estonia has had to rely on foreign credit and direct investment to finance its growth. Therefore, this leaves people as the main asset of Estonia.

Yet, the population of the country is far from sizable. At 1.32 million people,[1] it is roughly a thousand times smaller than that of India. With this figure, Estonia ranks 149th among the countries of the world[3] and 4th from bottom in the EU (with only Cyprus, Luxembourg and Malta even smaller)[4].

Figure 1. Estonia's population and labour pool are decreasing




**SOURCE:** UN Population Division data[2]

What is more, as with most of Europe the demographic trends in Estonia are such that the population is shrinking slightly due to low birth rates. Emigration to other countries with higher living standards (especially Finland) has had its impact as well, and it picked up pace both after Estonia joined the EU and especially in the aftermath of the global crisis.

The implication is that the available total labour pool is shrinking in size. The number of working-age citizens (aged 15–59) is likely to decrease by 11% by 2020 as compared to the 2010 level of 830,000 people[5]. With Estonians living longer at the same time, it creates financial sustainability and old-age dependency concerns. The challenge is to have enough economic output to keep up with the ageing society.

In other words, the essential challenge is to have enough people in the labour force. Demographic trends will result in 110,000–120,000 people (almost one in every five currently employed persons) leaving the active labour market in the next decade[6]. With not enough new entrants starting their working life due to smaller population numbers reaching the relevant age or leaving the country for better jobs, there will be an increasing demand for labour in Estonia – in order to even replace the retiring workers.

However, if the aim is to keep growing, then even more new suitably qualified staff and workers are needed, including talents with world-class skills and know-how. For example, the ICT sector as one of the forefront industries of Estonia, has recently estimated that some 2,200 people could be hired right away. Yet, the need is for much more (total estimate is above 6,000) people in the next three years, if there is a desire to capture all of the growth opportunities available.[7] Similarly, the other successful industries of machinery building, electronics, etc. are also in dire need of staff – especially skilled workers[8].

1 Official 2012 estimate from Statistics Estonia, *Most requested statistics*, 2012 http://www.stat.ee/main-indicators
2 Data obtained from United Nations, *World Population Prospects the 2010 revision* http://esa.un.org/unpd/wpp/index.htm
3 "Countries of the world", *Worldatlas.com* http://bit.ly/3dax7Y
4 Eurostat, *Population on 1 January by age and sex* http://bit.ly/bALeBn
5 United Nations, *World Population Prospects the 2010 revision* http://esa.un.org/unpd/wpp/index.htm
6 Ministry of Economic Affairs and Communications of the Republic of Estonia, *Labour needs forecast until 2018*, 2011, page 1 (in Estonian) http://www.mkm.ee/public/TJ_prognoos_2018_luhikirjeldus.pdf
7 Estonian Association of Information Technology and Telecommunications, *Forecast of labour need of Estonian ICT sector*, 2011, page 3 http://itl.ee/?dl=681
8 Ministry of Economic Affairs and Communications of the Republic of Estonia, *Labour needs forecast until 2018*, page 1 (in Estonian) http://www.mkm.ee/public/TJ_prognoos_2018_luhikirjeldus.pdf

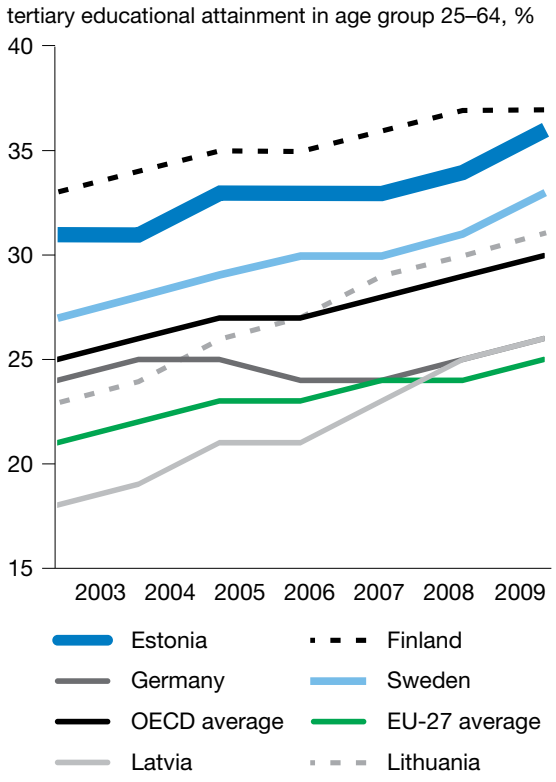
Indeed, the challenge is not simply to find labourers but to find the right skills and knowledge, which are becoming ever more valuable as economies and businesses become more knowledge-based. Company executives consider the inadequate supply of a qualified workforce the most worrying aspect of doing business in Estonia[9]. In particular, there is a need for top-level (e.g. Master-level specialists in ICT sector[10]) and good specialist skills (e.g. engineers, line operators, production managers in machinery building[11]) as well as general managerial and (international) sales competence[12].

» The needs of the economy and the labour pool competences have not been aligned enough

The mismatch in companies' requirements and capabilities of labour market participants and even school-leavers is also manifested in the unemployment situation in the country. In 2011, an average of 87,000 people were looking for jobs – 12.5% of the labour force. Although this rate has significantly fallen from the post-crisis 1st quarter 2010 peak level of 19.8%, and is forecast to fall rapidly (to 9.6% in 2013[13]) as economic conditions improve and labour shortages grow, it is still a significantly high figure given that the major growth industries are all searching for people.

Accordingly, the Estonian government is putting much emphasis on the retraining of people (especially those who are unemployed), increasing the quality of education (especially at higher and vocational education institutions), keeping kids with learning difficulties in school, incentivising skilled workers to postpone retirement, etc. This is all to bring as many actively engaged people as possible into the labour force, in order to reach a high employment rate of 76% set for 2020 and ease the skills shortages of companies.[14]

Figure 2. The Estonian population is in general well-educated, above the EU-average




**SOURCE:** Eurostat[15] and OECD[16] data

These aims are promising, however, as the general educational level in Estonia is in very good shape. For example, the companies themselves have rated the primary education in Estonia among the best in the world[17]. It is supported by international comparative tests like the PISA study, in which Estonian primary school pupils score among the best in the world in reading and math skills as well as science knowledge[18].

9 World Economic Forum, *Global Competitiveness Report 2011–2012*, 2011, page 172–173 http://www.weforum.org/reports/global-competitiveness-report-2011-2012
10 Estonian Association of Information Technology and Telecommunications, *Forecast of labour need of Estonian ICT sector*, 2011, page 3 (in Estonian) http://itl.ee/?dl=681
11 University of Tartu, *Sectoral study of machinery industry*, 2011, page 7 http://www.ec.ut.ee/orb.aw/class=file/action=preview/id=1062652/Masinat%F6%F6stuse+sektoruuring_I%FChikokkuv%F5te.pdf
12 Government Office of the Republic of Estonia, *Export problems of Estonian companies*, nr 2/2010, page 8 (in Estonian) http://bit.ly/lliJNP
13 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 29–30 (in Estonian) http://www.fin.ee/doc.php?109144
14 *National Reform Programme "Estonia 2020"*, 2011, page 8–9 http://bit.ly/JlqLar
15 Eurostat, *Persons with a given education attainment level by sex and age groups (%)* http://bit.ly/lO2TcU
16 Organisation of Economic Co-operation and Development, *Education at a Glance 2011: OECD Indicators*, 2011, page 41–42 http://www.oecd.org/dataoecd/61/47/48630299.pdf
17 World Economic Forum, *Global Competitiveness Report 2011–2012*, 2011, page 172–173 http://www.weforum.org/reports/global-competitiveness-report-2011–2012
18 Ministry of Education and Research of the Republic of Estonia, *Interim implementation report of "2007–2013 General education system development plan" for years 2007–2010*, page 3, 2010 (in Estonian) http://bit.ly/J6CUeU

Moreover, Estonia has one of the highest levels of educational attainment in Europe. In 2009, 82.3% of 20–24 year-olds had obtained secondary education[19]. Altogether some 40% of the population has a third-level degree in some field, which is above the EU average and the best in Eastern Europe[20]. The government's aim is to keep progressing in this realm. In 2015, 10% more people aged 20–29 should graduate annually with a higher degree than did so in 2008[21]. Therefore, good general education and higher educational attainment form a good basis to build on with retraining, skills upgrading, curriculum development and other efforts. This way at least part of the educational mismatch can be cured more simply than is possible in many other countries, where basic education system development is required first.

Importantly, 1% of people aged 20–29 are science and technology degree holders[22], half of whom are also current doctoral students in these fields[23]. This is the fifth best result in all of the EU and an outcome of the efforts to increase the share of science and technology studying to the EU average level of 24% by 2015[24]. As such, some respite in the need for top level and specialist skills should be forthcoming for technology-related industries.

>> Foreign talents are needed for next growth surge in Estonia; attracting of foreign students has risen to the fore

However, to meet the demand and growth potential, especially in view of the shrinking overall labour pool and current emigration conditions, Estonia's own human capital resources will not suffice. It is therefore necessary to aim at attracting more foreign specialists and talents to Estonia in addition to utilising internal human capital as much as possible.

An inflow of foreign skills and knowledge can allow for both plugging the existing gaps as well as bringing in the additional know-how, experience and access to international networks that is required for the next growth surge in the economy. That is why selective easing of immigration policies (e.g. in priority fields like ICT), more proactive targeting of foreign talents, etc. have become hot topics in Estonian economic and policy-making circles.

One of the best ways to receive the required skills and knowledge inflow is to attract more foreign students to study in Estonian universities, especially in the priority fields of science and technology. This is compounded by the demographic factors that are resulting in the significant fall of new student numbers, requiring universities to find alternatives. As most EU countries are facing the same challenge, there is also an increasing intra-European competition for talented students and researchers from other countries.

That is why the internationalisation need of higher education has risen to the fore in Estonia. The 2006–2015 National Strategy to Internationalize Higher Education foresees that 2,000 non-resident foreigners should be studying full time in Estonian higher education institutions by 2015[25]. This is to be achieved by opening up more high-quality study programmes (especially at Master's level) with instruction in English, conducting more promotion in prospective student host countries, etc. Furthermore, the share of foreign doctoral students in Estonian doctoral programmes should increase from 2.8% (56 foreign doctoral students) in 2005 to 10% (200) in 2015.[26]

The incoming flow of foreign students has already picked up by about 50% from 2005 to 2010, reaching close to a total number of 1,300 students studying in Estonian institutions[27]. Most of the growth has come from Master's level, with social sciences and business, humanities and medicine being the most attractive study fields for foreign students. The popularity of the fields of natural sciences and technology has been rising fastest, especially in ICT studies.[28] Despite such progress, more needs to be done to

19 Ministry of Education and Research of the Republic of Estonia, *Interim implementation report of "2007–2013 General education system development plan" for years 2007–2010*, page 3, 2010 (in Estonian) http://bit.ly/J6CUeU
20 Eurostat, *Tertiary educational attainment by gender, age group 30–34* http://bit.ly/IkqLTP
21 Ministry of Education and Research of the Republic of Estonia, *Detailed report on achieving the targets of the action plan for Estonian Higher Education Strategy*, 2010, page 3 (in Estonian) http://www.hm.ee/index.php?popup=download&id=10494
22 Eurostat, *Science and Technology graduates by gender* http://bit.ly/IoSNSc
23 Eurostat, *Doctorate students in science and technology fields* http://bit.ly/J6D7yK
24 Ministry of Education and Research of the Republic of Estonia, *Detailed report on achieving the targets of the action plan for Estonian Higher Education Strategy*, 2010, page 3 (in Estonian) http://www.hm.ee/index.php?popup=download&id=10494
25 "Adoption of National Strategy to Internationalise Higher Education 2006–2015", *State Gazette*, 15.11.2006 (in Estonian) https://www.riigiteataja.ee/akt/12752949
26 Ministry of Education and Research of the Republic of Estonia, *Detailed report on achieving the targets of the action plan for Estonian Higher Education Strategy*, 2010, page 8 (in Estonian) http://www.hm.ee/index.php?popup=download&id=10494
27 Statistics Estonia, *The number of foreign students has increased by nearly 50% in five years*, 2011 http://www.stat.ee/49510
28 Estonian Education Information System (EHIS) data from Archimedes Foundation.

meet the skills and knowledge requirements of the economy and attract talented students, especially in the crucial area of science and technology.

## GROWTH PROSPECTS DEPEND ON UPGRADING OF THE ECONOMY

The Estonian economy grew on average 3.8% annually in the decade of 2001–2010[29]. Within that timeframe, however, the growth rate fluctuated significantly. In mid-2000s, there was a credit-fuelled economic boom with very high consumption and investment activity, at the peak of which the economy grew even more than 10% in 2006. With the global financial and economic crisis, the country plunged into recession in 2008–2009, although has bounced back since – reaching 7.6% of GDP growth in 2011.[30]

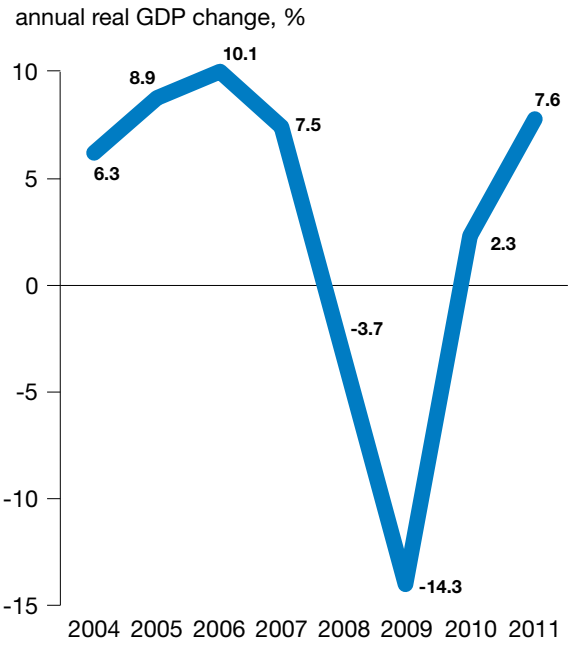
As a small economy that has chosen to be very open to trade and investment, the cycle of Estonian economic growth is very tightly linked to the prospects and wellbeing of partner economies. The country has been heavily export-reliant, with exports of goods and services continuously above 70% of GDP throughout the 2000s and reaching 85% of GDP in 2010[31]. As such, the recent return to overall growth has also been carried by exports. At the height of the crisis, Estonian companies cut their staff levels and cost base while beginning to target foreign markets more. Once the external economic conditions improved somewhat, the strategy paid off.[32]

» Estonia is very open to trade and investment, as exports are needed for growth

Based on strong exports, the current account has been in surplus in the last few years. However, historically Estonia has rather been running deficits in this regard by importing more than exporting[33]. To some degree, this has been the result of the high inflow of foreign direct investments, which has brought demand for the import of investment goods. The current account imbalances have been offset by the same investments themselves. This in combination with the prudent and conservative fiscal policy of successive governments has rendered Estonia with the lowest public sector debt level in the whole of otherwise debt-ridden EU. In 2011, the public sector owed only 6% of GDP worth of money to creditors, setting Estonia very clearly apart as one of a few sustainable economies in the troubled eurozone. [35]

Currently, both the European and global economic climates remain shaky with the global financial and recession troubles not over yet, despite the initial return to growth. Therefore, given the dependency on external demand, Estonia's growth rate for 2012 and beyond will surely become more modest compared to the initial bounce-back. Exports cannot be expected to remain a strong growth engine for some time.[36]

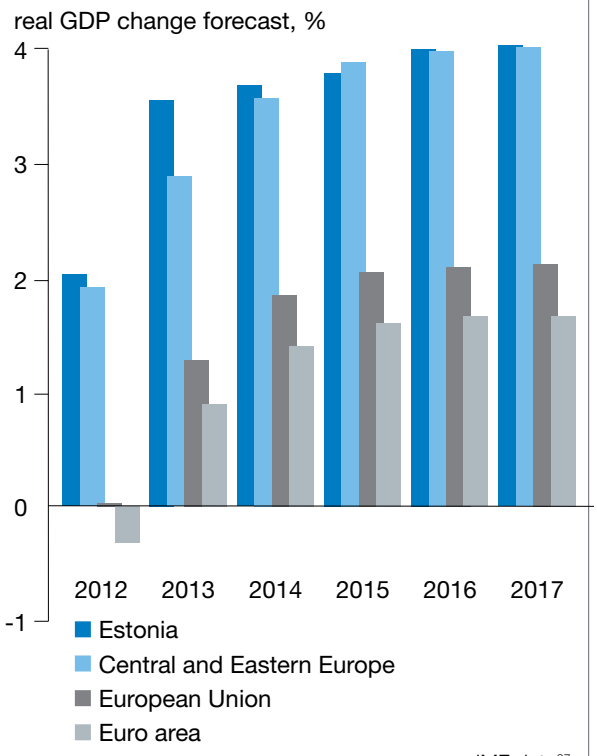
Figure 3. The Estonian economy went from boom to a slump and bounced back again




**SOURCE:** Statistics Estonia data[34]

29 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 7 (in Estonian) http://www.fin.ee/doc.php?109144
30 Statistics Estonia, *Gross Domestic Product and total national income* (in Estonian) http://bit.ly/IBaQD9
31 Data obtained from UNCTADStat, *Merchandise and services trade openness*, 2008–2010 http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=16419
32 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 20 (in Estonian) http://www.fin.ee/doc.php?109144
33 Ibid.
34 Statistics Estonia, *Gross Domestic Product and total national income* (in Estonian) http://bit.ly/IBaQD9.
35 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 52 (in Estonian) http://www.fin.ee/doc.php?109144
36 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 20 (in Estonian) http://www.fin.ee/doc.php?109144

Figure 4. Growth is to continue in Estonia, higher than in rest of Europe




**SOURCE:** IMF data[37]

Indeed, forecasts indicate that Estonia's growth rate might be in 2–4% range and pick up once foreign market conditions improve again. However, compared to the forecasts of developed economies in the European Union and beyond, Estonia will still stand out with a considerably higher growth rate. It should also reach or surpass the average growth rate of other Central and Eastern European countries.

The challenge is to sustain growth and improve labour productivity, even in unreliable external economic conditions. This will allow Estonia to counter the effects of a shrinking labour force, while also increasing the competitiveness of companies in foreign markets and incomes for the economy. The current situation is that Estonians put in a higher number of work hours than the other Europeans in average, but their productivity still remains at 2/3 of EU average[38]. The government has set the target of reaching 80% of average EU productivity by 2020[39].

To make this happen, Estonia needs a shift in the structure of the economy – so that there are more companies and industries in Estonia that give higher value added and engage in relevant exports[40]. To date, there have been too many people employed in enterprises with little potential of (raising) value added: whether due to their business area, position in value chains and the business model, innovation capacity, or other reasons.

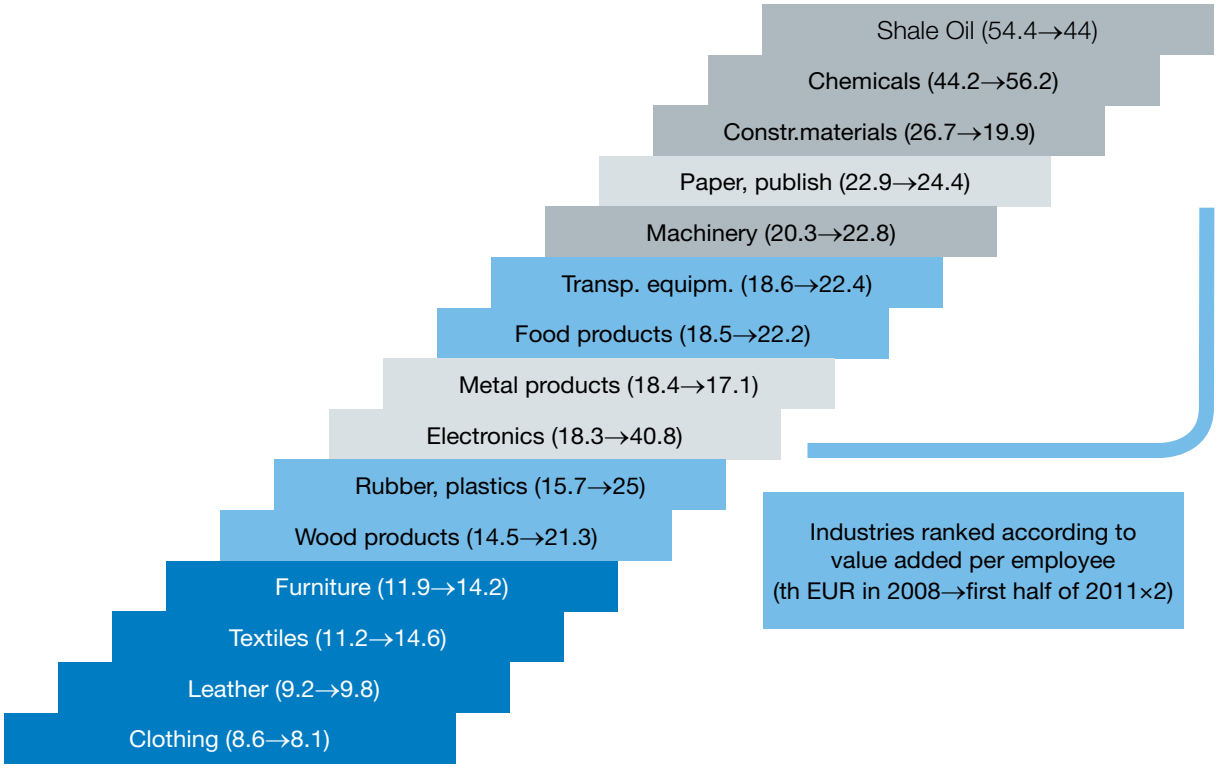
For example, in the otherwise productive and strongly exporting machinery building industry altogether a third of employed labour work in metal-working. This is a simple segment, in which their main business is cost-competitiveness based and low-value subcontracting work (whether for domestic or foreign clients) with limited options for raising their share and profits[41]. As a result, the growth prospects of the economy are held back.

» Estonian economy requires restructuring towards companies and industries that give higher value added

Looking at the manufacturing sector as a whole, the furniture and paper products industries are prominent for both their employment and export share but comparatively give very low value added. Therefore, traditional business and sectors are still too prominent and are holding back overall productivity.[42] The industries that bring the highest value added per employee are currently the heavy industries: oil shale related segments, chemical and construction material industry. The production of electronic equipment has recently shown the largest growths in value added levels, from 18,300 euros in 2008 to an estimated 40,800 euros in 2011. This has been carried by new export growth venues and upgraded product offerings.[43]

37 International Monetary Fund, *World Economic Outlook Database: April 2012 Edition*, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
38 *National Reform Programme "Estonia 2020"*, 2011, page 7–8 http://bit.ly/JlqLar
39 *National Reform Programme "Estonia 2020"*, 2011, page 8 http://bit.ly/JlqLar
40 Ibid
41 University of Tartu, *Sectoral study of machinery industry*, 2011, page 4 http://www.ec.ut.ee/orb.aw/class=file/action=preview/id=1062652/Masinat%F6%F6stuse+sektoruuring_l%FChikokkuv%F5te.pdf
42 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 10 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
43 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 69 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf

Figure 5. Much of the manufacturing industry needs to raise its value added level




**SOURCE:** ERAC[44]

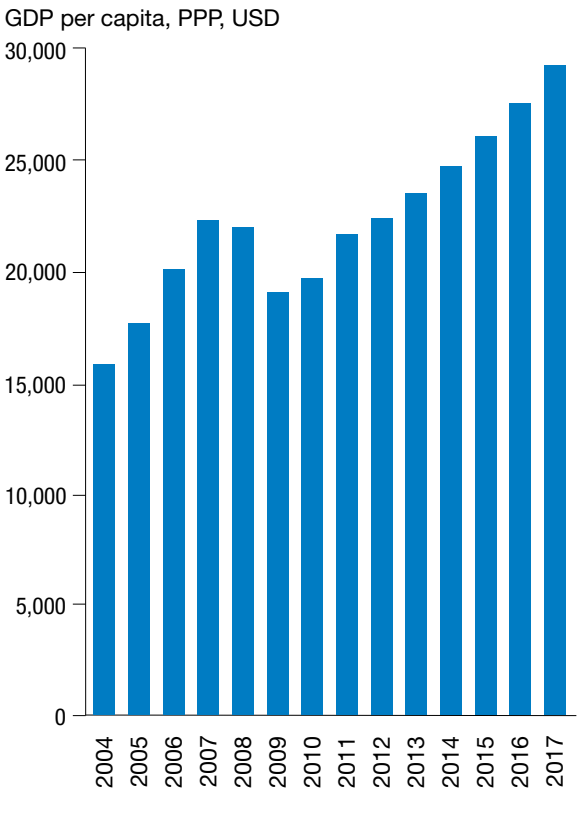
In order to change the low value-added situation by upgrading the economic structure and achieve higher growth accordingly, Estonia needs to make progress on several fronts. First, there is a need for upgrading in the current traditional industries so that these companies would offer higher-value products and services, expand their activities in foreign markets, move to new (more promising) business areas and value chains. Secondly, the emergence and expansion of new growth industries should be strongly supported. In both of these domains, there is a need for domestic-grown innovation and investment. Just as importantly, there is also a need to attract foreign investors who would bring market access, new products/services, new technological know-how, etc.

The structural challenge does not concern the manufacturing industries alone, especially as 68% of Estonian GDP currently comes from services (29% from industry and only 3% from the primary sector)[45]. In the service sector, it is similarily the case that the areas with most employees and the largest share are the ones with the lowest value-added levels. Retail and wholesale trade, tourism and transportation are among the largest employing service industries, but among the least productive ones as well. At the same time, smaller ICT, financial and logistics sectors bring in value added that is several times higher.[46]

Even for the latter industries, there is ample room for better performance. The companies have largely focused on the domestic market so far, while exports could bring even more value added. For example, the financial sector has good potential to offer niche services and products (including related ICT solutions) to the Nordic and Central-Eastern Europe[47]. The challenge is to employ such opportunities, attract relevant talents and investors, develop products and services, etc. – while also pushing the backlagging service sectors to upgrade towards higher-value activities.

44 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 69 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
45 Central Intelligence Agency, *CIA world factbook Europe–Estonia*, 2012 https://www.cia.gov/library/publications/the-world-factbook/geos/en.html
46 Estonian Development Fund calculations based on several Statistics Estonia databases.
47 Oxera, *Financial services sector in Estonia: Growth opportunities and policy implications*, 2009 http://bit.ly/I1z0tq

Figure 6. With good economic growth prospects, average purchasing power should rise fast




**SOURCE:** IMF data[48]

## ESTONIA'S DOMESTIC MARKET OFFERS ITS PERKS, DESPITE BEING SMALL

Estonia's total GDP in current prices reached 16 bln euros in 2011[49]. This figure indicates in some sense the total size of the domestic market. However, the per capita GDP figures are more informative as they better reflect the average purchasing or spending power in a market. For Estonia, the figure stood close to 12,000 euros in 2011 – ranking 19th out of 27 EU member-countries[50]. Therefore, it remains a small market but outranks various other more populous countries of Europe in terms of market promise as reflected in relative purchasing power levels.

Nevertheless, even when factoring in the comparative price levels, Estonia's GDP per capita still only reached 64% of the EU average in 2010 – after a crisis-time slump[51]. Economic growth is still needed to make Estonia more attractive as a market destination. However, if the currently planned policies have their effect and external conditions do not significantly worsen, Estonia can expect to enjoy at least a 25% rise in real GDP per capita in the next five years. This will then constitute a significant improvement, in both European and global terms.

In terms of consumption categories, a significant share of private spending currently goes on basic necessities like food and housing. Altogether, Estonian households spent 47% of their income in 2011 on these products and services, with an additional 11% on transportation, 9% on leisure spending and 6% on communications[52]. A significant share of basic goods and transportation costs reflect the global inflation of food items and fuels that has been occurring over the past number of years[53].

However, consumption has also changed in structure to a noticeable degree in the last few years due to the effects of the economic crisis[54]. Prior to the crisis and during the boom, spending on durable goods and household items was rather high. This consumption was naturally cut back with a loss of jobs and curtailment of credit access during the crisis. If economic and spending power growth will be sustained in the coming years, it can be expected that the demand for durable goods will return strongly, once again opening up the opportunities for related companies.

The expected growth in investments by both the private and public sector will further strengthen such demand. Indeed, in 2001–2010, the rise in investment activity gave the largest contribution to economic growth. Although, in the peak years of the boom private consumption did take over this position for a short while[55]. The economic crisis brought a compositional change to investment expenditures similar to household spending. Investment into transport

48 International Monetary Fund, *World Economic Outlook Database: April 2012 Edition*, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
49 Statistics Estonia, *Most requested statistics* http://www.stat.ee/main-indicators
50 Eurostat, *GDP and main components – Current prices* http://bit.ly/xhkjZ7
51 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 35 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
52 Statistics Estonia, *Expenditure of household members by types of households* (in Estonian) http://bit.ly/Jubl5Q
53 Bank of Estonia, *Economic forecast 2011–2013*, 2011, page 9 (in Estonian) http://bit.ly/Ilip1D
54 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast, 2012*, page 21 (in Estonian) http://www.fin.ee/doc.php?109144
55 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, pages 4 and 7 (in Estonian) http://www.fin.ee/doc.php?109144

vehicles, buildings and facilities was cut back – but investment into machinery and especially ICT equipment was kept up as these contribute most to productivity improvements. In 2011, the spending on these categories almost reached the pre-crisis peak level again.[56] If economic prospects and confidence remain positive, investment demand and related business opportunities should also remain strong in the coming years.

>> Estonia is very advanced in ICT uptake, services and know-how: a good test-site for launching into European markets

A particular feature of the Estonian domestic market is that population and economic activity are geographically very concentrated. A large part of the Estonian population is living in or around the capital city, with 30% living in Tallinn alone and another 10% in the surrounding Harju county (total close to 530,000 people)[57]. Of all the companies registered in Estonia, more than 40% are based in Tallinn[58] and the largest share of foreign investment is also concentrated in the area. Overall, 2/3 of Estonian residents live in urban areas,[59] with incomes an average of 9% higher than for people living in rural areas[60]. Therefore, business opportunities and spending are very much concentrated to a few locations despite the country being small in overall size.

Another particular feature of the Estonian market is that it is very technology-friendly, especially toward ICT products and services. This is because Estonia has achieved outstanding success in ICT uptake and development. Estonia ranks 24th overall in the global Network Readiness Index ranking, while it is no. 3 in the world for internet coverage in schools as well as businesses[61]. 76.5% of total population[62] and including 98% of people aged 16–24 being regular Internet users[63]. Moreover, a fifth of the Estonian young people (aged 16–24) have some experience of writing a computer program[64].

Therefore, use of computers is commonplace. This drives demand and attracts supply for online services. Successive governments have greatly facilitated this by developing a cutting-edge general information society infrastructure. For example, Estonia has Europe's most advanced public key infrastructure that allows all residents to authenticate themselves online in a secure and easy manner (even vote electronically in national elections), digitally sign legal documents (like business contracts), etc. Estonia's e-governance system as a whole has been ranked among the best in the world[65].

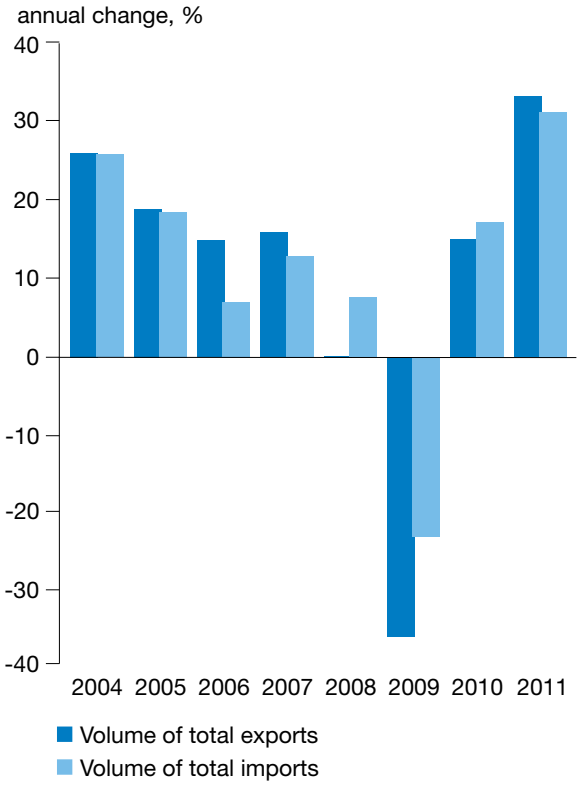
Given such a facilitating environment and a large pool of tech-savvy users in an otherwise small market setting, Estonia constitutes a great test-site environment for developing, testing and launching technological products and services – especially for the European market. The booming Estonian ICT sector can provide a good partner platform in this.

### STRONG EXPORT PERFORMANCE CAN BE SUSTAINED WITH NEW MARKETS AND MORE EXPORTING COMPANIES

The World Bank has ranked Estonia no. 3 in the world in terms of freedom of trading across borders[66]. This is a result of decisions taken in early 1990s and held steady that openness to trade and investment should be the cornerstones of economic policy and growth. As such, Estonia has enjoyed fast trade growth and its share in global trade has been rising. But given the low initial position (prior to 1991 virtually no trade existed with countries outside the USSR) and the small size of the country and its companies, Estonia in 2009 contributed only a meagre 0.085% to world

56 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 23 (in Estonian) http://www.fin.ee/doc.php?109144
57 Statistics Estonia, *Population by gender, age group and county as of 1 January* (in Estonian) http://bit.ly/JuykwX
58 Center for Policy Studies Praxis, *Development trends of small and medium-sized enterprises*, 2012, page 9 (in Estonian) http://bit.ly/JT95jn
59 Statistics Estonia, *Population by gender, age group and administrative unit as of 1 January* (in Estonian) http://bit.ly/JuykwX
60 Statistics Estonia, *Net income of residents by gender and residence* (in Estonian) http://bit.ly/lkHere
61 World Economic Forum, *Global Information Technology Report 2011-12,* 2012, page 214 http://reports.weforum.org/global-information-technology-2012/
62 Statistics Estonia, *16–74 year old computer users by individual groups* (in Estonian) http://bit.ly/I64tI9
63 Eurostat, *Computer skills in the EU27 in figures*, 26.03.2012 http://bit.ly/IliylC
64 Ibid.
65 Estonia ranked 16th in the latest World Economic Forum, *Global Information Technology Report 2011–12 ranking* (2012, page 214 – http://reports.weforum.org/global-information-technology-2012/); also in total as 20th in the latest, United Nations *E-government Survey*, 2012 http://www2.unpan.org/egovkb/global_reports/12report.htm
66 World Bank Group, *Doing Business in Estonia*, 2012 http://www.doingbusiness.org/data/exploreeconomies/estonia

Figure 7. Estonia has relied on strong trade growth, bouncing also back after the crisis




**SOURCE:** IMF data[67]

trade. The government's aim is to increase this share to at least 0.11% in 2020.[68]

The global financial crisis brought an economic cooling to markets throughout the world and a fall in demand for Estonian products and services. That is why both exports and imports plunged in 2009, bringing the country into a steep economic downturn. However, trade bounced back just as fast and took the national economy back to growth along with it.

In 2011, the export of goods from Estonia totalled 12 billion euros in current prices (growing a record 38% annually) and imports stood at 12.6 billion euros (37% annual growth)[69]. Adding services, the total export growth in 2011 was 25% and import growth 27%. As can be observed, the export and import changes to a large degree move in unison. Much of the imports are used as direct inputs for export products and services (e.g. as interim products or input resources in subcontracting industries)[70].

Estonia does most of its trading with its neighbouring countries of Sweden, Finland, Russia and the other Baltic countries Latvia and Lithuania. In 2011, Sweden and Finland received the largest share of Estonia's electrical equipment, wood articles and furniture exports, while a significant share of mechanical and electrical equipment, beverages and spirits went to Russia[71].

These top trading partners have been mostly unchanged over the last number of years, although occasionally altering ranking positions among each other. This is firstly due to the natural reasons that it is often easier to start internationalisation from nearby markets. In some sense, the other two Baltic states of Latvia and Lithuania can be considered as 'a home market' for Estonian companies, due to similar overall background and development.

More importantly, tight value chain and group networks exist between the surrounding region and Estonia. For example, many Nordic manufacturing companies have used Estonia as a base to make their own business more cost-competitive by outsourcing from or offshoring to this country due to its easier business environment and cheaper labour costs. Finally, Estonian is also an important interim logistics and production hub for many types of goods aimed at other regional markets. It has a convenient location and good connectivity in the geographical centre of Northern Europe. This region is highly attractive as a market because the countries in this region rank at Europe's top in terms of spending power,[72] and the big Russian market is also nearby.

### >> Most of Estonia's export destinations have modest growth prospects

Taken together, the EU receives 2/3 of Estonia's goods exports and in return sends 3/4 of the country's imports. The US market gets another 6%

67 International Monetary Fund, *World Economic Outlook Database: April 2012 Edition*, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
68 *National Reform Programme "Estonia 2020"*, 2011, page 18 http://bit.ly/JlqLar
69 Statistics Estonia, *Record high trade in Estonia in the previous year*, 2012 http://www.stat.ee/57496
70 Ministry of Finance of the Republic of Estonia, *2012 spring economic forecast*, 2012, page 4 (in Estonian) http://www.fin.ee/doc.php?109144
71 Statistics Estonia, *Record high trade in Estonia in the previous year*, 2012 http://www.stat.ee/57496
72 Eurostat, *GDP and main components – Current prices* http://bit.ly/xhkjZ7

Table 1. Neighbouring countries are the main foreign trade partners of Estonia

| *Groups of countries or countries of destination* | *Exports of goods in 2011* | | *Groups of countries or countries of consignment* | *Imports of goods in 2011* | |
|---|---|---|---|---|---|
| | *share, %* | *change 2010–2011, %* | | *share, %* | *change 2010–2011, %* |
| **Total** | **100** | **38** | **Total** | **100** | **37** |
| EU27 | 66 | 33 | EU27 | 78 | 34 |
| CIS | 13 | 40 | CIS | 11 | 37 |
| 1. Sweden | 16 | 38 | 1. Finland | 13 | 15 |
| 2. Finland | 15 | 22 | 2. Latvia | 11 | 34 |
| 3. Russia | 11 | 57 | 3. Sweden | 11 | 32 |
| 4. Latvia | 8 | 23 | 4. Germany | 10 | 23 |
| 5. USA | 6 | 127 | 5. Russia | 8 | 37 |
| 6. Lithuania | 5 | 27 | 6. Lithuania | 8 | 43 |
| 7. Germany | 5 | 20 | 7. Poland | 7 | 45 |
| 8. Nigeria | 3 | 137 | 8. China | 4 | 61 |
| 9. Norway | 3 | 21 | 9. Netherlands | 4 | 46 |
| 10. Netherlands | 3 | 64 | 10. United Kingdom | 3 | 132 |

**SOURCE:** Statistics Estonia data[73]

and Norway 3% of Estonia's exports[74]. Therefore, Estonia's trade and especially the growth-driving exports are very strongly tied to advanced economies and the market demand fluctuations there.

As the prospects for such economies currently remain modest, Estonia cannot expect to keep up the post-downturn impressive trade performance in the coming years[75]. Despite the positive economic growth forecast, the strategic challenge will be for Estonia's companies to conquer the advanced markets with higher-value (and less demand elasticity) products and services. The other option is to increasingly enter new markets, especially in the emerging economies that have grown fast even during the global crisis years.

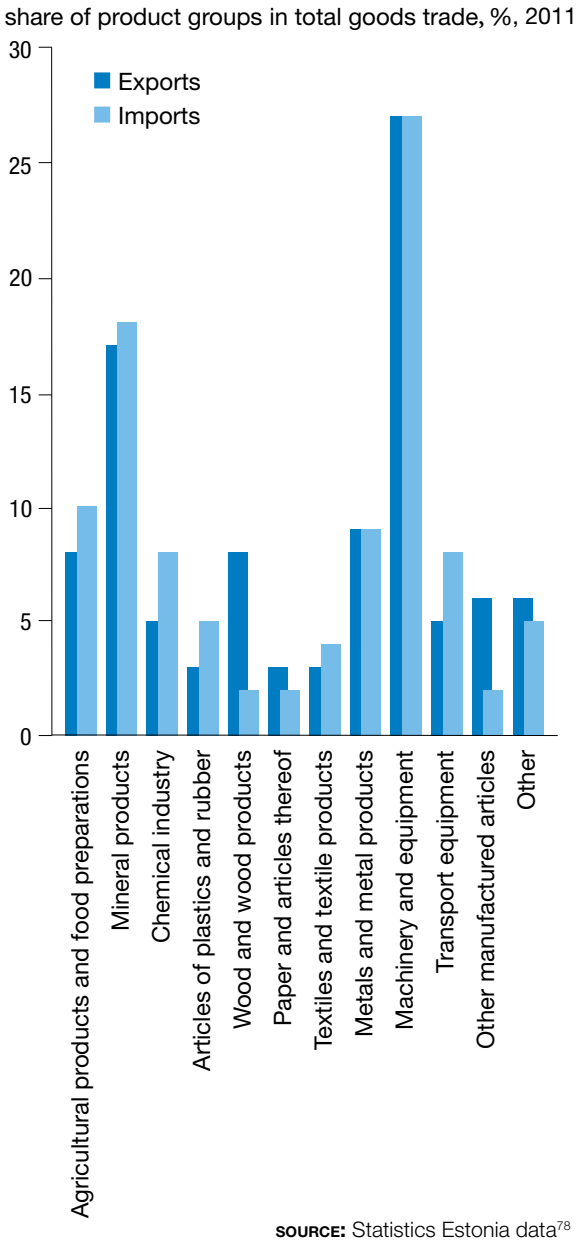
The structure of Estonia's goods trade reflects well the strengths of Estonian industry, with all the most productive sectors strongly represented along with some traditional strongholds. Machinery and equipment constitute the largest products group, contributing to 27% of Estonian trade. The record trade growth in 2011 was significantly supported by this particular category as the exports and imports of machinery and equipment (especially computers, electronic and optical products) grew most significantly, at 67% and 58% annual rates respectively.[76]

The other large traded product groups are mineral products, including motor spirits, fuel oils and electricity (holding 17% of exports and 18% of imports); metals and metal products (9% of exports and imports), and agricultural products and food preparations (8% and 10% respectively). In the last several years, there has been a significant rise in the share of mineral products and a slide in the share of wood and textiles and related products in the export composition. This reflects the eroding productivity and competitiveness base in these industries (with specific niche business remaining the main opportunity for Estonian-based companies there). [77]

In the services area, Estonia is a net exporter in total trade. With 3.9 billion euros in total service exports and 2.7 billion euros in imports, Estonia's services are mostly sold to Finland, Russia and Sweden and bought mostly from Finland, Germany and Sweden.

73 Statistics Estonia, *Record high trade in Estonia in the previous year*, 2012 http://www.stat.ee/57496
74 Ibid.
75 Bank of Estonia, *Economic forecast 2011–2013*, 2011, page 8 (in Estonian) http://bit.ly/llip1D
76 Statistics Estonia, *Record high trade in Estonia in the previous year*, 2012 http://www.stat.ee/57496
77 Ibid.

Figure 8. Estonian goods trade is dominated by machinery and equipment as well as mineral products




**SOURCE:** Statistics Estonia data[78]

Unfortunately, no specific breakdown by different service categories publicly exists, but tourism represents a major part of both exports and imports.

In 2011, tourism exports reached 1.2 bln euros (i.e. almost a third of all service exports) with a record of 1.8 million people visiting Estonia and staying overnight, mostly arriving from neighbouring Finland and Russia[79]. Business, cultural and nature tourism have been the most dominant factors in bringing visitors to Estonia. This reflects the attractions of growing business opportunities, rich cultural heritage and pure natural beauty (including four distinct seasons) that Estonia offers. In addition, health tourism is a growing field as Estonia has a good opportunity to serve an increasing number of spa, clinic and hospital visitors from the ageing countries in (Northern) Europe and beyond[80].

Despite the good overall growth figures and openness to trade, Estonia's exporting base is limited. Although small and medium-sized (SME) companies contribute 76% to total exports, only 13% of such companies are engaged in any exporting at all. At the same time, 2/3 of large enterprises are exporters.[81] Yet, SMEs comprise 99.9% of the companies registered in Estonia and only about 150 enterprises can be categorised as large[82]. Moreover, exports tend to be carried by foreign-owned companies. Half of such companies engage in exports, while the relevant figure is only between 20–30% for Estonian-owned companies[83].

Estonian export performance would be higher if the export base would increase by more companies becoming (more) involved in international trade. There are currently various barrier factors holding such a rise back, especially for more distant markets (like the emerging economies): small marketing competence and awareness of concrete market conditions in companies, limited contacts in new markets, awareness and capacity to protect intellectual property, etc.[84] In particular, better information services and

78 Statistics Estonia, *Record high trade in Estonia in the previous year*, 2012 http://www.stat.ee/57496
79 Enterprise Estonia, *Tourism in Estonia and world 2011*, 2012, page 3 (in Estonian) http://static1.visitestonia.com/docs/276771_eesti-turism2011.pdf
80 See for more: Estonian Development Fund, *Estonian growth opportunities in healthcare services*, 2010 http://bit.ly/I1HnCq
81 Center for Policy Studies Praxis, *Development trends of small and medium-sized enterprises*, 2012, pages 20–21 (in Estonian) http://bit.ly/JT95jn
82 Center for Policy Studies Praxis, *Development trends of small and medium-sized enterprises*, 2012, page 9 (in Estonian) http://bit.ly/JT95jn
83 Center for Policy Studies Praxis, *Development trends of small and medium-sized enterprises*, 2012, page 58 (in Estonian) http://bit.ly/JT95jn
84 Government Office of the Republic of Estonia, *Export problems of Estonian companies*, nr 2/2010, page 7 (in Estonian) http://bit.ly/IliJNP

market entry facilitation by relevant public agencies could do much to improve the situation[85].

One particular way to expand to foreign markets is to go beyond the usual export activity of international shipping or cross-border service delivery, by setting up a company's own sales, production or other facilities abroad. However, data reveals that such an opportunity remains rather under-utilised, especially in manufacturing industries. The reasons have to do with the small size of the majority of Estonian-owned companies, leaving them with little finances for FDI. With the tough credit conditions of last few years and the general capability issues manifested for exports, the outcome is a low level of outward FDI from Estonia.

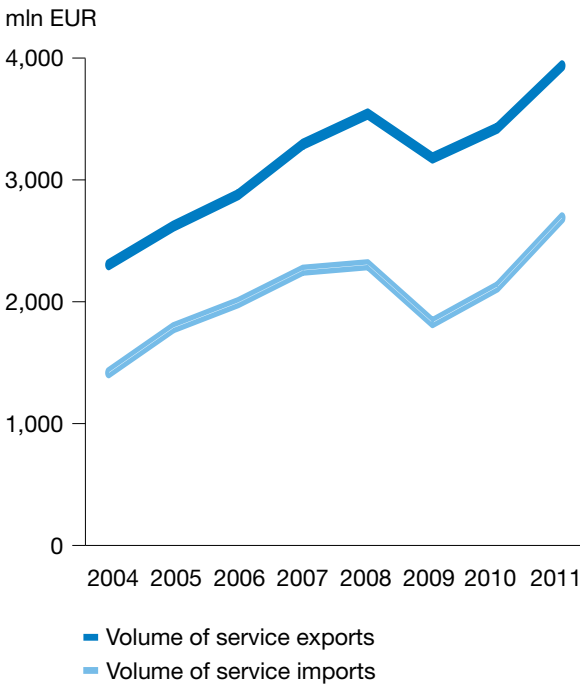
» Estonian companies are still not used to outward FDI as a way of market entry

In 2011, such Estonian investments abroad stood at 3.6 billion euros, which is 25% lower than outward FDI stock was in the peak year of 2008 (although still more than double of what it had been in 2005). Estonian companies have mainly invested abroad in the areas of professional, scientific and technical activities (22% of outward FDI stock), financial and insurance activities (19%) and into transportation and storage (18%). The latter two have received the bulk of outward capital flow in recent years. As with general exports, neighbouring countries have received the majority of flows – Lithuania 21%; Latvia 19%, and Finland and Russia 8% each. 17% of Estonian direct investments have gone to Cyprus for tax havening reasons.[86] Investments into emerging markets have been meagre, reflecting the lack of strategic orientation to these new global (market) growth hubs.

## NEW WAVE OF FOREIGN DIRECT INVESTMENTS IS SOUGHT FOR

Despite the economic hardships of the global crisis and Eurozone debt troubles, Europe still ranks as one of the most lucrative target regions for foreign investors – right behind China. Its big internal (single) market, qualified labour force and world-class research and development (R&D) capabilities attract companies from all over the world, increasingly from emerging markets as well. Within Europe, investors are switching focus from the big 'Old Europe' countries to richer Northern Europe as well as the more dynamic and competitive Central and Eastern Europe.[87]

Figure 9. Estonia is a net exporter of services



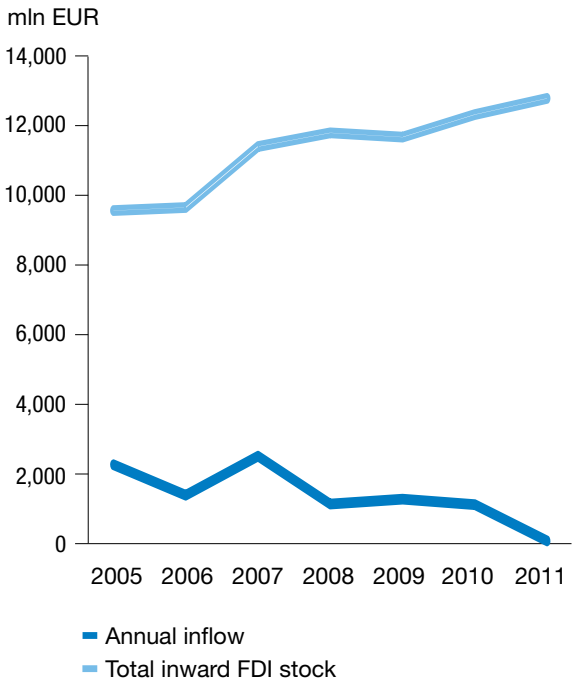

**SOURCE:** Bank of Estonia data[88]

Estonia holds a geographically beneficial position right in the middle of these two increasingly attractive regions. Making use of this advantage, Estonia has indeed so far received the highest rates of foreign direct investments (FDI) per capita in Central and Eastern Europe. The total stock of direct investments in Estonia reached 12.8 billion euros in 2011, or 79.9% of GDP. Most investments have gone to financial and insurance activities (24% – all the major banks are foreign-owned) and in manufacturing (17%), with real estate activities (16%) and wholesale and retail trade (14%) not far behind.[89]

FDI has mostly come from neighbouring countries. Sweden and Finland are the top investors, holding 29% and 24% of all direct investments made

85 Rozeik, H. and A. Jürgenson, *Study of Estonian Information and Communication Sector Companies*, Center for Policy Studies Praxis, 2009, page 42 (in Estonian) http://itl.ee/?dl=186
86 Bank of Estonia, *ODI position by countries* (in Estonian) http://bit.ly/yNQUEd
87 Ernst & Young, *Restart: Ernst & Young's 2011 European attractiveness survey*, 2011 http://bit.ly/mKfNPo
88 Bank of Estonia, *External sector statistics* http://statistika.eestipank.ee/?lng=en#treeMenu/MAKSEBIL_JA_INVPOS
89 As of 31 December 2011. Ibid.

Figure 10. Total FDI stock has stayed steady, even through the crisis




**SOURCE:** Bank of Estonia data[90]

into Estonia by the end of 2011. That share has remained relatively stable, while the number of investments coming from these countries has grown. The Netherlands is the third highest investor with 10% share.[91]

More than a billion euros of FDI has entered the country every year in the last decade, surpassing the level of two billion euros in 2005 and 2007. FDI is important to Estonia, marked by the fact that from 2008–2010 FDI inflows made up an average of 37.3% of gross fixed capital formation in the country[92]. During the economic crisis, foreign investors were wary of investing in Estonia as well as anywhere and the capital inflows are yet to return to pre-crisis levels.[93]

Foreign ownership is particularly strong among large enterprises in Estonia. Half of current such companies have been built or acquired by foreign capital, while only 32% of medium-sized and 6% of small enterprises have foreign investors involved. In terms of share among the total sectoral participation, foreign investors are most visible in retail (26% of companies are foreign-owned), wholesale (17%), and logistics and communications (17%). The large majority (4/5) of foreign investors have set up their facilities in the larger towns, with half of all investors in the national capital Tallinn alone.[94]

Estonia offers foreign investors the advantages of a very favourable investment climate. Ever since rapid reforms were launched in the early 1990s and privatisation began (which offered M&A opportunities), Estonia has offered a relatively stable economic and business-friendly environment[95]. The country currently ranks 24th in latest the World Bank's Ease of Doing Business Index[96]. At the same time, it serves for many investors as a conveniently located and well-connected logistics hub with good rail, road and ship (plus growing air) transport options to surrounding attractive regions.

Alternatively, Estonia is a lower-cost but good-quality production or service centre from where the highly lucrative Nordic or Russian markets can be reached. As a particular attraction, Estonia has had a unique taxation system in place since 2000 under which the profits that companies reinvest in Estonia are exempt from tax. This has induced successive FDI by current investors, who have reinvested a total of about 900 million euros worth of earnings in Estonia[97].

» Foreign investors have been attracted to business climate, location, and tax policy of Estonia

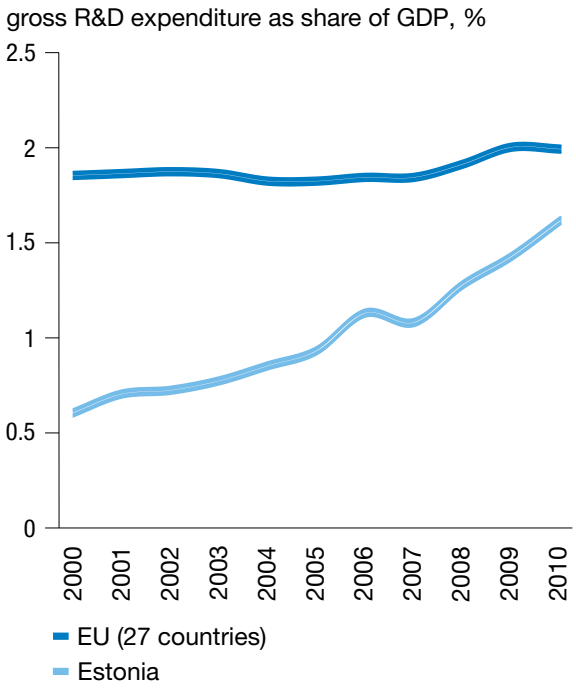
In order to keep growing or stay in business, almost a third of Estonian companies will be looking for a

90 Bank of Estonia, *External sector statistics* http://statistika.eestipank.ee/?lng=en#treeMenu/MAKSEBIL_JA_INVPOS
91 As of 31 December 2011. *Bank of Estonia, Service exports and imports by countries* http://bit.ly/JudhKM
92 Data from UNCTADStat, *Inward and outward foreign direct investment flows, annual, 1970–2010* http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=88
93 It should be noted that in 2011 the inflow level was particularly low. However, this does not reflect that much investor confidence than technical reasons. The largest foreign-owned bank restructured its group and reshifted the assets previously held by the Estonian daughter company in Latvia and Lithuania to its parent group in Sweden, due to internal reasons and nothing to do with the business environment in Estonia. Not counting such Swedish (dis)investments, the inflow figure for 2011 would have stood close to that of previous years at 970 million euros. Bank of Estonia, *Estonia's balance of payments for 2011*, 2012 http://bit.ly/IBbi4j
94 Center for Policy Studies Praxis, *Development trends of small and medium-sized enterprises*, 2012, page 73 (in Estonian) http://bit.ly/JT95jn
95 Urmas Varblane, "Foreign Direct Investment in Estonia", in ed. Scott Diel, *Foreign Investors in Estonia: 15 case studies*, Enterprise Estonia, 2010, pages 121–122 http://bit.ly/Iz9dpn
96 World Bank Group, *Doing Business in Estonia*, 2012 http://www.doingbusiness.org/data/exploreeconomies/estonia
97 Bank of Estonia, *Estonia's balance of payments for 2011*, 2012 http://bit.ly/IBbi4j

foreign investor within the next 2 years[98]. Therefore, the challenge for Estonia is to attract a new wave of FDI at pre-crisis inflow levels and beyond. In addition, the overall structural challenge implies that new investors are especially needed in knowledge-intensive industries and other higher-value activities to boost the upgrading of the economy. This means going beyond getting current investors to reinvest. In addition to more capital and jobs, the new investors should bring access to the technological know-how required for restructuring as well as access to new markets.

Attracting such a new wave of foreign investment is high on the national agenda. There are several incentives (e.g. retraining and technology transfer support) and support services (e.g. for setting up the company) that the government offers for strategic investment projects, particularly in the most promising knowledge-intensive industries. The Estonian Investment and Trade Agency is also getting more active in targeting potential investors[99]. However, capital remains scarce in the hitherto main FDI source countries and other advanced economies, as the economic climate is not supportive. Therefore, Estonia has to switch towards attracting more investors from new partner countries, especially from emerging markets with rapidly growing pools of globalising companies.

Figure 11. Estonia's R&D intensity has been growing fast, catching up to the EU average




**SOURCE:** Eurostat data[100]

## BUILDING SCALE ON THE SUCCESS ACHIEVED IN R&D AND INNOVATION, ESPECIALLY IN TECHNOLOGY AREAS

In order to fulfil the targets for the increase in national productivity, develop new sources for export success in foreign markets and also attract higher-value (e.g. development-related) foreign investors, research and development and innovation level is crucial.

Estonia's R&D system and results weathered the global economic crisis better than the economy as a whole. While R&D expenditure fell by a few percentage points in 2009, it rose again significantly (18%) in 2010. This was the result of increased private sector investments, in particular, as for the first time businesses contributed more than half of the total R&D investments – the spending had otherwise been long dominated by government sector.[101] Yet, it must be noted that a large part of the business sector R&D is also financed from public sources[102].

The gross domestic expenditure on R&D reached 1.63% of GDP or 232.8 mln euros in 2010[103]. The same share had stood at only 0.6% in 2000. Therefore, the decade saw an impressive annual average growth of above 10%[104]. This has brought R&D intensity in Estonia rapidly close to EU average levels[105], allowing the country to catch up in terms of technology, innovation and research. The government has set the target that R&D expenditures should reach 3% of GDP by 2020[106], although progress towards this aim somewhat slowed during last downturn.

98 Center for Policy Studies Praxis, *Development trends of small and medium-sized enterprises*, 2012, page 52 (in Estonian) http://bit.ly/JT95jn
99 See for more: Estonian Trade and Investment Agency http://www.investinestonia.com/
100 Eurostat, *Research and development expenditure, by sectors of performance* http://bit.ly/lz9mci
101 Statistics Estonia, *The expenditures on R&D were raised by investments in the oil industry*, 2011 http://www.stat.ee/49500
102 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 61 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
103 Statistics Estonia, *The expenditures on R&D were raised by investments in the oil industry*, 2011 http://www.stat.ee/49500
104 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 10 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
105 Eurostat, *Research and development expenditure, by sectors of performance* http://bit.ly/lz9mci
106 *National Reform Programme "Estonia 2020"*, 2011, page 18 http://bit.ly/JlqLar

Increased spending has also brought along increased performance and outputs. EU ranks its member states in the European Innovation Scoreboard, where Estonia has reached the group of innovation followers – countries on the path to becoming leaders in innovation and research fronts[107]. In terms of the output of publications, Estonia is already ranking strong compared to the rest of Europe (which is at top of the world overall) in various measures, especially in international scientific publications. For example, in 2010 per million inhabitants 491 international scientific publications were produced in Estonia and 11% of them got published in 10% most cited journals.[108]

More than half of these publications of Estonian researchers were co-published with foreign researchers, showing the readiness for international collaborations. Estonian science owes some of its success to its partnership with scientifically more advanced countries, particularly with Sweden, Finland, and Germany. A considerable number of publications are prepared and published in co-authorship with colleagues from those countries (including within joint projects funded under EU Framework Programme), giving the Estonia a benefit of learning and knowledge transfer.[109]

Such collaborations have been facilitated by international framework agreements for scientific and technological cooperation that Estonia has established with more than 40 countries including USA, China, India, Mexico, Ukraine, etc. and major organisations such as CERN, European Space Agency, and more.

>> Estonian researchers are eager to collaborate internationally, as the high share of co-publications shows

Another important R&D output indicator set concerns patenting intensity. In 2009, the European Patenting Office received 33 applications from Estonia per million inhabitants. This figure is the second highest in Eastern Europe, ahead of Portugal and on par with Spain, but far below the EU27 average of 116.[110] This is so because of a set of factors such as an insufficient focus on applied research in R&D work, previous smaller business R&D activity, etc. All of these need to be improved upon, in order to put the R&D capacity to maximum economic (growth) use in Estonia.

The availability of a sufficient number of R&D staff with sufficient skills and preparation is key to R&D and innovation success. That is why it has been an important policy aim to increase the intake and salaries of doctoral students, offer more postdoctoral and researcher mobility grants for coming to Estonia, etc.

Currently, one in every hundred of Estonia's working population is employed in R&D – more than 5,200 people in total[111]. The number of researchers in the private sector has increased almost 5 times in 10 years, comprising 30% of the total number of researchers and engineers working in Estonia in 2010[112]. Nevertheless, the general demographic trends and hitherto educational preparation quality issues still constitute a considerable bottleneck to employing the full R&D potential that the country otherwise might have[113]. Hence, there is a strong need to attract more foreign researchers and students to Estonian higher education and the R&D system.

The largest share of Estonia's research staff works in the area of natural sciences, followed by social sciences and humanities, and then the engineering and technology fields. The same proportions roughly correspond to how public sector R&D expenditures are split between the fields. In addition, such division gives good ground for advancing innovation in the crucial areas of natural science and technology, which have been designated as focus areas in the national R&D and innovation strategy.

The researchers mostly work in 18 Estonian R&D institutions: six public universities, several state research organisations and independent research institutes. The largest public research university is the

107 Ministry of Education and Research of the Republic of Estonia, *Research and Development in Estonia: Overview and Statistics*, 2011, page 22 http://bit.ly/I5SPNy
108 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 11 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
109 Ministry of Education and Research of the Republic of Estonia, *Research and Development in Estonia: Overview and Statistics*, 2011, page 20 http://bit.ly/I5SPNy
110 Eurostat, *Patent applications to the European Patent Office* http://bit.ly/I2mCVd
111 Eurostat, *Total R&D personnel and researchers by sectors of performance, as % of total labor force and total employment, and by sex* http://bit.ly/I5SUkk
112 Ministry of Education and Research of the Republic of Estonia, *Report on the fulfilment of the National R&D&I Strategy "Knowledge-based Estonia" and its action plan*, 2011, page 3 (in Estonian http://bit.ly/J6DZ6i
113 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 16 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf

University of Tartu, followed by the Tallinn University of Technology, Tallinn University and the Estonian University of Life Sciences. More than 2/3 of Estonian students study at public universities, and the same institutions are in charge of over half of Estonian R&D.

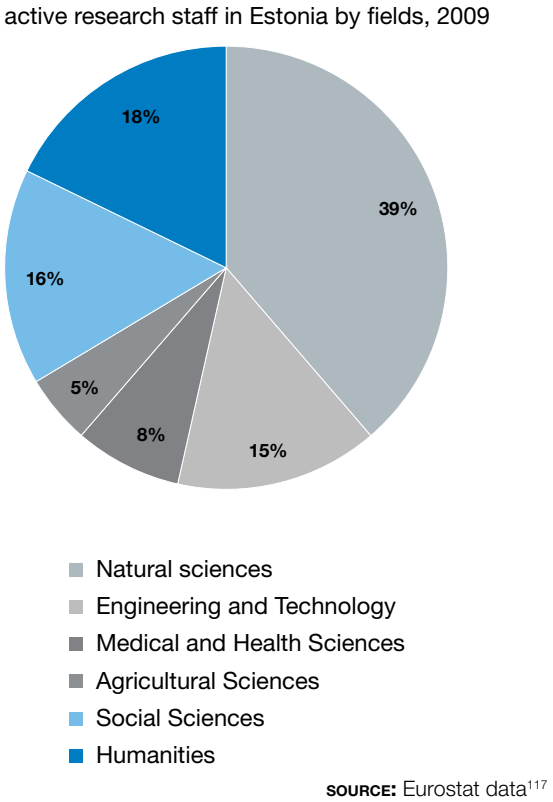
To facilitate more cooperation among the various R&D institutions as well as get more high-level research, 11 Centres of Excellence have been created. These work on internationally acclaimed research in close co-operation with top foreign research institutions. In addition, 8 competence centres exist for facilitating industry-research collaboration and applied development work. Both sets of centres mostly operate in the areas of natural science and technology, with specific focuses on ICT, biotechnology, environment or physics-related matters.[114]

This is well in line with the national R&D and innovation strategy "Knowledge-based Estonia", which has set information and communication technologies, biotechnology, and materials technology as the pillars on which to develop Estonian R&D excellence. In addition, the strategy specifies four socio-economic challenge areas in which innovation is to be promoted: energy, defence and security, health care and welfare services, and environmental protection. In all of these technology and socio-economic fields, national R&D programmes are created and implemented.[115] Several of the same fields dominate in the innovation side as most business expenditure on R&D is done by a fairly limited number of high-tech SMEs, mainly from the ICT and biotech fields (with some contribution from the service sector, such as financial institutions).[116]

Three technology areas stand out the most on the Estonian R&D landscape, with both academic and research excellence as well as noticeable business activity and innovation capacity present – the Estonia's most promising fields of strength.

» ICT, biotech and cleantech are the three key areas of research strength and innovation capacity

Figure 12. The largest share of research staff works in in natural sciences area




**SOURCE:** Eurostat data[117]

The first and by far the strongest among them is ICT, partially because of Estonia's general strong ICT uptake and use level. This field features the strongest business sector of the three technology fields, with more than 2,000 active companies, although most of them are small domestic market oriented service providers[118]. However, there are also quite a few strong software development companies (including the R&D centres of global companies like Skype and Symantec) and a few (foreign-owned) large major electronics producers or telecommunication providers present.

In addition, in recent years start-up activity has rapidly increased in the ICT area. This is reflected in the high share of ICT deals in Estonian venture capital investor's portfolios[119], as well as the fame that Estonian

114 The full list of Centers of Excellence is available online: http://www.hm.ee/index.php?1512873. The full list of competence centres is available online: http://www.eas.ee/en/for-the-entrepreneur/innovation/competence-centre-programme
115 *Estonian Research and Development and Innovation Strategy "Knowledge-based Estonia" 2007–2013*, 2007 http://www.hm.ee/index.php?popup=download&id=6175
116 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 11 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
117 Eurostat, *Total R&D personel and researchers by sectors of performance, sex and fields of science* http://bit.ly/IbJKVM
118 Rozeik, H. and A. Jürgenson, *Study of Estonian Information and Communication Sector Companies*, Center for Policy Studies Praxis, 2009, page 20 (in Estonian) http://itl.ee/?dl=186
119 Estonian Venture Capital Association, *Statistics*, 2011 (in Estonian) http://www.estvca.ee/estvcast/statistika

ICT start-ups have jointly gained in the world. In 2011 they got known as the 'Estonian Mafia' because of the emergence of a 'disproportionate' number of them (given the country's size)[120].

Altogether, the Estonian ICT sector currently contributes 36% of total business R&D expenditures[121]. The main areas where the ICT sector has extensive experience in the development of innovative e-governance, finance, logistics and e-health solutions. In addition, the major ICT research excellence areas in Estonia are: cyber security and cryptography, user applications and system integration, fundamental computer science, integrated electronic systems, embedded systems, user interfaces (including language technology)[122].

Biotechnology is the second promising field. There, Estonia's R&D competence and innovation performance is highest in the areas of biomedicine (especially early stage drug discovery, diagnostics and therapeutic products) and food (diagnostic and safety, processing, and functional foods)[123]. The business sector itself is small, consisting of about 55 companies, most of them very closely linked to the research community and often owned by researchers themselves. These companies earned about 19 million euros in revenues in 2010, and the sector has grown by more than an average of 28% annually since 2004.[124] The Estonian Biotechnology Programme aims to raise sectoral revenues, exports, added value and R&D investments multifold in the next few years, by assisting companies to reach (international) markets[125]. While several companies are developing their own products in the biotech area, many companies are also involved in service business, e.g. DNA testing.

The third and even more promising field is cleantech, which combines various scientific disciplines and technological areas, including material science, environmental science, energy technology, etc. While there are more than 200 companies in Estonia related to cleantech in some way, most of them are distributors of foreign solutions. A recent study identified 36 R&D-dedicated cleantech companies, some with tight ownership affiliation to research groups in universities and most not yet in the market entry or sales phase (still developing their products).[126] The most promising solutions and strengths are related to energy technologies and energy efficiency solutions (including the relevant ICT solutions). There are also several promising environmental diagnostics, biofuels and material technology companies active[127].

>> Estonian tech-companies and researchers need to scale up their activities, and find suitable partners to meet this challenge

In all of these three most promising technology fields, particularly biotech and cleantech but also ICT, the challenge for Estonia is to develop both R&D excellence, the related labour pool as well as the business sector – so that they would constitute a significant R&D and economic impact. Currently, they all are small and are looking for ways to expand own business or operations, including by entering new markets.

However, to achieve the latter and make a significant impact, domestic R&D manpower and capacity will not be sufficient. Alternatives like offshoring, contract research outsourcing, etc. have to be taken into serious consideration[128]. Indeed, the lack of scale and the limits on current scalability are the main hindrances for the development of these fields and, consequently, Estonia. Thus, Estonian ICT, biotech and cleantech companies and researchers need to find partners who can offer matching competences to jointly overcome the scale challenge and remain at the forefront in these fields. ■

120 "Startup Sauna Puts #estonianmafia to Test", *TechCrunch.com*, 11.10.2011 http://techcrunch.com/2011/10/11/startup-sauna-puts-estonianmafia-to-test/
121 ERAC, *Peer-Review of the Estonian Research and Innovation System*, 2012, page 83 http://www.mkm.ee/public/ERAC_EE_Peer-Review_Report_2012.pdf
122 Ministry of Education and Research of the Republic of Estonia, *Estonian Information and Communication Technology Higher Education and Research and Development Programme 2011–2015*, 2012, page 13 http://www.hm.ee/index.php?popup=download&id=11479
123 Ernst & Young, *Feasability Study for an Estonian Biotechnology Programme*, 2009 http://bit.ly/IdLPw6
124 Ministry of Economic Affairs and Communications of the Republic of Estonia, *Ministry's activities in developing the bioeconomy*, 2012 (in Estonian) http://bit.ly/Ikt09L
125 Enterprise Estonia, *Biotechnology Programme* http://www.eas.ee/en/for-the-entrepreneur/innovation/biotechnology/biotechnology
126 Valdmaa, K. and Kalvet, T., "Emergence of the Clean Technologies Sector in Estonia", in: Valdmaa, K. and Kalvet, T. (eds), *Emergence of the Clean Technologies Sector in the Baltic Sea Region*, 2011, page 159 http://bit.ly/I7Pwc3
127 Valdmaa, K. and Kalvet, T., "Emergence of the Clean Technologies Sector in Estonia", in: Valdmaa, K. and Kalvet, T. (eds), *Emergence of the Clean Technologies Sector in the Baltic Sea Region*, 2011, page 188 http://bit.ly/I7Pwc3
128 Rozeik, H. and A. Jürgenson, *Study of Estonian Information and Communication Sector Companies*, Center for Policy Studies Praxis, 2009, page 43 (in Estonian) http://itl.ee/?dl=186

# 3 The Indian Economy: Trends and Challenges

As with Estonia, the current and future economic trends and challenges of India also need to be studied in order to chart out the most promising co-operation opportunities between these two countries. The best potential for collaboration emerges from determining how each country's strengths might offer solutions to the other's challenges, or how the strengths can be combined – today and into the future.

Since the major economic reforms were kick-started in 1991, India has enjoyed admirable economic success. The two decades have featured strong economic growth and increasing livelihoods, leading to a domestic market boom. Indian companies have gained a strong foothold in world markets, especially in the engineering and business services areas, reflected in rising trade and investment flows. The technological and scientific competence base has been on the rise, too, making India an even stronger player in the world economy.

However, many significant economic challenges still remain for India in maintaining such momentum, as indicated by the current policy debates and recent reduction in growth pace. These challenges need to be efficiently tackled as soon as possible, which is a mighty task for Indian government at all levels.

Nevertheless, the long-term outlook of India offers strong hopes. Its demographic base combined with the ongoing and planned efforts hold much promise in leading to large growth in India's market demand, innovation capacity and internationally successful businesses. India should be poised for further and wide-reaching economic expansion and this should not be overlooked in Estonia. Indeed, the future strengths and paths of India can offer solutions to many of the interests and needs of the Estonian economy and companies.

## DEMOGRAPHIC TRENDS PROVIDE A BOOST TO INDIA'S ECONOMY AS WELL AS TALENTS FOR THE WORLD

India is on the path of becoming the world's biggest country in terms of population. Based on the latest census, as of 1 March 2011, a total of 1,210,193,422 people lived in India. That amounts to 17.5% of the total world population, meaning that every 6th person on Earth is an Indian.[1] In addition, around 20–30 million non-resident Indians or Indians with foreign citizenship live and work in other countries all over the world, especially Myanmar, USA, Malaysia and Saudi Arabia[2].

Within India, the largest share and number of people live in the state of Uttar Pradesh, which has 200 mln residents, or 16% of the Indian total – more than the entire population of Brazil. The other larger states are Maharashtra with 112 mln, Bihar with 104 mln, West Bengal with 91 mln, and Andhra Pradesh with 85 mln people.[3]

>> Indian population increased in 2001–2011 by the size of almost total Brazilian population

In the single decade since the previous census in 2001, some 181 mln people were added to India's population. This is again close to the entire population of Brazil, which has the world's fifth-largest population.[4] Such fast growth has been due to the usual demographic effects of improved health and economic conditions. These have led to longer life spans and lower child mortality rates. In fact, birth and fertility rates have been falling, but mortality rates have just been falling faster. In addition, due to past high birth levels, larger and larger cohorts of people are reaching reproductive age and although giving birth to fewer children, there are simply large numbers of them being born.[5]

As such, the large population growth is destined to continue in India for several decades to come. The United Nations Population Bureau forecast prior to the most recent India's census was that by 2025 India could have a total of 1.46 billion people – surpassing China and becoming the most populated country in the world. The population peak might finally arrive in India around 2060 at the level of 1.7 bln people.[6]

Nevertheless, from an economic perspective the total tallies do not matter to the well-being of nations as much as the age structure or demographic profile of the population. It is in this respect that India's situation is particularly promising. India is and will continue to be a very young country, enjoying the benefits of the world's largest workforce. The current median age is a little over 25 years, rising to about only 30 by 2025. In total, 62% of people are between the prime working ages of 15 to 60 – creating a labour pool of more than 750 million people.

Their number will rise to a staggering 925 million by 2030, taking the lead globally from China in this category in the process. Most importantly, a very significant share of the population will only enter the labour market for the first time in the next decade or so. Some 610 million people were younger than 25 in 2010, and more than 375 mln of them were even younger than 15.[7] In the next two decades, each year more than 10 mln new people will be entering the work force. This means that a number equivalent to the entire population of Sweden will be added to the labour pool annually.[8]

Such a demographic situation and trends allow India to enjoy what economists call a demographic dividend. It will give a boost to productivity and thereby economic growth, as there will be more people to do the work. Their sheer number and additions can keep a ceiling on wage and salary growth that would otherwise be much higher.

Also, with a working age population growing in share, more funds will be available for investment through their earnings and savings. The ageing countries, for

1 Census of India, *Provisional Population Totals India: Paper 1*, 2011, page 38 http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html
2 European Travel Commission, *Market Insights: India*, 2010, page 3 http://www.etc-corporate.org/resources/uploads/ETCProfile-India-2010-dr4.pdf
3 Census of India, *Provisional Population Totals India: Paper 1*, 2011, page 46 http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html. See also Annex 3.
4 Census of India, *Provisional Population Totals India: Paper 1*, 2011, page 38 http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html
5 Census of India, *Provisional Population Totals India: Paper 1*, 2011, page 58 http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html
6 United Nations, *World Population Prospects 2010 Revision* http://esa.un.org/unpd/wpp/index.htm
7 Ibid.
8 Ghani, E. "Reshaping Tomorrow: What will India look like in 2025?", *VoxEU.org*, 13.01.2012 http://www.voxeu.org/index.php?q=node/7520

example, instead have to devote to caring for elderly and consumption. International Monetary Fund experts have calculated that in this manner the demographic dividend alone can potentially add some 2% to India's economic growth each year in the next two decades.[9]

» India will have no labour pool shortage worry in the coming decades, unlike most large economies of the world

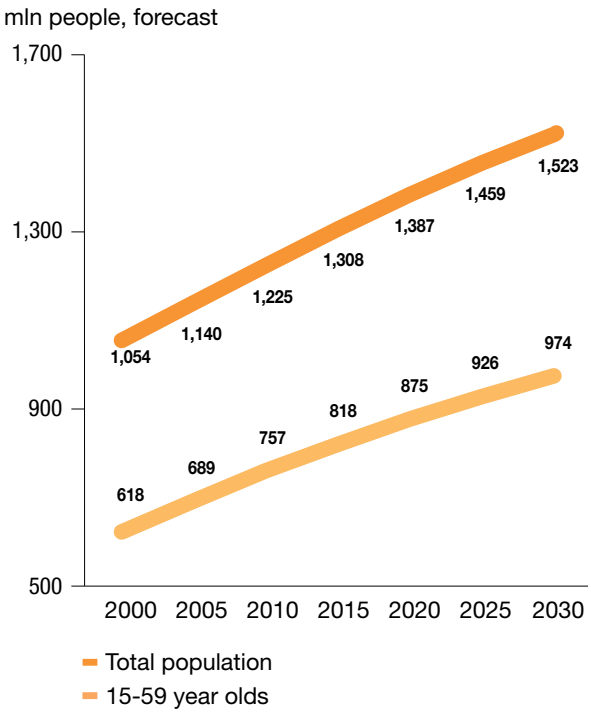
In order to reap the benefits of such a promising demographic situation, the challenge for India will be to keep the economy growing to provide enough jobs and life quality for all of the additional labour market entrants. This will require doing everything possible to support job creation, but even more importantly ensuring that people, and especially young people, receive sufficient education.

Otherwise, the demographic dividend promise might instead turn into a 'burden', if all of these hopeful new labourers remain unemployed and perhaps become (socially or politically) restless[10]. The expansion of study opportunities and the more pertinent improvements in the quality education available in India will help to ensure that people have the skills and knowledge needed to get employed – and thereby contribute to the demographic dividend.

» The quality and level of people's skills and knowledge need to rise, in order to fully reap the demographic dividend

For a start, it is promising that the most fundamental skill of literacy has much improved in India. According to the 2011 census, 74% of people could read and write in one of the 23 official languages of India. There has been a marked improvement over the previous census, when the literacy rate stood at 65%. A gap still persists between different states, with literacy rates ranging from 94% in Kerala (the highest) to 64% in Bihar (the lowest). There also is a gender gap, with 82% of men possessing reading and writing skills compared to only 65% of women[11].

Figure 1. India's population and labour pool are growing fast to become the world's largest by 2025




**SOURCE:** UN Population Division data[12]

However, these gaps have fallen by several percentage points over the course of the decade. The situation has improved due to the large expansion in the provision of primary education. Now almost all children aged 6–14 are enrolled in schools as a result of governmental policy action.[13] Together with several initiatives to teach adults, this has allowed the government to start aiming for an 80% literacy rate by 2015[14].

Nevertheless, literacy skills and primary education are in most cases not enough to find employment, especially for higher-paying jobs. It has been estimated that some 75% of jobs to be created in the next few years might require some degree of vocational training[15]. In addition, there is a growing need for higher education graduates, both engineers and others[16].

9 Aiyar, S. and A. Mody, The Demographic Dividend: Evidence from the Indian States, *IMF Working paper* 38, 2011 http://www.imf.org/external/pubs/ft/wp/2011/wp1138.pdf
10 Ernst & Young, *Making the Indian higher education system future ready*, 2009, page 18 http://bit.ly/K2Mnok
11 Census of India, *Provisional Population Totals India: Paper 1*, 2011, page 98–101 and 108 http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html
12 United Nations, *World Population Prospects 2010 Revision* http://esa.un.org/unpd/wpp/index.htm
13 Accenture, *New Waves of Growth for India: Unlocking Opportunities*, 2011, page 16 http://bit.ly/IR19il
14 OneIndia News, *Indian literacy will reach 80% by 2015: Kapil Sibal*, 11.09.2011 http://news.oneindia.in/2011/09/11/indian-literacy-reach-80-percent-2015-kapil-sibal.html
15 Ernst & Young, *Making the Indian higher education system future ready*, 2009, page 71 http://bit.ly/K2Mnok
16 Boston Consulting Group, *Indian Manufacturing: The Next Growth Orbit*, 2010, page 22 http://bit.ly/IaM7nD

Table 1. India has several world-class universities

| | |
|---|---|
| *THE World University Rankings 2011–2012* | |
| 301–350 | Indian Institute of Technology Bombay |
| *Academic Ranking of World Universities 2011* | |
| 301–400 | Indian Institute of Science |
| *QS World University Rankings 2011/12* | |
| 218–219 | Indian Institute of Technology Delhi |
| 225 | Indian Institute of Technology Bombay |
| 281 | Indian Institute of Technology Madras |
| 306 | Indian Institute of Technology Kanpur |
| 341 | Indian Institute of Technology Kharagpur |
| 398 | University of Delhi |
| 401–450 | Indian Institute of Technology Roorkee |
| *FT Global MBA Rankings 2012* | |
| 11 | Indian Institute of Management, Ahmedabad |
| 20 | Indian School of Business |

**SOURCE:** THE, ARWU, QS and FT rankings[17]

Although India is already said to have the world's largest available pool of research and engineering staff[18], not enough students graduate to match the demand from business. Even the ones that do finish schooling might not be employable due to their insufficient skills despite their schooling.[19] A recent World Bank study found that about 2/3 of employers are more or less dissatisfied with the skills of the graduating engineers coming to work for them[20].

The reasons have been plenty, ranging from a lack of infrastructure and teaching materials to inefficient regulation and supervision of institutions, shortages of qualified teaching staff, out-dated curriculum, etc.[21]

For vocational education, the matter has also received little previous attention with most policy efforts concentrated on higher education[22]. The Indian government is now making efforts to improve the situation with increased funding, a better accreditation system and regulatory oversight, and other means[23].

In addition, much effort is being placed into expanding the offering of higher study places while ensuring their quality. India already ranks as first in the world for its total number of higher education institutions.[24] Most of the schools are colleges providing technical or professional training, 87% of all students study in more than 30,000 of such colleges. In recent years, the national government has still supported the opening of some 1,500 new institutions. [25]

Among others, importantly the network of so-called technical education schools (consisting of Indian Institutes of Technology, Indian Institutes of Information Technology, National Institutes of Technology, Indian Institutes of Management) has been expanded significantly, as has the network of central universities. The technical education schools are considered the 'crown jewels' of Indian higher education, offering the best-quality study opportunities at a world-class level. The idea behind the expansion has been to capitalise on the existing good teaching experience and management models of the best schools, as well as giving more students the opportunity to obtain highest-standard education from more institutions.

» India is expanding the quality and spread of higher education, including the network of best schools

In addition, the private sector has stepped in to help meet the surging demand for education. Currently,

17 Times Higher Education, *THE World University Rankings 2011–12* http://www.timeshighereducation.co.uk/world-university-rankings/2011-2012/top-400.html; ShanghaiRanking Consultancy, *Academic Ranking of World Universities (ARWU)*, 2011 http://www.shanghairanking.com/index.html; Quacquarelli Symonds, *QS World University Rankings 2011/12* http://www.topuniversities.com/university-rankings/world-university-rankings/2011; Financial Times, *Global MBA Rankings 2012* http://rankings.ft.com/businessschoolrankings/global-mba-rankings-2012
18 Dukkipati, U., "Higher Education in India: Sustaining Long-Term Growth?", *CSIS: South Asia Monitor*, 2010, page 2 http://csis.org/files/publication/sam_141.pdf
19 Boston Consulting Group, *Indian Manufacturing: The Next Growth Orbit*, 2010, page 22 http://bit.ly/laM7nD
20 Blom, A. and H. Sateki, *Employability and Skill Set of Newly Graduated Engineers in India*, World Bank: Policy Research Working Paper No. 5640, 2011, page 19 http://bit.ly/llkOtX
21 Ernst & Young, *Making the Indian higher education system future ready*, 2009, page 15 and 74–75 http://bit.ly/K2Mnok
22 Ernst & Young, *Reaching towards its true potential: Ernst & Young's 2011 India attractiveness survey*, 2011, page 50 http://www.ey.com/IN/en/Issues/Business-environment/Reaching-towards-its-true-potential
23 Ministry of Human Resource Development of India, *Annual Report 2010–11*, 2011 http://mhrd.gov.in/sites/upload_files/mhrd/files/AR2010–11_Part1.pdf
24 Ernst & Young, *Making the Indian higher education system future ready*, 2009, page 7 http://bit.ly/K2Mnok
25 Ministry of Human Resource Development of India, *Annual Report 2010–11*, 2011, page 122 http://mhrd.gov.in/sites/upload_files/mhrd/files/AR2010-11_Part1.pdf
26 Ibid.

37% of students study in various private institutions (from colleges to universities).[26] There is also a legislative initiative in motion to allow foreign universities enter India with their own full branches. This has previously been possible only in collaboration with a local institution. The new move should now serve to upgrade the quality in the market together with offering of more study places.[27] One of the latest policy plans of government is to set up another network of world-class institutions called 'innovation universities' to complement the existing 'crown jewels'. These would offer interdisciplinary study and research opportunities in co-operation with the world's best schools, and form India's own 'Ivy League'.[28]

In 2010/2011, there were 14.5 mln students enrolled in Indian higher education institutions, most of them studying in English[29]. That translates into a gross university-level enrolment rate of 18% among India's youth. The government hopes to raise the rate to 30% by 2020 through the creation of study places for 10 mln more students (annually) with the initiatives outlined above. In addition, some 70 mln (young) people should get trained through vocational education, where the government aims to increase the enrolment rate from its current level of 12% to 25%.[30]

If these plans are put to action, they will make a significant contribution to the national economy, boosting its future prospects and the well-being of people. Nevertheless, even with all of these rises in study opportunities, a quick comparison with demographic data shows that there will still not be enough places for the tens of millions of young Indians. In addition, the current teaching quality issues will take time to be solved. This combined with rising economic opportunities (especially in middle class) creates the basis for an increasing demand to study abroad.

>> Growing numbers of Indian students will look for good study opportunities abroad

As it stands, the Indian student population studying abroad is the second largest in the world after China, with more than 200,000 attending educational institutions outside of India for their training and degrees. These students have mostly been drawn to English speaking countries (USA, UK, Australia) and their renowned institutions, but they have also been expanding their destination target list.[31] A particular interest exists for Master and Doctoral level studies, in which opportunities at home have been particularly lacking (including in highly valued areas like medicine, natural sciences, engineering, business). The desire to study abroad is projected to keep rising at a quick pace. By 2025, the annual outflow of Indian students may far exceed 300,000.[32]

The demographic trends render India in a good position of not having to worry about any labour shortages in the next few decades, if skills and knowledge can be ensured. This potential sets India very vividly apart from most of other big countries and markets of the world, which will be quite short of (qualified) people and will have to deal with rising (labour) costs.[33] India indeed might offer a solution and help to 'fill the gap' for many advanced countries. This can be done by offering a manufacturing and service base for these countries or supply them with needed labour, if Indians go to work and study abroad[34]. However, India offers them increasing reasons to stay or return, as long as the economy will keep forging ahead as it has done in the past.

## STRONG LONG-TERM GROWTH OUTLOOK DESPITE SOME CURRENT SLOWING DOWN

The demographic dividend is not just a thing of the future but has also been the key to India's growth to date. This combined with economic reforms started in India in 1991, led to fast rising business activity, foreign trade and the entry of foreign investors.

At the start of the reforms, India was still largely an agrarian economy. During the newly free economic times, comparative advantage laws took effect and the economy began transforming. India's vast population and at-the-time availability of technical

27 Organisation of Economic Co-operation and Development, *Economic Survey India 2011*, 2011, pages 177–178.
28 "India to soon have navratna universities", *The Economic Times*, 03.01.2011 http://bit.ly/Js1tZo
29 Ministry of Human Resource Development of India, *Annual Report 2010–11*, 2011, page 122 http://mhrd.gov.in/sites/upload_files/mhrd/files/AR2010-11_Part1.pdf
30 Government of India, Planning Commission, *Faster, Sustainable, and more Inclusive Growth: An Approach to the 12th Five Year Plan*, 2011, page 100 http://planningcommission.gov.in/plans/planrel/12appdrft/appraoch_12plan.pdf
31 Organisation of Economic Co-operation and Development, *Economic Survey India 2011*, 2011, pages 177–178.
32 Archimedes Foundation, Report on the Selection of Target Countries, 2011, pages 76–79.
33 World Economic Forum, *Global Talent Risk – Seven Responses*, 2011 http://www3.weforum.org/docs/PS_WEF_GlobalTalentRisk_Report_2011.pdf
34 Accenture, *New Waves of Growth for India: Unlocking Opportunities*, 2011, page 16 http://bit.ly/IR19il

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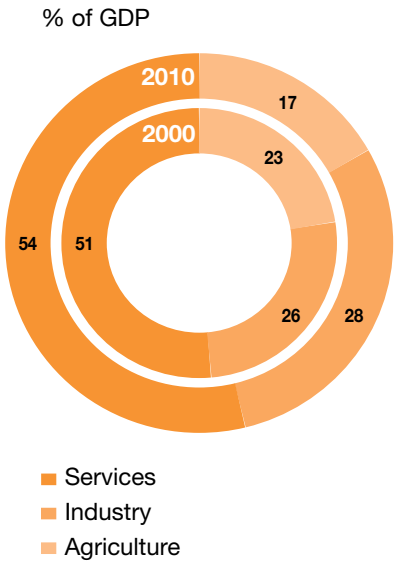



**SOURCE:** Deutsche Bank Research, based on EIU data[35]

skills combined with the growing need of Western companies to cut costs leading to the rise of the service economy. It was based largely on outsourcing at first. Indeed, taking care of outsourcing work in anything from simple back office tasks (in the earlier days) to complicated R&D and other core business functions (these days, as the companies have built up their competence), has been the key growth area in India[36]. It has driven value-added creation, the emergence of employment opportunities and rising exports.

As a result, India's overall economic structure has shifted. Agriculture today accounts for less than a fifth of GDP and services contribute more than a half[37]. Naturally, agriculture continues to hold an important place, as its share is noticeably higher in India than in other fast-growing and large economies[38]. Furthermore, 60% of people still receive their incomes from this sector[39]. This means that agricultural development will be significant in the process of reaching economic growth and the rise in the well-being in India – although the other sectors will be most instrumental in driving the economy forward.

Alongside the service sector boom, the industrial sector has been gaining its share as well. However, India is still little industrialised compared to most other large economies. In particular, the share of manufacturing has remained modest at a level of 15–16% of GDP[40]. Yet, manufacturing sector has the potential to offer more jobs for lesser-educated people than (outsourcing) services, besides giving a boost to exports, output growth and technological development.

» Services have driven economic growth so far; a new major policy is to advance manufacturing in India as well

It is for these reasons that the Government of India finally launched a National Manufacturing Policy in 2011. The aim is to rapidly increase the manufacturing sector's share in GDP to 25% by 2022, creating 100 million new jobs in the process. This is to be reached by an ambitious agenda of building up strength in both older and new strategic industries. The focus will be on easing the regulatory burdens and offering financial incentives together with large retraining efforts, and setting up national Investment and Manufacturing Zones across the country to attract investment and build competence clusters.[41]

In the process, the manufacturing base of India should expand. To date, just a few selected industries have dominated the sector. Food processing, metals and electrical machinery, chemical, rubber and petroleum production have been contributing 70% to the total manufacturing output of India[42].

In general, India has enjoyed a remarkable growth story in the last two decades, especially considering the low initial base level. It became a trillion dollar economy in 2007[43], and currently ranks as the 4th largest in the world in purchasing power parity terms

35 Deutsche Bank Research, *China-India Chartbook*, 2011, page 4 http://bit.ly/GMesyt
36 Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010, page 4 http://bit.ly/lbgIRX
37 Deutsche Bank Research, *China-India Chartbook*, 2011, page 4 http://bit.ly/GMesyt
38 HSBC Global Research, *The world in 2050: Quantifying the shift in the global economy*, 2011, page 13 http://bit.ly/hOZ9gg
39 Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010, page 4 http://bit.ly/lbgIRX
40 Government of India, Ministry of Commerce & Industry, Department of Industrial Policy and Promotion, National Manufacturing Policy, 2011 http://dipp.gov.in/English/Policies/National_Manufacturing_Policy_25October2011.pdf
41 Ibid.
42 Boston Consulting Group, *Indian Manufacturing: The Next Growth Orbit*, 2010, pages 6–7 http://bit.ly/laM7nD
43 Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010, page 3 http://bit.ly/lbgIRX

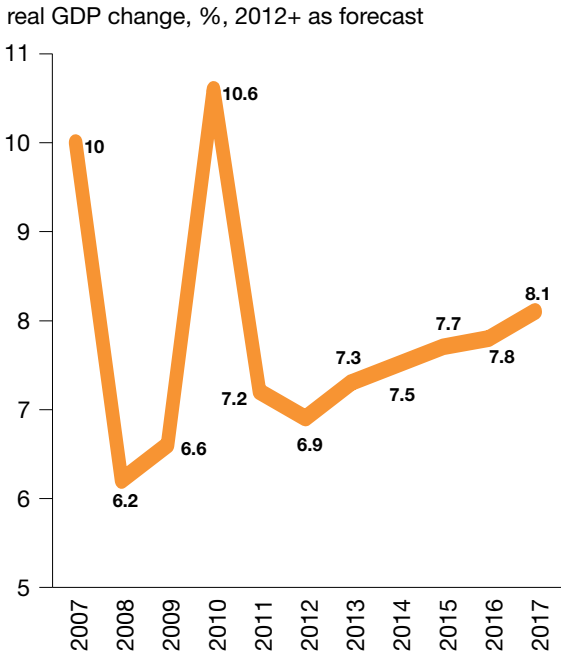
(behind the USA, China and Japan) or 11th in nominal terms[44]. The real GDP growth figures stood at the range of 9% annually throughout the mid-2000s until taking a dip with the global recession induced by the economic crisis, though remaining at the otherwise high level of 6%. This was due to the sharp fall in demand for Indian outsourcing services and export products in the key Western markets.

However, the Indian economy bounced back with a fast V-shape recovery to above 10% annual growth rate again in 2010[45]. This made India one of the first major economies to recover[46], showing its dynamism and inherent potential. The reasons are mainly twofold. First, the government launched a fiscal stimulus package and this together with a continued rise in incomes led to domestic demand staying strong in 2008–2009[47]. Secondly, exports also bounced back in 2010 with an improvement in the economic climate in foreign markets as well as new business coming towards Indian outsourcing companies, due to Western companies eagerly starting to cut costs in their operations even more[48].

» India bounced rapidly back from global crisis, although the growth rate is slowing down again

The recovery has been followed by another slowing down. The global economic climate is cooling again, the governmental stimulus ended and fiscal consolidation efforts do not allow for its extension, and the domestic investment demand is getting sluggish. Both Indian governmental[49] as well as international financial institutions like the World Bank[50] and the IMF[51] forecast economic growth in 2012 to fall slightly below 7%, while staying in the 7–8% range in the years to come unless significant policy changes are undertaken.

Figure 3. Economic growth forecast remains high in India, although lower than at peaks

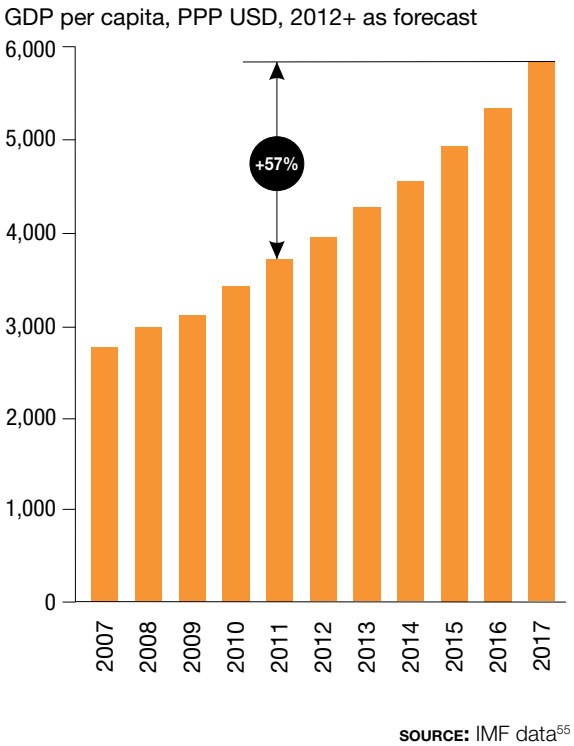



**SOURCE:** IMF data[52]

Both domestic and international analysts and official sources agree on the required steps: overcoming infrastructure bottlenecks (including those in electricity provision and transportation), improving the land acquisition system for industrial development, boosting productivity in agriculture, raising educational and health standards, decreasing the risks and liberalising the financial sector, regaining regulatory reform momentum and battling corruption[53]. The list can go on and indeed the content has remained quite the same for several years[54], making business leaders impatient and limiting their investment eagerness. Therefore, much of the future direction of the economy will

44 PwC, "The accelerating shift of global economic power: challenges and opportunities", *The World in 2050*, 2011 http://www.pwc.com/gx/en/world-2050/the-accelerating-shift-of-global-economic-power.jhtml
45 World Bank, *2012 India economic update*, March 2012, page 11 http://bit.ly/xP4cdt
46 Organisation of Economic Co-operation and Development, *Economic Survey India 2011*, 2011, page 11.
47 Ernst & Young, *Doing Business in India*, 2011, page 16 http://bit.ly/HWXY9v
48 "Indian technology firms: Seeking to avoid a mid-life crisis", *The Economist*, 05.11.2012 http://www.economist.com/node/21536613
49 Government of India, Economic Advisory Council to the Prime Minister, *Review of the Economy 2011/12*, February 2012 http://eac.gov.in/reports/eco_rev1112.pdf
50 World Bank, *2012 India economic update*, March 2012 http://bit.ly/xP4cdt
51 International Monetary Fund, *World Economic Outlook Database: April 2012 Edition*, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
52 International Monetary Fund, *World Economic Outlook Database: April 2012 Edition*, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
53 See, for example, Government of India, Planning Commission, *Faster, Sustainable, and more Inclusive Growth: An Approach to the 12th Five Year Plan*, 2011 http://planningcommission.gov.in/plans/planrel/12appdrft/appraoch_12plan.pdf or World Bank, 2012 India economic update, March 2012, page 12 http://bit.ly/xP4cdt
54 See, for example, O'Neill, J. and T. Poddar, *Ten Things for India to Achieve its 2050 Potential*, Goldman Sachs Global Economics Paper No. 169, June 2008 http://www.goldmansachs.com/our-thinking/brics/brics-reports-pdfs/ten-things-india.pdf

Figure 4. Fast growth results in a steady rise in purchasing power of Indian consumers




**SOURCE:** IMF data[55]

depend on the steps that India's government will be taking in its economic policy.

>> India still has strong inherent potential to keep growing and raising the per capita GDP levels fast

However, even with the status quo, India's economy still has much inherent momentum to keep it growing at the forecasted 7–8% level. First of all, the demographic dividend will have its effect as long as enough jobs are on offer. As a result, secondly, there is a high potential for domestic consumption to continue driving the economy like it emerged during the peak years of recent global economic crisis[56]. This potential is riding on the rising per capita incomes, i.e. the higher living standards and purchasing power of Indian people.

In the decade of 2001–2010, real GDP per capita in the country rose by about 6% of each year on average[57]. Moreover, the trend was held back by high inflation stemming from rapidly rising energy and food prices and reaching even 9–10% in some months, especially during the last few years[58]. Given the current economic outlook and despite the policy advancement needs, it is the forecast that by 2016 India's average incomes and livelihood will grow to twice the level they were just in 2007[59]. This will be partly facilitated by the expected tempering of inflationary pressures in the economy[60].

Of course, these figures and the potential is not unison across India. The vast size and varying natural, economic, population, political and other conditions create a living standards and growth potential gap between different parts of India. Currently, eight states together provide above 70% of the total national GDP: Maharashtra, Gujarat, Andhra Pradesh, Bihar, Madhya Pradesh, Rajasthan, Orissa and Uttar Pradesh[61]. Several of them have made the list largely due to their large population size, such as Bihar and Orissa. Others are the true economic powerhouses of the country with the highest income levels and most business activity, such as Maharashtra with the cities of Mumbai and Pune.

>> Indian economy and market is geographically diverse, with three large groups of states

Generally speaking, the states and territories of India can be divided into three groups based on their purchasing power and business development levels.[62] The first group of states (including Maharashtra or the National Capital Region around New Delhi, for example) is where the most international business takes place and modern industries can be found, and also the biggest cities. Among them are also states like Karnataka (includes the city of Bangalore), which may not give as large total GDP contribution but have high per capita GDP levels and world-class technology business hubs.

55 International Monetary Fund, *World Economic Outlook Database*: April 2012 Edition, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
56 Accenture, *New Waves of Growth for India: Unlocking Opportunities*, 2011, page 13 http://bit.ly/IR19il
57 The Economist, "Hares and Tortoises", *Graphic Detail blog*, 13.06.2011 http://www.economist.com/blogs/dailychart/2011/06/gdp-growth
58 World Bank, *2012 India economic update, March 2012*, page 14 http://bit.ly/xP4cdt
59 International Monetary Fund, *World Economic Outlook Database: April 2012 Edition*, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
60 World Bank, *2012 India economic update*, March 2012, page 14 http://bit.ly/xP4cdt
61 "India to be $5.6 trln economy by 2020: Dun & Bradstreet", *The Economic Times*, 17.08.2011 http://bit.ly/phYPaJ
62 See Annex 3 for detailed overview.

The second group of states consists of many of the fastest-growing areas that can be considered as the next emerging states (such as Gujarat or Andhra Pradesh, with Ahmedabad and Hyderabad as the largest cities). They are developing strongly into new innovation and business hubs, but may lag somewhat behind in purchasing power levels.

The third group of states is where labour-intensive agriculture and traditional industries still prevail, rendering their large populations (e.g. in Rajasthan or Bihar) the lowest purchasing power level so far[63]. With the right set of business-friendly policies, however, they can leap forward fast with high growth rates. Therefore, the current purchasing power levels are not locked in and reducing the relevant gaps would boost India's overall growth and living standards greatly.

## CONSUMER MARKET WILL RISE TO NEW HEIGHTS

With such forecasts, India can expect to become the world's third largest economy and market rather soon – overtaking Japan as early 2012[64], or by 2015 at the latest[65]. Some very long-term forecasts have also been made, although they differ in predictions. By 2050 India could hold either third[66], second[67] or even the first[68] place in the list of economies ranked by the size of their GDP in purchasing power parity terms – if all the conditions are right and the necessary educational, infrastructure, regulatory and other policies are effectively implemented.

Regardless of India's exact rank by the very distant date of 2050, the economic trends and forecasts point to one direction: India will continue to become an ever more lucrative market for companies and investors from across the world. Its market will be expanding rapidly and will soon overtake China in growth rates[69]. This is well supported by the underlying drivers that contribute to, and in return also get a further boost from the overall growth path that India is on.

The key aspect to take note in this regard the foreseeable rapid rise of the middle class. Rising incomes in the case of a large population will surely mean that there will also be an increasingly large number of very rich consumers. Indeed, it has been estimated that the number of Indian households with over 1 mln US dollars' worth of assets will grow from 300,000 to 700,000 in the current decade[70]. There are also 49 Indians in the global Forbes billionaire list, up from just 1 in 1990[71].

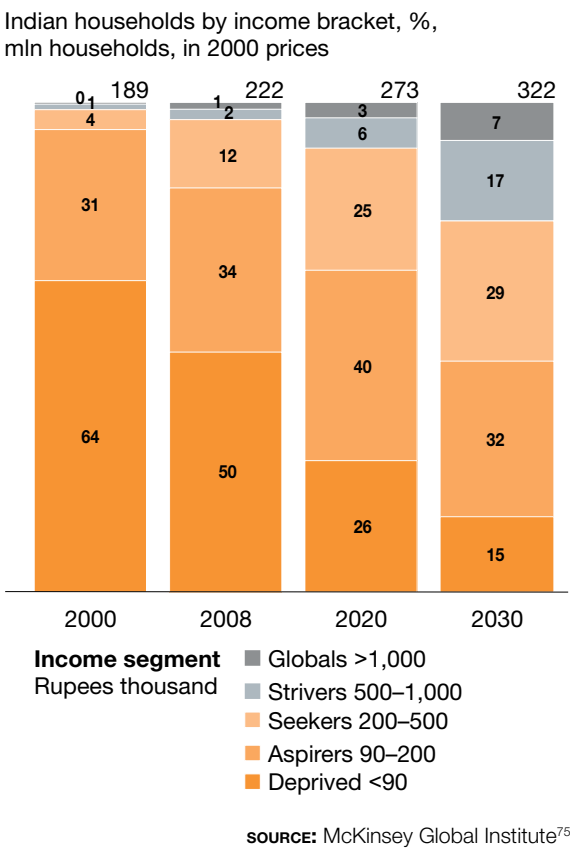
If we take a wider approach, then the top group of consumers with very Western-like consumption patterns and spending levels now consists of 2 mln households (in 2010) and may grow to equal the total number of current Australian households of 10 mln by as early as 2020[72]. Such changes will surely bring significant growth in demand for luxury and high-end items and services, opening up good opportunities for relevant companies and niches in India.

>> More highest-income households in India by 2020 than there are all households in Australia

Nevertheless, the middle class is by far the fastest-growing segment in both numbers as well as spending. While no official definition of this consumer segment exists[73], McKinsey has developed an estimate that the share of such households was around 12% in 2008 – with the potential to rise to almost half of all households by 2030[74].

63 Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010, page 5 http://bit.ly/IbgIRX
64 Euromonitor, *Top 10 largest economies in 2020*, 07.07.2010 http://blog.euromonitor.com/2010/07/special-report-top-10-largest-economies-in-2020.html
65 Buiter, W. and E. Rahbari, *Global Growth Generators: Moving beyond 'Emerging Markets' and 'BRIC'*, Citi Global Economics View, February 2011, page 43 http://citi.us/i0ahkp
66 HSBC Global Research, *The world in 2050: Quantifying the shift in the global economy*, 2011, page 3 http://bit.ly/hOZ9gg
67 PwC, "The accelerating shift of global economic power: challenges and opportunities", *The World in 2050*, 2011, page 3 http://www.pwc.com/gx/en/world-2050/the-accelerating-shift-of-global-economic-power.jhtml
68 Buiter, W. and E. Rahbari, *Global Growth Generators: Moving beyond 'Emerging Markets' and 'BRIC'*, Citi Global Economics View, February 2011, page 4 http://citi.us/i0ahkp
69 PwC, "The accelerating shift of global economic power: challenges and opportunities", *The World in 2050*, 2011, page 15 http://www.pwc.com/gx/en/world-2050/the-accelerating-shift-of-global-economic-power.jhtml
70 "Millionaire households in India growing", *The Hindu Business Line*, 17.08.2011 http://bit.ly/K3CBSZ
71 "India's Economy: The half-finished revolution", *The Economist*, 21.07.2011 http://www.economist.com/node/18986387
72 McKinsey Global Institute, *The 'Bird of Gold': The Rise of India's Consumer Market*, May 2007, page 108 http://www.mckinsey.com/Insights/MGI/Research/Asia/The_bird_of_gold
73 Saxena, R., *The Middle Class in India: Issues and opportunities*, Deutsche Bank Research, 2010, page 1 http://bit.ly/aw8ncg
74 McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 45 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India

Figure 5. The most important trend in the Indian market is the rise of the middle class




SOURCE: McKinsey Global Institute[75]

The rise of the middle class is important, because it unleashes consumer-spending growth. These segment members are the ones that grow their consumption the fastest, especially as they are first entering middle class or are still newly in its income range. The reason is that they jump to new opportunities that higher earnings (sometimes for the first time beyond daily necessities) open up in increasing own well-being through more and better household goods and residence, more aspirational lifestyles, new services like transportation and leisure, etc. They will keep looking for a competitive price, but will become more brand and functionality conscious as well. [76]

Although the fast rise of the middle class is happening, the majority of people continue to live in conditions of poverty. The estimates of their numbers range from 50% of the total population living with less than $1 per day[77] to 75% of urban dwellers living with less than $2 per day[78]. The (foreign) businesses often tend to ignore this segment. However, the people and households in this sector do currently contribute at least a quarter of consumer spending with their needs, although having little non-discretionary money[79].

» Half of the households will be middle-class, but bottom-of-the-pyramid segment remains important as well

Therefore, such bottom-of-the-pyramid markets should not be overlooked when considering opportunities in India. Low-cost business models offering very functional products and 'no-frills' services are in high demand in this segment[80]. This is pushing more companies to target it through marketing as well as innovation efforts, like Tata Group has undertaken with its Nano car (the world's cheapest one in the market) and most recently with a 500-euro prefabricated house aimed at the rural poor[81].

The wider benefit of these efforts may be that the companies gain a more loyal customer base in the future, as people in this segment are possible upcoming middle class consumers if their incomes rise. Along with the overall growth of the economy, some 570 million people or 42% of the population might move by 2021 from poverty to being avid consumers as members of the emerging middle class. The total spending power of such people will be in excess of $ 1 trillion[82], similar to the current total GDP of India. Therefore, the potential 'prize' for companies targeting bottom-of-the-pyramid households is far greater than their current income and spending levels show.

» Cities will contribute 70% of GDP, as rapid urbanisation will continue

75 McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 45 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India
76 McKinsey Global Institute, *The 'Bird of Gold': The Rise of India's Consumer Market*, May 2007, pages 103–108 http://www.mckinsey.com/Insights/MGI/Research/Asia/The_bird_of_gold
77 Figure is in PPP-dollars. TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011, page 7 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
78 Figure is in PPP-dollars. McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 13 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India
79 Boston Consulting Group, *The Tiger Roars: Capturing India's Explosive Growth in Consumer Spending*, 2012, page 8 http://bit.ly/GLV61u
80 Accenture, *New Waves of Growth: Unlocking opportunity in the multi-polar world*, 2011, page 81 http://bit.ly/IMlepU
81 "India's Tata Group to launch 'world's cheapest homes'", *BBC News*, 16.07.2011 http://bbc.in/oLaJaf
82 PwC, *Profitable growth strategies for the Global Emerging Middle*, 2012, page 11 http://pwc.to/IFsYvo

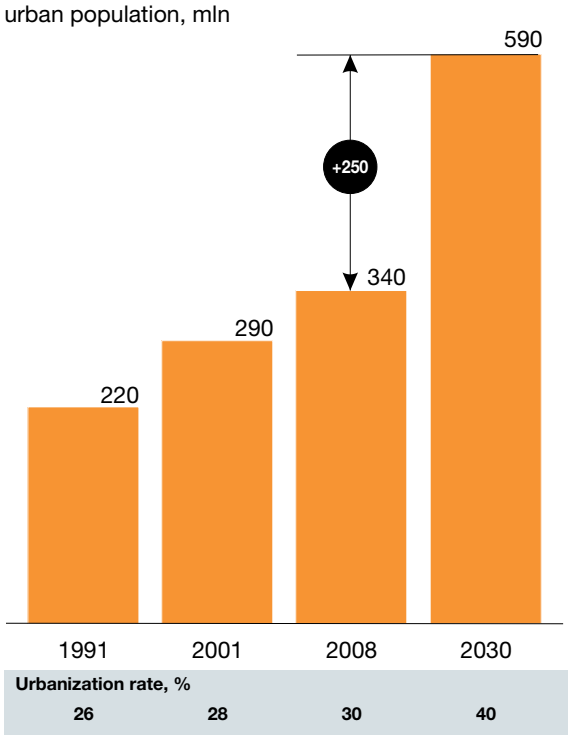
The other driver for consumption increases is the ongoing rapid urbanisation in India. This also has a significant effect on the rise of the middle class, as most of such emerging households will be living in cities. Overall, some 31% of the Indian population currently resides in urban areas according to the latest census. This has risen by more than 3.4 percentage points compared to a decade ago, with a total of 2,800 entirely new towns emerging in the 2001–2011 period.[83]

This matters for economic growth and consumption as people in urban areas earn and spend about twice as much as rural residents[84]. The reasons lie in the economies-of-scale effect that allows companies to reach their customers more effectively, as well as the consumer culture and simply better job opportunities that cities offer.

The hitherto move to towns and cities might have been just the beginning of a larger migration. McKinsey forecasts that by 2030 some 250 mln more people may be urban residents, bringing the urbanisation rate of India above 40%. For some states like Maharashtra, Karnataka, Tamil Nadu, Gujarat or even Punjab, the rate may be even higher and the urban population surpass the rural population.

Overall, there will probably be 6 megacities with 10 mln or more inhabitants (Mumbai, Delhi, Kolkata, Chennai, Bangalore, Pune), 13 with more than 4 mln people and a total of 68 cities with more than 1 mln residents. As such, the cities will be the source of 70% of GDP of India and home to 70% of new job positions created by 2030.[85] Therefore, much of India's consumer market future lies in its rapidly expanding cities.

Figure 6. India is on the path of fast urbanisation




**SOURCE:** McKinsey Global Institute[86]

>> Private spending will rise fourfold in India by 2020

In 2010, Indian households spend a total of 991 mln US dollars on various products and services. Carried by rising per capita incomes, middle class and urbanisation, the aggregate private consumption should rise in India fourfold by 2020: reaching 3.6 trln US dollars. This translates into a compound annual growth rate of 14%, which is significantly higher than the rest of the world and even other large emerging markets. As a result, India's share of the world consumer market will rise from the current level of 2.7% to 5.8% in 2020.[87]

## DEMAND WILL GROW FOR A WIDE VARIETY OF PRODUCTS AND SERVICES

The lucrative overall market growth will bring attractive market opportunities for almost all industries, products and services. However, along with across-the-board rise, significant changes will also occur in relative demand and, hence, consumption structure.

As there will be more people and households with higher incomes, discretionary spending levels will rise. While currently such non-basic expenses have accounted for 40–50% of total spending in the richest

83 Lahiri, T., "India's pace of urbanization Speeds Up", *Wall Street Journal: India Real Time blog*, 18.07.2011 http://on.wsj.com/qGistf
84 Zinnov Management Consulting, *India's Innovation Thrust: Driven by Startups and MNCs*, July 2011, page 4 http://bit.ly/lj3wcH
85 McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 13–15 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India
86 McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 15 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India
87 Boston Consulting Group, *The Tiger Roars: Capturing India's Explosive Growth in Consumer Spending*, 2012, page 3 http://bit.ly/GLV61u

Table 2. Improved livelihood and growing middle class will result in rising demand for non-discretionary products and services

| *Consumption group* | *Spending in 2010 (USD bln)* | *Spending in 2020 (USD bln)* | *Growth 2020 vs 2010* |
|---|---|---|---|
| Food | 328 | 895 | 2.7× |
| Housing and consumer durables | 186 | 752 | 4.0× |
| Transportation and communication | 168 | 664 | 3.9× |
| Education and leisure (incl. Internet) | 71 | 296 | 4.2× |
| Clothing and footwear | 59 | 225 | 3.8× |
| Health | 49 | 183 | 3.8× |
| Other (includes holidays, personal care, loan payments, etc.) | 129 | 570 | 4.4× |
| TOTAL | 991 | 3,584 | 3.6× |

**SOURCE:** Boston Consulting Group[88]

consumer segments, they have remained between 20–30% for the vast majority of lower-income Indian households[89]. By 2025, total discretionary spending might already rise to a staggering 70%[90].

Spending on major product and service categories like food and home will still increase significantly in absolute terms. More money in people's pockets will lead to changes within this group, too, with people eating more and healthier, spending on redecoration or upgrading of their homes, etc. Yet, first and foremost people will use their higher earnings to spend on non-necessities like transportation and communication (including mobile use), leisure and personal care, and health and education – all the things that were unattainable to them before. That is why the highest growth rates are to be expected in non-discretionary product and service categories in India.

>> 50 mln Indians will be travelling abroad by 2020

In other words, it is in these categories that companies will find the most appealing future business opportunities in India's consumer market. However, opportunities will also open up to service the rising demand from abroad. For example, in 2020 some 50 mln Indians might be travelling abroad – mostly for business, but increasingly for leisure and increasingly towards Europe[91]. The current figures have been between 10–15 mln annual trips made, with the tendency to visit several places on the same trip with package tours and aiming for good shopping opportunities[92].

Yet another driver for increased consumer spending will be the 'Internet revolution' that India has embarked on. The country should become the world's largest second largest online market by 2020 in terms of user base, surpassing the United States[93]. Currently, there are about 120 mln Internet users in India, up from 30 mln just 5 years ago. Given the large population, the penetration rate still remains at the level of 10%.[94] This is set to rapidly change. By 2015, 350 mln[95] to 450 mln[96] Indians (30–35% of the population) will be regularly conducting their business, seeking entertainment or doing other matters online.

88 Boston Consulting Group, *The Tiger Roars: Capturing India's Explosive Growth in Consumer Spending*, 2012, page 4 http://bit.ly/GLV61u
89 Boston Consulting Group, *The Tiger Roars: Capturing India's Explosive Growth in Consumer Spending*, 2012, page 13 http://bit.ly/GLV61u
90 McKinsey Global Institute, *The 'Bird of Gold': The Rise of India's Consumer Market*, May 2007, pages 16 http://www.mckinsey.com/Insights/MGI/Research/Asia/The_bird_of_gold
91 World Tourism Organization and European Travel Commission, *The Indian Outbound Travel Market with Special Insight Into the Image of Europe as a Destination*, 2009 http://bit.ly/JPgiRr
92 European Travel Commission, *Market Insights: India*, March 2010 http://bit.ly/JPf6gS
93 Euromonitor International, *Emerging Focus: Emerging Market Economies to Benefit from Robust Growth in Internet Usage and Access*, 19.07.2011 http://bit.ly/oUdblx
94 Avendus, *India Goes Digital*, 2011, page 9 http://www.avendus.com/Files/India_goes_Digital.pdf
95 Estimate by Google as cited in "India to add 200 mln Internet users by 2014: Google", *Zeenews.com*, 16.09.2011 http://bit.ly/rkj8tw
96 Estimate by McKinsey as cited in Narasimhan, L., "Can India Lead the mobile-Internet revolution?", *McKinsey Quarterly*, February 2011, page 3 https://www.mckinseyquarterly.com/Can_India_lead_the_mobile-Internet_revolution_2746

This fast uptake of the Internet will be facilitated by several factors. First, India has the potential to 'bypass' the computer-based Internet stage and 'become first truly mobile digital society'[97]. In other words, it can leapfrog over a few market development stages as it enters the game later than other countries. Internet-enabling mobile phones are cheaper to buy and easier to handle than personal computers, plus they can spread to remote towns and rural areas easier than fixed network building has managed. Indian consumers are also getting rich enough to afford mobiles just at the time when Internet use is switching to mobile device platforms everywhere.

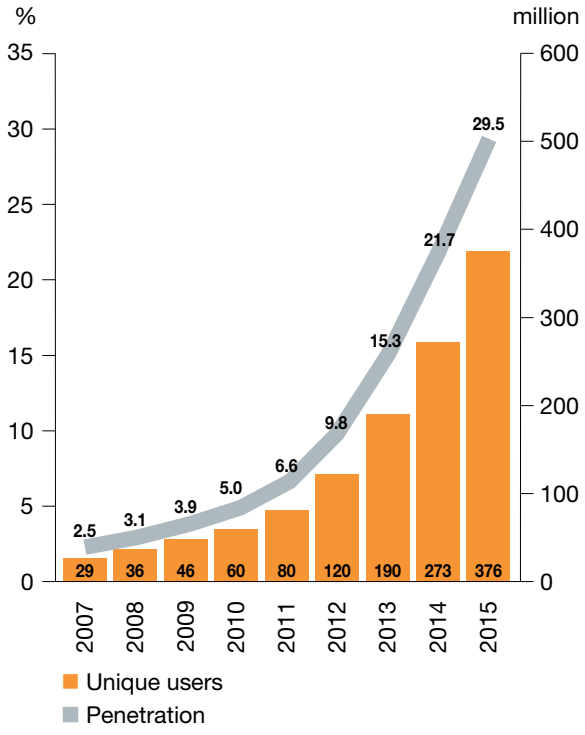
Therefore, Indians can 'jump' online via mobile internet and increasing numbers of them do. At the end of 2011, there were 900 mln total and among them 650 mln active mobile users in the country with 10 mln new subscribers joining monthly[98]. That is the size of the *current* potential Internet user base then.

» India will skip the personal computers, leapfrogging to digital society and e-commerce with mobile Internet

Second, the government is assisting Internet uptake through several initiatives. Despite the rapid growth in mobile Internet connectivity, a national broadband plan policy has been put in place to bring fast fixed access to all villages in 2014 and have 600 mln total connections by 2020[99]. The aim is to increase social inclusion and alleviate (rural) poverty, while also bringing more and better public services to citizens. Namely, the government has launched an ambitious e-governance plan programme to bring service provision mostly online and thereby make it more accessible[100].

Additionally, as part of the national e-governance plan the governance has launched a unique identity (UID) scheme to give all residents a means to identify themselves – especially on electronic channels for public entitlements or services, for example[101]. Overall demand for Internet and related devices, content and services should rise further along with the UID progress. The plan is to have 400 mln Indians enrolled in the programme by the end of 2012[103].

Figure 7. India is on the verge of large-scale Internet uptake




SOURCE: Avendus[102]

As the outcome of the fast and wide spread of Internet use, the e-commerce market will take off. This will bring a further boost to total consumption, opening up new product and service access for people and allowing companies to get to customers previously unreachable.

The Indian e-commerce market has indeed already been growing at the rate of 50% annually and has reached the level of 10 bln US dollars, mostly driven by online travel agency sales[104]. By 2020, total online sales can jump 20-fold to 200 bln US dollars, carried by the rapid growth in financial services, e-tailing (selling of retail goods over Internet), etc.[105]

97 Narasimhan, L., "Can India Lead the mobile-Internet revolution?", *McKinsey Quarterly*, February 2011, page 1 https://www.mckinseyquarterly.com/Can_India_lead_the_mobile-Internet_revolution_2746
98 Prabhudesai, A., "Indian Mobile Subscriber base reaches 893.84 Million [Dec. 11]", *Trak.in*, 01.02.2012 http://bit.ly/zKWQGU
99 Rufino, P., "India wants 600 mln broadband connections by 2020", *futuregov.asia*, 12.10.2011 http://bit.ly/oUpPVD
100 Government of India, Ministry of Communications and Information Technology, Department of Electronics and Information Technology, *National e-Governance Plan*, 2012 http://mit.gov.in/content/national-e-governance-plan
101 "India's identity scheme: The magic number", *The Economist*, 14.01.2012 http://www.economist.com/node/21542763
102 Avendus, *India Goes Digital*, 2011, page 9 http://www.avendus.com/Files/India_goes_Digital.pdf
103 "India's identity scheme: The magic number", The Economist, 14.01.2012 http://www.economist.com/node/21542763
104 "Online business in India set to boom", *India Brand Equity Foundation*, 31.10.2011 http://bit.ly/IMUVAP
105 "E-tailing in India to touch USD 70 billion by 2020: Technopak", *The Economic Times*, 08.02.2012 http://bit.ly/IMVc72

For this reason, companies from SME start-ups to global giants like eBay are aiming at India, considering it to be one of the main future e-commerce 'hubs' in the world[106].

Despite all the rapid growth and market opportunities to be found in private consumption, there is also great future demand for investment goods and services in India. First and foremost, this will be carried by the need to upgrade much of the country's infrastructure. Bottlenecks in electricity production and distribution, road and rail transportation, air and seaports, affordable housing availability, etc. are among the greatest constraints to growth and development of India. McKinsey has estimated that the economic growth rate could be at least 1.1 percentage points higher if the infrastructure system was more efficient, and not suffering from underinvestment[107].

>> 1 trln US dollars will be invested in various infrastructure, but needs are even higher

That is why the national government has set the goal to invest a total of 1 trln US dollars (almost the value of annual GDP) into infrastructure building and upgrading in the next five years, under the Twelfth Five Year Plan of 2012–2017[108]. This investment will not come from the public budget alone, but significantly from private and including foreign investors through various public-private partnership schemes that are due to be put in place.

Nevertheless, the needs are even higher with cities alone requiring capital expenditure of 1.2 trln US dollars over next two decades to keep their transportation, sanitation and housing infrastructure up to speed with the rapid urbanisation[109]. Such high investment demand and financing will translate into ample business opportunities for heavy and specialised machinery and equipment, construction materials and chemicals, etc.

As one particular infrastructure investment area, the environmental sector offers very attractive market opportunities. The reason is that India has many challenges in this regard. In order to support its economic growth aims together with its larger population and rapid urbanisation, India will have a growing appetite for natural resources, from energy and water to land, etc. Yet, there simply are not enough resources or production available as the already present peak-hour electricity shortages[110] or the looming threats of having only half of the required pure water available in 2030 indicate[111]. At the same time, only 25% of coal energy reaches end-users[112] and only 20% of sewage water gets treated in Indian cities[113].

>> India will be world's third largest environmental goods and services market by 2020

To improve the situation, the government has set various targets, ranging from improving the efficiency of energy and water use to increasing the share of renewable energy sources in electricity production and limiting carbon emissions, etc. All of these will require large investments, which the government is financing with subsidies or stimulating by regulative measures. This will open up good market opportunities for companies offering resource-efficiency solutions (including relevant ICT products), alternative energy production devices (wind turbines, solar panels, biomass collectors, etc.), water or waste treatment or environmental monitoring equipment, etc.

The total environmental goods and services market stood at 300 bln US dollars in 2007/08, comprising 6% of the global market and ranked 4th in the world in size[114]. 40% of the needed machinery and equipment is imported to get access to the best technology, although the government has set conditions that solutions in subsidised projects should be increasingly sourced from domestic Indian (or domestically

106 "India to be among world's top 10 e-commerce hubs by 2015: eBay", *The Economic Times* http://bit.ly/oihlcs
107 McKinsey & Co., *Building India: Accelerating Infrastructure Projects*, 2009, page 3 http://bit.ly/JkNUKf
108 Government of India, Ministry of Finance, *Key Features of Union Budget* 2012/2013, 2012, page 4 http://indiabudget.nic.in/ub2012-13/bh/bh1.pdf
109 McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 20 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India
110 Santhanam, N., *India's Renewable Energy Market: Opportunities For Foreign Companies*, Energy Alternatives India, July 2011 http://eai.in/ref/eve/india_renew_energy.html
111 2030 Water Resources Group, *Charting Our Water Future: Economic frameworks to inform decision-making*, 2009, page 9 http://www.2030waterresourcesgroup.com/water_full/Charting_Our_Water_Future_Final.pdf
112 The Climate Group, *India's Clean Revolution*, 2011, page 41 http://www.theclimategroup.org/publications/2011/3/23/indias-clean-revolution/
113 McKinsey Global Institute, *India's Urban Awakening: Building inclusive cities, sustaining economic growth*, April 2010, page 19 http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_awakening_in_India
114 Innovas Solutions, *Low Carbon and Environmental Goods and Services: an industry analysis*, March 2009, page 75 http://bit.ly/a3zEzE

producing foreign) companies[115]. By 2020, Indian cleantech demand should surpass that of Japan and become world's third largest, doubling in size[116].

## EXPORT POWERHOUSE IN THE MAKING WITH A HIGH DEMAND FOR IMPORTS

In the past, trade in India has not been as significant to the economy as is the case in many other large emerging countries. The trade-to-GDP ratio has stood at 40%, making the country less reliant on international markets and more on internal demand[117]. This is why the global economic downturn of recent years has not affected India to the same extent as other countries.

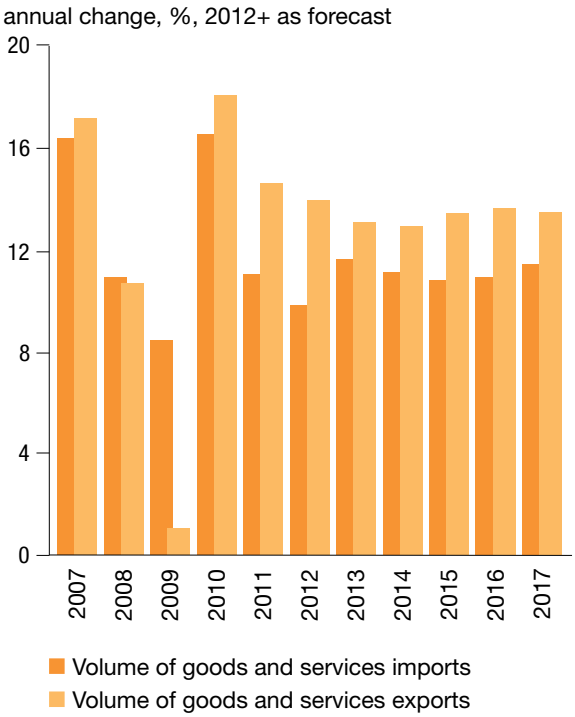
However, this is not to say that trade has been irrelevant for India, especially as it has been growing fast. The total volume of (merchandise) trade more than doubled in the 5 years from 2006–2011, reaching over 600 billion US dollars[118].

First, imports have grown at a fast pace, even in the hardest crisis impact year of 2009 (especially compared to exports that fell significantly). This directly relates to the internal market where customers and investing companies have demanded a wide variety of goods and services that are not sufficiently on offer or produced in India itself. Among imports, oil and petroleum products dominate, constituting a third of total imports. The electric appliances (including electronics) and miscellaneous machinery follow at 10% of imports each.[119]

» India imports more than exports, especially fuels and machinery goods

The share of fuels is so high because the increasingly energy-hungry India is already the world's fourth biggest oil consumer, needing to import 3/4 of its total oil requirement. By 2025, oil demand will grow to the extent that virtually all of it will need to be covered by imports.[120]

Figure 8. India's trade is expected to keep growing fast




SOURCE: IMF data[121]

For other product groups, India will become more self-sufficient as the manufacturing industry develops and emphasis is put on boosting technological capacity and local business strength in areas like the electronics and automotive sectors. Even then, however, there will be sufficient demand to require better-quality goods and services from abroad. The total imports are forecast to grow at about 10% annually in the coming years[122].

India currently ranks 7th and 13th, respectively, worldwide in terms of the import volume of services and merchandise. Globally, some 3.3% of services and 2.7% of produced goods are exported to the Indian market.[123] This high level of import consumption

115 US Commercial Service, *Doing Business in India: Country Commercial Guide for U.S. Companies*, 2011, page 38 http://bit.ly/J62QHD
116 HSBC, *Sizing the climate economy*, September 2010, page 43 http://bit.ly/b71vPy
117 Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010, page 5 http://bit.ly/IbgIRX
118 Government of India, Ministry of Commerce & Industry, Department of Commerce, *Export Import Databank version 6.0*, 2011 http://commerce.nic.in/eidb/default.asp
119 Ibid.
120 "India in Africa: Catching up", *The Economist*, 26.03.2011 http://www.economist.com/node/18745335
121 International Monetary Fund, *World Economic Outlook Database*: April 2012 Edition, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
122 International Monetary Fund, *World Economic Outlook Database*: April 2012 Edition, 2012 http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
123 World Trade Organisation, *World Trade Report 2011*, 2011, page 33 http://www.wto.org/english/res_e/publications_e/wtr11_e.htm

Table 3. India's major trading partners are the other big economies

| *Exports of goods* | | | *Imports of goods* | | |
|---|---|---|---|---|---|
| *Country* | *Share in 2010–2011* | *CAGR 2006–11* | *Country* | *Share in 2010–2011* | *CAGR 2006–11* |
| United Arab Emirates | 13.7% | 30.0% | China | 11.8% | 25.6% |
| USA | 10.2% | 7.9% | United Arab Emirates | 8.9% | 39.5% |
| China | 7.8% | 23.9% | Switzerland | 6.7% | 28.3% |
| Hong Kong | 4.1% | 21.9% | Saudi Arabia | 5.5% | 11.2% |
| Singapore | 4.1% | 14.2% | USA | 5.4% | 14.3% |
| Netherlands | 3.1% | 30.5% | Germany | 3.2% | 12.0% |
| United Kingdom | 2.8% | 6.2% | Iran | 3.0% | 9.4% |
| Germany | 2.7% | 14.1% | Australia | 2.9% | 11.4% |
| Belgium | 2.5% | 16.0% | Nigeria | 2.9% | 11.4% |
| Indonesia | 2.5% | 32.4% | South Korea | 2.8% | 21.5% |
| **India's total goods exports** | **USD 251.1 bln** | **18.7%** | **India's total goods imports** | **USD 369.8 bln** | **18.8%** |

**SOURCE:** India Department of Commerce data[124]

has forced India to run a growing current account deficit.

However, export performance has been improving as well. With the exception of 2008–2009, when foreign demand fell in advanced countries, export growth has indeed surpassed that of imports and this is set to continue for the foreseeable future. It is expected that total exports in 2011 should reach the record level of 300 bln US dollars[125].

With rapidly rising trade, India has been climbing fast among the ranks of the world's top exporters. It entered the TOP 20 merchandise exporters for the first time in 2010, achieving a 1.4% share of the world market. India also holds 10th position in terms of service exports, covering 3% of its worldwide volume.[126]

Quite a large part of that advance has come from special economic zones set up around the country, from which up to a quarter of exports originate[127]. India was the first Asian country to set up such zones back in 1965, and currently there are 143 of them in operation[128]. They offer a preferential business, infrastructure and tax environment for companies (mostly from certain focus sectors) who set up within their borders and engage in exports, in particular. As such, they have attracted a large share of internationally operating companies, both foreign and domestic owned.

>> The policy ambition is to double India's export volume in the next 3 years

Overall, the most important trading partners for India are United Arab Emirates (UAE), USA and China. In terms of imports, several resource-rich countries like Saudi Arabia, Iran and Nigeria also make it into the TOP 10 list, together with the world's machinery and electronics building strongholds of Switzerland, Germany and South Korea. China has leapt to become the biggest supplier of imported goods to India.

At the same time, the largest share of Indian exports go to UAE – partially for the purpose of shipping them further afield afterwards. Other big global trading countries like Singapore, Hong Kong and the Netherlands also feature high on the export destination list for the same purpose.[129]

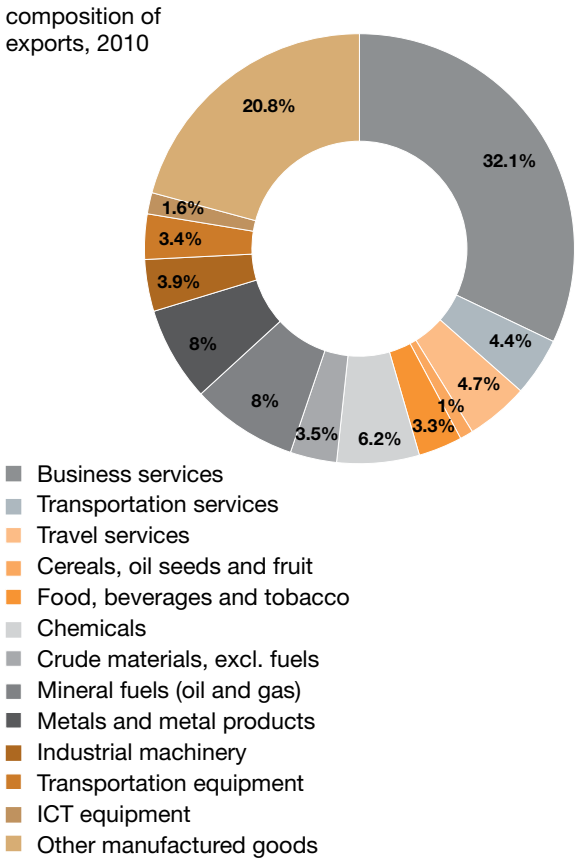
124 Government of India, Ministry of Commerce & Industry, Department of Commerce, *Export Import Databank version 6.0*, 2011 http://commerce.nic.in/eidb/default.asp
125 "India Trade Gap Widens", *Wall Street Journal*, 09.12.2012 http://on.wsj.com/wUT72q
126 World Trade Organisation, *World Trade Report 2011*, 2011, page 33 http://www.wto.org/english/res_e/publications_e/wtr11_e.htm
127 "India's Economy: The half-finished revolution", *The Economist*, 21.07.2011 http://www.economist.com/node/18986387
128 Government of India, Ministry of Commerce & Industry, Department of Commerce, *Special Economic Zones of India* http://sezindia.gov.in/index.asp
129 Government of India, Ministry of Commerce & Industry, Department of Commerce, *Export Import Databank version 6.0*, 2011 http://commerce.nic.in/eidb/default.asp

If the European Union is treated as one single group due to its single market and common trade policy, then it is the biggest trading partner for India in terms of both exports and imports. However, the share of 'old' Western partners has been falling very rapidly. In 2004, they comprised 30% of India's external trade. Today the EU and USA combined now account for only 20%. Instead, the Asian partners have taken over with exports to China contributing the largest share of their rise.[130]

Therefore, India's trade relations and especially its export markets are shifting importantly, reflecting the shift of overall global demand and economic growth perspectives towards the emerging markets. As a whole, 52% of India's exports were bound to some emerging market in 2010, while the figure had been 35% only a decade ago.[131]

India's exports consist of a wide variety of goods and services. Various business and knowledge-intensive services account for almost a third of total exports, manifesting the success India has had in outsourcing business.[132] As one example of a newer service sector niche, medical tourism exports have been rising fast. Close to a million health tourists enter India each year to receive treatment in specialist hospitals that offer world-class cardiac or cosmetic surgery, traditional or neurological treatments, joint replacements and even dentistry – at prices much lower than in the Western world or even other emerging market countries[133]. The number of medical tourists has the potential to grow by 40% a year, reaching the level of over 3 million incoming customers annually by 2015[134].

Figure 9. Services have driven India's exports, but the export base is wide




**SOURCE:** Ernst & Young, based on UN and IMF data[136]

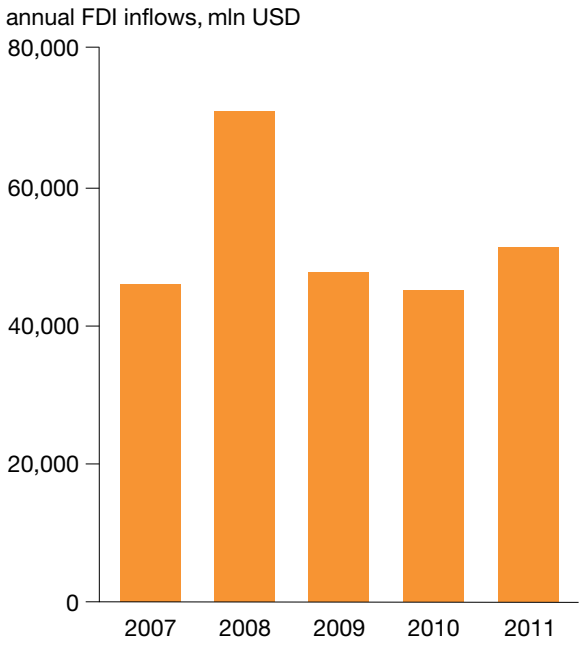
### India's trade is shifting from developed to emerging markets, from low-tech to high-tech

Refined fuels, chemicals, metals and various machinery (car parts, industrial equipment, etc.) are the next biggest in India's exports, and the biggest merchandise groups sold abroad.[135] They have displaced traditional items like leather, gems and jewellery or even textiles, which for a long time in the past featured strongly in outward trade. This shows that India has leaped ahead towards a modern manufacturing industry, in the process skipping a few rungs on the usual export development ladder[137].

During this process, the structure of exports has noticeably shifted. In 2002–2008, the share of low-tech exports fell from 66% to 56%, while medium-tech rose from 22% to 20% and high-tech exports doubled in share from 7% to 14%[138]. Therefore, India is becoming more competitive in more valuable and complicated products, partially due to relevant foreign companies increasingly moving their production bases to India. This switch towards higher-end exports is also expected to gather further momentum with the government's new manufacturing policy initiative.

130 World Bank, 2012 *India economic update*, March 2012, pages 2–3 http://bit.ly/xP4cdt
131 Accenture, *New Waves of Growth for India: Unlocking Opportunities*, 2011, page 13 http://bit.ly/lR19il
132 Ernst & Young, *Trading Places: The emergence of new patterns of international trade*, 2011, page 14 http://bit.ly/xZHgA3
133 Lai, N., "India's Medical Tourism Industry", *Asia Sentinel*, 18.05.2010 http://bit.ly/afuBrJ
134 "No. of foreign patients in India to cross 32 lakh by 2015: ASSOCHAM", *India Infoline News Service*, 05.08.2011 http://bit.ly/pcBHqG
135 Ernst & Young, *Trading Places: The emergence of new patterns of international trade*, 2011, page 14 http://bit.ly/xZHgA3
136 Ernst & Young, *Trading Places: The emergence of new patterns of international trade*, 2011, page 14 http://bit.ly/xZHgA3
137 Bajaj, V., "Manufactured Goods Lead Surge in Indian Exports", *New York Times*, 25.07.2011 http://nyti.ms/JqL6bU
138 Desai, P.N., "India on global R&D map", *ExpressBuzz*, 16.08.2011 http://expressbuzz.com/opinion/op-ed/india-on-global-rd-map/304741.html

Figure 10. India has been attractive for global capital




**SOURCE:** Ernst & Young based on fDi Intelligence database[139]

The Indian government has stated a goal that the country's total exports should double in volume to 450 bln US dollars by 2014 and, in the long term, India's share in global trade should also double by 2020. In order to achieve this, exports will have to grow steadily at a very high annual rate of 25% at least.[140]

It is a very ambitious aim given both the previously achieved (lower) growth levels as well as the possible obstacles. These include, for example, the infrastructure bottlenecks that can significantly hamper access to foreign markets (due to an inefficient road network or availability of logistics infrastructure as well as cargo handling at ports[141]) or production capacity at home (e.g. in the case of continued electricity shortages).

Another challenge will be to find sufficient foreign demand, especially in light of the conditions of weak economic growth and possible continued turbulence in developed markets. It will require them to find and open up new markets or new pockets in old markets.

That is one reason why the Indian government has been actively pursuing trade deals. This active diplomacy effort ranges from free-trade negotiations with the European Union to expanding business ties with Africa and China, and even the old nemesis, Pakistan[142]. Each and every export opportunity needs to be tapped into in order to reach the announced objectives, especially via boosting trade in the hitherto strongest exporting industries.

## THE HIGH HOPES OF FOREIGN INVESTORS

India was almost closed for foreign capital entry before the reforms of 1991. As soon as the 'door' was opened, investors quickly pounced on the opportunity. The stock of foreign direct investment (FDI) brought to the country grew 10 times in the first decade, then doubled in 2000–2004 and more than quadrupled by 2010.[143] Therefore, foreign investors were entering India at a growing pace. This has been part of India's economic success story as investors brought much needed capital, know-how and technology, creating jobs and export growth along the way.

2008 was the peak year, after which annual FDI inflows suddenly fell. The same thing happened across the world, as investor confidence and access to debt capital took a hit in the aftermath of the global downturn. 2010 was another low year in FDI inflow, but 2011 finally brought about a recovery, carried by several large deals.[144] In total, investors brought in more than 51 bln US dollars to the economy again that year – 25% more than the year before. This rendered India the fourth-most attractive investment destination in the world (after USA, China, UK).[145] The value of foreign companies' outstanding investments (stock) in India stood at 198 bln at the end of 2010.[146]

139 Ernst & Young, *Ready for Transition: 2012 attractiveness survey India*, 2012, page 7 http://emergingmarkets.ey.com/wp-content/uploads/downloads/2012/03/india-attractiveness-final-version1.pdf
140 Government of India, Ministry of Commerce & Industry, Department of Commerce, *Strategic Plan*, 2011, page 2 http://commerce.nic.in/ann/StrategicPlan.pdf
141 For example, the turnaround time in India's major ports is 12 times that of the much larger Singapore or Hong Kong ports – KPMG, *Adding Wheels: Investing in the Indian transportation & logistics industry*, 2010, page 9 http://bit.ly/JqN6Rj
142 "India, Pak to double trade to $6 b in 3 yrs, liberalise terms for business visas", *The Economic Times*, 29.09.2011 http://bit.ly/I2ce0K
143 World Bank, *2012 India economic update*, March 2012, page 22 http://bit.ly/xP4cdt
144 Ibid.
145 Data covers eleven months of each year, as at the time of publication only Jan-Nov 2011 data was available. Ernst & Young, *Ready for Transition: 2012 attractiveness survey India*, 2012, page 7 http://emergingmarkets.ey.com/wp-content/uploads/downloads/2012/03/india-attractiveness-final-version1.pdf
146 UNCTADStat, *Inward and outward foreign direct investment stock, annual, 1980–2010* http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=89

Table 4. A few large countries contribute majority of India's new incoming FDI projects

| Rank in 2011 | Country | FDI projects (covering January-November each year) | | | Change 2011 vs 2010 | Value (USD mln) 2011 |
|---|---|---|---|---|---|---|
| | | 2010 | 2011 | Share in 2011 | | |
| 1 | USA | 200 | 260 | 30% | 30% | 11,739 |
| 2 | Japan | 74 | 107 | 12% | 45% | 6,582 |
| 3 | United Kingdom | 74 | 90 | 10% | 22% | 1,248 |
| 4 | Germany | 75 | 81 | 9% | 8% | 2,229 |
| 5 | France | 26 | 26 | 3% | 0% | 3,383 |
| 6 | Sweden | 7 | 24 | 3% | 243% | 2,319 |
| 7 | Switzerland | 23 | 23 | 3% | 0% | 539 |
| 8 | Spain | 15 | 20 | 2% | 33% | 1,021 |
| 9 | UAE | 26 | 19 | 2% | -27% | 932 |
| 10 | Finland | 13 | 17 | 2% | 31% | 843 |
| 11 | Others | 158 | 197 | 23% | 25% | 19,978 |
| | TOTAL | 691 | 864 | 100% | 25% | 50,813 |

**SOURCE:** Ernst & Young based on fDI Intelligence data[147]

Foreign investors have mostly been targeting the parts of the Indian economy that have held the largest business potential for both the domestic market as well as exports. Therefore, these have been the sectors that later have sustained economic growth and international trade for the country. Accordingly, the service industry has been biggest recipient of FDI, as it has been in constant receipt of slightly over 20% of capital inflow.

Until the global crisis, housing, real estate and construction were the next in line with 7–10% shares, but they have lost their attraction as the credit conditions have tightened around the world. The telecommunications sector has retained its 7–9% share. The power, metal and automobile industries have risen to 6% of capital inflow, due to the development of the manufacturing sector. In 2011, the drugs and pharmaceuticals sector rose to second place overall with a 14% share, mainly stemming from a few very large mergers and acquisitions.[148]

» Foreign investors are turning their focus from services to manufacturing in India

As for the origin of investors and capital, an interesting set of countries top the list. Mauritius has been the no. 1 investing country for years, responsible for over 40% of inflows in 2005–2009 and slightly less (24%) in 2010–2011. Similarly, Singapore has held second position with 10–15% of inflows in recent years.[149]

Much of this investment is not actually in the form of 'true' foreign capital, but is the so-called 'round tripping' capital. Indian companies and entrepreneurs set up in Mauritius or Singapore (or Cyprus) to receive the benefits of favourable business regulations and a smaller tax burden, but still operate the actual business in India. The investments they make into their companies are treated as coming from a company of foreign origin. At least 20% of total FDI is estimated to be round-tripping capital.[150]

When leaving such countries aside and also look at project numbers instead of financial flows to take more effectively account for the level of investor activities towards India, then the ranking of FDI sources looks quite different. In 2011, US companies were responsible for nearly a third of new investment projects, with Japan, United Kingdom and Germany each contributing about 10% of all projects, in addition. Altogether, these four countries accounted for 60% of foreign investment deals made.

147 Ernst & Young, *Ready for Transition: 2012 attractiveness survey India*, 2012, page 9 http://emergingmarkets.ey.com/wp-content/uploads/downloads/2012/03/india-attractiveness-final-version1.pdf
148 World Bank, 2012 *India economic update*, March 2012, page 22 http://bit.ly/xP4cdt
149 World Bank, 2012 *India economic update*, March 2012, page 22–23 http://bit.ly/xP4cdt
150 Rao, K.S., and B. Dhar, *India's FDI Inflows: Trends & Concepts*, Institute for Studies in Industrial Development, New Delhi, 2011, page 22 http://isid.org.in/pdf/WP1101.PDF

However, the rest of the deals are spread rather broadly between many countries. Among the TOP 10 source countries, the Nordic countries of Sweden and Finland have been the most rapidly growing investors, reflecting the increased orientation of Nordic companies towards the India market. In addition, South Korea and China have become active as new investors (most notably into manufacturing) and will probably make the TOP 10 in the near future.

Foreign investors have been attracted to India for several reasons. First, about half of them have come to enter the domestic market and secure a share of its growth potential. Second, about a half of investors have also targeted India as a cost competitive service and manufacturing base due to the large available labour force and, increasingly, talent pool.

As these two conditions have great potential to remain intact in the years to come, investors are also feeling upbeat about the future prospects. They think that India might be on the way to becoming one of the world's leading manufacturing hubs in the current decade. This is part of why about 2/3 of current investors aim to bring in new capital and projects, mostly to increase their operations in India. That sets India apart from much of the rest of the world, which struggles with uncertainties regarding the business climate and growth prospects. [151]

» Domestic market potential plus the availability of labour and talent attract investors

Despite the general optimism, though, a large majority of foreign investors also say that India needs better infrastructure as well as less bureaucracy and corruption[152]. For these reasons, India currently ranks only 132nd out of 183 world countries in terms of conditions for doing business[153]. A particular matter is also that a few industries remain off limits for foreign companies or they can only enter under certain restrictions, most famously in multi-brand retail[154].

If these regulatory, governance, infrastructure and other bottlenecks were to be alleviated – even partially – investor interest, FDI inflow and economic growth prospects would be much higher for India.

## INDIAN COMPANIES ON THE WAY TO GLOBALISATION

Compared to foreign investment inflows, the outflows of capital have been considerably smaller. One reason is that for quite a long time the outward expansion opportunities of India's companies were rather limited (e.g. in project size). Government imposed limits by regulations aimed to maintain monetary and fiscal policy stability.[155] That is why outward FDI levels were almost negligible before 2000, and only took off in 2005 once the regulation was liberalised to a great deal.

The wave of going out then peaked in 2008 but waned somewhat afterwards, as the global financial crisis made borrowing rather costly or impossible and companies could not sufficiently finance their expansion anymore. However, initial reports indicate that 2011 might have been a new record year, as foreign market and credit conditions improved[156].

Despite the growing capital flows, India has had a small share in the world FDI scene. In 2010, it was only the world's 21st in terms of its companies' investments abroad, accounting for 1.1% of global FDI flows[157]. The stock of capital invested abroad remains just as small. By the end of 2010, Indian companies had invested a total of 92.4 bln US dollars in other countries (0.4% of total world stock)[158].

» India's outward FDI has grown remarkably, but still remains small in a global context

To date, more than half of India's total outward capital flows have gone to developed economies[159]. The main individual target countries have been the United

151 Ernst & Young, *Ready for Transition: 2012 attractiveness survey India*, 2012 http://emergingmarkets.ey.com/wp-content/uploads/downloads/2012/03/india-attractiveness-final-version1.pdf
152 Ibid.
153 World Bank Group, *Doing Business in India*, 2012 http://www.doingbusiness.org/data/exploreeconomies/india
154 The restrictions as well as incentives are detailed in Government of India, Ministry of Commerce & Industry, Department of Industrial Policy and Promotion, *FDI Policy (Circular 1 of 2012)*, 2012, http://dipp.gov.in/English/Policies/Policy.aspx
155 This section draws upon a background study on India's outward FDI past and future trends, commissioned for the purposes of the Estonia-India foresight project – unless cited differently.
156 "Outward FDI by India Inc hits $43 bln", *The Times of India*, 23.06.2011 http://bit.ly/ldEikr
157 Satyanand, P.N. and P. Raghavendran, *Outward FDI from India and its policy context*, Columbia FDI profiles, 2010, page 1 http://bit.ly/I6dQoZ
158 UNCTADStat, *Inward and outward foreign direct investment stock, annual, 1980–2010* http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=89
159 Satyanand, P.N. and P. Raghavendran, *Outward FDI from India and its policy context*, Columbia FDI profiles, 2010, page 2 http://bit.ly/I6dQoZ

Arab Emirates, United States and United Kingdom with about 10% of investment outflows each. This reflects the main Indian motivations for investing abroad. Indian enterprises have mainly sought entry to attractive markets or access to key resources, such as oil.

Besides the United Kingdom and Germany, the rest of Europe has not been that much on the radar of Indian executives. From Central and Eastern Europe, only Russia and Poland have received any larger-scale deals and flows due to the size of their markets, natural resources and historical economic ties.

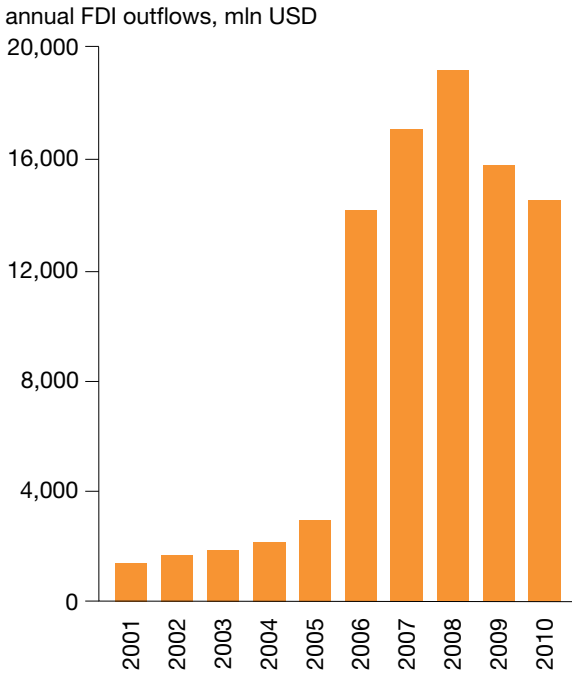
The FDI target country list is seeing a structural shift similar to India's exports. As the demand and growth outlook remains sluggish in developed economies, Indian companies are targeting other emerging markets more and this will change the geographical structure of capital outflows. However, developed economies will remain lucrative to a certain degree and for certain groups of companies.

Namely, there are particular assets such as brands, technological know-how, networks and niche talents in which developed countries still hold pole position. These make Indian companies keep some of their focus towards those markets with some of their investments. For example, this is why Indian ICT and other outsourcing companies are closely eyeing the Swedish and Finnish investment opportunities, as they are globally important technology source countries (in ICT, cleantech, healthtech, etc.).

### Indian companies look for market access and assets, including know-how and technology

Indian companies often prefer to make their investment and enter the market through a merger with or acquisition of a local company. Such deals represent up to 80% of all investment outflows. From an Indian point of view, the deals are attractive because they allow the company to rapidly internationalise and expand its own operations – with the help of local expertise, a recognised brand and technological synergies. However, greenfield deals are also on the rise. This has come about largely in relation to increased investment in other emerging markets where not enough suitable merger and acquisition targets are available.

Figure 11. The outward investments of India's companies are yet to return to their peak




**SOURCE:** UNCTAD data[160]

A fifth of India's outward investments have been directed towards the energy sector, some 16% to software and ICT services, 12% to pharmaceutical companies, and 7% to other chemical industries. Overall, manufacturing has emerged to take over the lead role from services, which carried the baton in the earlier days of the rapid outward FDI increase. In the last few years, a rising number of deals have been made in the consumer goods as well as food and beverage industries, besides the leading industries of industrial machinery and metal processing growing their share.

A relatively small section of companies are conducting a large portion of investing abroad. Almost a third of outward FDI may be from as few as 10 large investor companies, which include all the big names of Indian industry – both older conglomerates like the Reliance and Birla groups or newer global leaders like Wipro and Infosys. These major companies have also been the ones behind flagship international purchases, which have gained worldwide attention. Tata Group's moves to buy Tetley Group, the famous tea

160 UNCTADStat, *Inward and outward foreign direct investment flows, annual, 1970–2010* http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=88

company, or Jaguar Land Rover car manufacturers, or Bharti Airtel's ownership of the large African telecom provider Zain are well-known examples.[161]

This situation is to be expected when considering the development of India's enterprises in general. In 2011, only 8 Indian companies were big enough to reach the Fortune Global 500 list of the world's largest[162]. The biggest part of the economy consists of small and medium sized enterprises. In manufacturing they give 45% of output and 40% of exports, for example[163].

In addition, the vast majority of business activity takes place in an unofficial manner in the so-called informal or unorganised sector. It has in the past employed some 90% of the labour force and contributed 60% of GDP, from 'mom and pop' businesses to other small enterprises.[164] Such companies cannot be expected to internationalise, especially not significantly.

>> By 2020, India will be one of the main sources of FDI in the world, carried by medium sized enterprises

Their share will likely fall as the economy grows and a competitive environment develops, industries go through consolidation, people become wealthier and less sensitive to price (which had allowed the unorganised sector to operate), regulations improve, etc. In addition, the competition in India will intensify as more foreign companies enter the Indian market. This will allow local entrepreneurs gain experience from spillover effects, making them aim higher as a result and go to foreign markets more. In doing so, they can still rely on the cost advantages that their home market offers (e.g. availability of talents).

Therefore, the potential outcome is that the globalisation of India's companies might be on the verge of take-off. Currently, only 15% of businesses operate with some kind of offices or facilities abroad, but their number should rise by several thousands in the next few years and their share accordingly. Indeed, one forecast has stated that India will become the world's main source country for foreign investors and FDI by 2020.[165]

To a large degree, this will be carried by medium sized enterprises joining the globalisation front and investors' circle. They will mostly be looking for joint ventures and mergers or acquisitions to overcome their size risks and receive a faster return on their investments. Therefore, the relatively low levels of India's outward FDI should not be treated as a sign of little opportunities – but rather as untapped potential that is poised to burst forth.

Another factor that will contribute to the rising globalisation of Indian business is the emergence of the start-up community in India. Despite technological development and a vibrant domestic market, start-ups were quite absent for a long time due to financing and regulatory gaps, as well as other factors.[166] The framework conditions have improved significantly since, including the relevant capital offering in India with both domestic and foreign financers providing more private equity and venture capital. In addition, many engineers, businessmen and other non-resident Indians are being lured back to India because of its ample opportunities. They use their experience to establish or run many of the start-ups.

These factors have led to a rise in start-up numbers. In first 9 months of 2011, venture capital and private equity investments reached 115 deals to the total value of 648 mln US dollars and rose 29% in annual comparison[167]. Many of these start-ups are aiming at opportunities in the vast domestic market or other similar-level emerging markets, where they can more easily market India-orientated products and services.

However, start-ups will also be investing to gain access to talents and specific (niche) competences abroad. That is why it can be expected that theirs and, accordingly, India's investments into the knowledge and innovation hubs will rise (as has already happened in Silicon Valley and Singapore).

## INDIA AS AN EMERGING GLOBAL INNOVATION LEADER

India has been called a 'sleeping giant' – because of its huge potential in the areas of research and devel-

161 "Indian takeovers abroad: Running with the bulls", The Economist, 03.03.2012 http://www.economist.com/node/21548965
162 CNN Global Money, *Fortune Global 500*, 2011 http://money.cnn.com/magazines/fortune/global500/2011/countries/India.html
163 "MSME ministry to network with PE players for capital infusion", *The Economic Times*, 08.08.2011 http://bit.ly/JTc8wg
164 Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010, page 17 http://bit.ly/IbgIRX
165 *PwC, Emerging multinationals*, 2010, page 1 http://bit.ly/ISFxD1
166 Evalueserve, *R&D Ecosystem in India*, 2008 http://www.rcuk.ac.uk/documents/india/StudyRDIndia.pdf
167 Narasimhan, T.E., " PE, VC investments in small units rise 29%", *Business Standard*, 13.09.2011 http://bit.ly/n2M8bD

opment (R&D) and innovation, which so far has not yet sufficiently materialised[168]. The idea is that if India should 'wake up', it will leave a significant impact on the world with its publications, patents, technologies and solutions.

The reason for such commentary mostly comes from looking at R&D expenditure levels in India. These have remained in the range of 0.7–0.9% of GDP in the last two decades. This is the lowest figure among the big emerging markets (the BRIC countries of Brazil, Russia, India, China).[169] In 2008, India contributed 3.8% of total R&D spending in the world. Most of this comes from central government, whose share in total expenditure is quite high by international standards – at almost 60% currently still.[170]

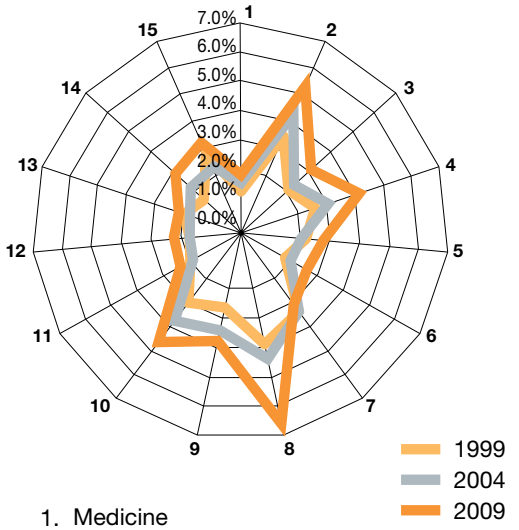
The private sector is the source of slightly more than a quarter of R&D spending, leaving state governments, universities and others responsible for the small remaining contribution. However, the private sector share has doubled in a few years, but not sufficiently for the gross national spending level to rise in relation to GDP.[171]

>> Despite the relatively low level of R&D funding, publications and patents are on the way up

It is not the spending that matters, but the current trends in research and innovation outputs. One set of metrics used for measuring them concerns the publications that stem from research. In the decade of 2000–2010, the total number of papers that Indian authors managed to get published in peer-reviewed academic periodicals grew two to threefold and reached above 40,000 articles a year.

Figure 12. India is gaining ground in scientific publications, especially in core strength areas

India's share of global article output




1. Medicine
2. Chemistry
3. Physics and Astronomy
4. Materials Science
5. Engineering
6. Biochemistry, Genetics and Molecular Biology
7. Agricultural and Biological Sciences
8. Pharmacology, Toxicology and Pharmaceutics
9. Environmental Science
10. Chemical Engineering
11. Mathematics
12. Computer Science
13. Earth and Planetary Science
14. Immunology and Microbiology
15. Energy

**SOURCE:** Sciencemag based on Thomson Reuters Web of Knowledge database[173]

Along with it, India's share in the world's total rose to 3.4%, also increasing in almost all scientific fields. More importantly, the papers improved in terms of their quality and impact as their citation rates rose from 40% to 60% of the world's average.[172] However, India still holds a modest 25th place in the world for the quality and impact of its scientific publications, despite being the world 10th largest publication source country[174].

The other important outputs of research and innovation are patents. Patenting activity was meagre before 2005, when a new and more effective intellectual property protection legislative framework was

168 Adams, J., C. King and V. Singh, *Global research report: India*, 2009 http://bit.ly/laLRXs
169 TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011, page 7 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
170 Ernst & Young, *Making the Indian higher education system future ready*, 2009, page 52 http://bit.ly/K2Mnok
171 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 363 http://bit.ly/h5qelT
172 News Focus, *India Rising*, 2012, page 905 http://www.sciencemag.org/content/335/6071/904.full.pdf
173 News Focus, *India Rising*, 2012, page 905 http://www.sciencemag.org/content/335/6071/904.full.pdf
174 TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011, page 22 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011

introduced. In the wake of this, patent application and granting levels jumped rapidly, increasing annually by about 23%[175]. In 2004, there were 17,500 patents applied for and 1,900 granted in India, while in 2009 the figures stood at 37,000 and 16,000, respectively[176]. Notably, the granting of patents to Indian residents by the US Patent Office (as a higher standard-bearer) also doubled during the same time period[177].

The growth in patenting and publishing has been facilitated by the focus on the funding of applied research, especially from the increasing contribution that companies are giving. Altogether 2/3 of R&D spending has gone to such applied work. However, the total funding volume of fundamental research has also grown, mostly aided by central government financing.[178]

In addition, the growth in outputs has mainly been due to the outcome of the large share of companies and especially foreign-invested private research organisations in R&D work in India. For example, 84% of patents applied for and granted in India come from foreign-owned companies[179]. Among the TOP 50 Indian patent holders with the largest numbers of patents, there are only 6 companies or institutions that are actually from India itself[180]. This is so because of the large and growing number of R&D centres that foreign research institutions and particularly multinational companies have established in India.

>> Foreign companies and R&D centres carry research and innovation in India

The estimate is that there are more than 800 such centres operating in the country[181]. Since Texas Instruments opened the first R&D unit in 1985, it became a trend in the 1990s and boomed in the 2000s. The vast majority (90%) of them have been established in the five major city regions of Bangalore, Hyderabad, Chennai, National Capital Region (Delhi) and Pune-Mumbai, where the agglomeration of business activity and educational institutions is largest.[182] Most of the centres focus their work on ICT (software development, chip design, mobile applications, etc.), biotech (pharmaceuticals, vaccines, etc.) and automotive industry solutions (vehicle parts mainly)[183].

The focus of foreign R&D centres is mostly on product development, but not necessarily for the Indian market. This has been so until recently, when India's market demand began to be noticed. It is the 'resource'-seeking motivation that has taken the companies to India. They want to take advantage of the large scientific and technical manpower pool that India can offer, as there is a constant lack of talent in innovative companies. In this regard, India can offer a solution at a scale that is not possible elsewhere.[184]

Based on that, R&D work in India has also been very cost effective. For example, conducting life sciences research in India is currently 60% cheaper than the US/Europe and is projected to remain at least 20% cheaper even in 2025[185]. At the same time, the quality has become ever better, making India a very good value-for-money location for R&D work.

>> Due to a large and increasingly skilled talent pool, India offers very good value-for-money in R&D work

India indeed has been the country with the largest pool of available scientific and engineering staff. Each year, 200,000 engineers graduate in India and this number may rise to 500,000 by 2015. At that time 30% of the global pool of engineers will be in India

175 Evalueserve, *R&D Ecosystem in India*, 2008 http://www.rcuk.ac.uk/documents/india/StudyRDIndia.pdf
176 The large difference between number of patents applied for and number of patents granted stems from the matter that the patenting system still does not function fully effectively, mostly because of the shortage of qualified patent examiners. TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011, page 20–21 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
177 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 13 http://bit.ly/h5qelT
178 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 371 http://bit.ly/h5qelT
179 TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011, page 22 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
180 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 363 http://bit.ly/h5qelT
181 Ibid.
182 Krishna, V.V. and S. Bhattacharya, *Internationalisation of R&D and Global Nature of Innovation: Emerging Trends in India*, Asia Research Institute Working paper no. 123, National University of Singapore, 2009, page 7 http://www.ari.nus.edu.sg/docs/wps/wps09_123.pdf
183 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 363 http://bit.ly/h5qelT
184 Rakesh, B. and S. Mani, *Foreign R&D Centres in India: An Analysis of their Size, Structure and Implications*, Indian Institute of Management Ahmedabad, 2012, page 55 http://bit.ly/zNK2D2
185 Boston Consulting Group, *Life Sciences R&D: Changing the Innovation Equation in India*, 2011, page 24 http://www.bcg.com/expertise_impact/biopharma_summit.aspx

(or at least Indian).[186] Despite such large graduating classes of engineers, India surprisingly lags behind in terms of the relative number of researchers. For every million people, the ratio of researchers has so far have been only about 140, which places India behind other large economies[187].

The reason has been that due to more lucrative job market opportunities, deficiencies in the quality of teaching and too few study places, not enough students enter and graduate from PhD studies. In 2010, only about 6,000 new Doctors of Science emerged from Indian universities[188].

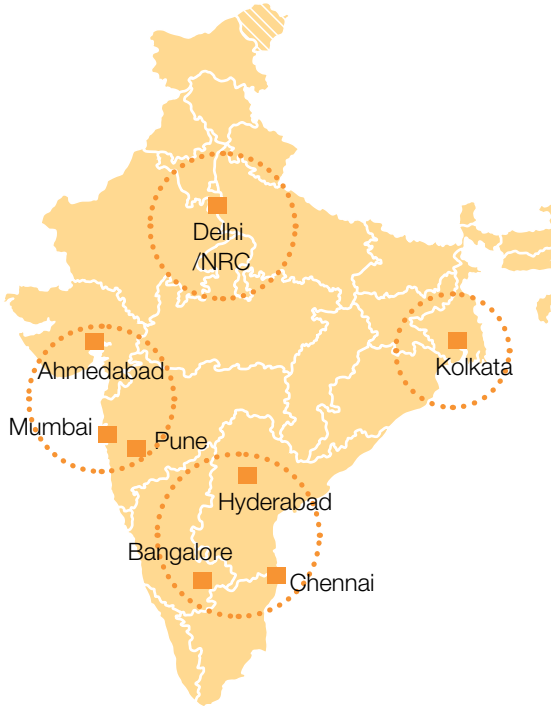
The outcome is that universities do not feature strongly in the R&D landscape of India. Their share in total research work is modest, and research capacity has concentrated on very few institutions. Indeed, 80% of publications of academic origin come from just 10% of schools. Among them, the 'crown jewels' of Indian Institute of Science, the Indian Institutes of Technology as well as Indian Institutes of Management dominate.[189]

>> The four biggest hubs dominate in India's R&D landscape

Such a concentration of academic research as well as teaching excellence matches geographically the high concentration evidenced by foreign companies R&D centres. That is why India's innovation and R&D potential is very clustered area-wise. There are four biggest hubs with their educational and foreign business clusters: around the metro areas of Delhi, Mumbai-Pune-Ahmedabad, Bangalore-Hyderabad-Chennai and also Calcutta. In all of these areas, almost all of the main R&D fields are present, leading to little specialisation among them.

As the list of cities involved in the clusters shows, several 'next-tier' cities beyond the biggest metros have also developed into innovation frontrunners (like Pune or Hyderabad). This has made the spread of technological and innovation capacity somewhat wider than it was just a few years ago. It means that there are more opportunities opening up for (foreign) institutions or companies to seek out new partners in India.

Figure 13. India's R&D and innovation potential has clustered into major centres



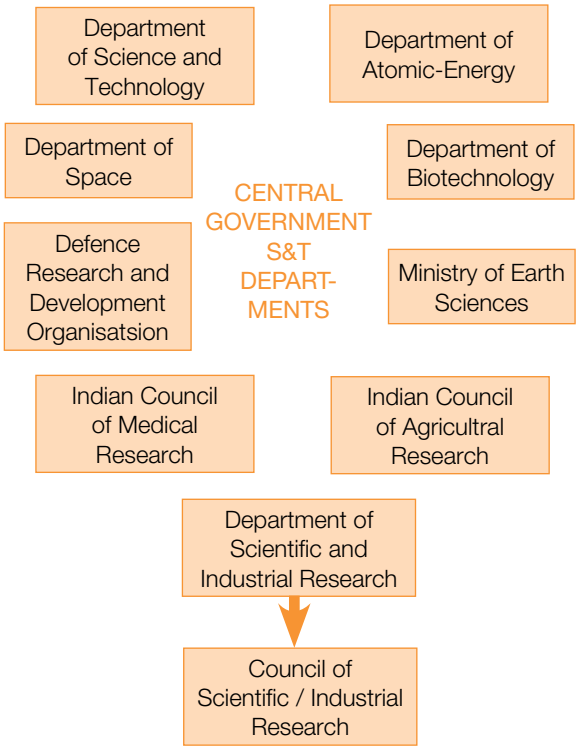

**SOURCE:** Invensis Consulting[190]

On the public sector side, research funding and capability are everything but concentrated. There is a multitude of ministerial departments and agencies that all fund R&D in their respective fields, often for applied purposes. In addition to ministerial-level institutions that guide the high-level funding and overall research and innovation environment, there are five major research organisations under them.

These carry out thematic work themselves by combining, in turn, many other smaller institutions and research centres with focused missions under their own umbrella. The five are: Indian Council of Medical Research; Indian Council of Agricultural Research; Indian Council of Social Science Research; Council of Scientific and Industrial Research; and Tata Institute of Fundamental Research. These institutions also partially channel public research funding and are in charge of collaborations with industry and foreign partners.[191]

186 Finpro, *Leapfrogging in India – Workshop*, 2009 http://bit.ly/IhEXlV
187 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 373 http://bit.ly/h5qelT
188 Ernst & Young, *Reaching towards its true potential: Ernst & Young's 2011 India attractiveness survey*, 2011, page 50 http://www.ey.com/IN/en/Issues/Business-environment/Reaching-towards-its-true-potential
189 Ernst & Young, *Making the Indian higher education system future ready*, 2009, page 54 http://bit.ly/K2Mnok
190 Based on the study TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
191 SITRA, *The New Geography of Innovation: India, Finland, Science and Technology*, SITRA Reports 71, 2006.

Figure 14. Public funding of R&D flows through various agencies set up separately for each major priority field




**SOURCE:** Department of Science & Technology, Government of India[192]

There is a great desire in India to put the talk of a 'sleeping giant' to rest. The President of India has declared the current decade an "Innovation decade". During this, India should rise through the ranks to become one of the hubs or even *the* hub of the world's new frontier technologies and solutions.[193] Almost half of foreign investors have bought into this objective, stating their belief that indeed India will be such a leading centre for innovation – at least in certain core areas like ICT, life sciences and the automotive industry[194].

» India has set an ambitious goal to become a global hub for talents, technology and innovation

In order to make it happen, the government plans to increase R&D spending to the level of 2% of GDP by 2017. Half of the funding should come from the public budget, the other half from the private sector, implying the desire and expectation that its share would rise considerably.[195] The increased funding should go towards making the current strength areas even stronger as well as stepping more towards nascent areas like energy technology or nanotechnology[196].

As part of it, a wide-ranging national innovation roadmap has been developed and put into practice. It foresees the development of 20 innovation clusters across the country to fill the gaps and reorder the R&D and innovation ecosystem, create a 1 bln US dollar 'fund of funds' for inclusive innovation, and very importantly to expand significantly international collaborations for all this.[197] Among other things, this would involve greater cooperation with European countries, researchers and innovative companies, as this has hitherto remained too modest – and both sides are aiming to change the situation[198].

## CURRENT RESEARCH AND INNOVATION STRENGTHS ARE TECH-RELATED

From the point of view of the central government, a very big part of public R&D funding has traditionally gone to defence and aerospace research and industry. For example, in 2006, the outlays on defence research formed a third of all governmental R&D funding. Together with space research, their combined share was above half of total funding, and nuclear science added another 10%.[199]

Such prioritisation has followed overall national policies and governmental objectives. India has the world's third largest army and the defence budget

192 Department of Science & Technology Government of India, *S&T System in India*, 2011 http://www.dst.gov.in/stsysindia/st_sys_india.htm
193 Government of India, Ministry of Science and Technology, Department of Science and Technology, *Press Releases: 2010–2020 Decade of Innovation in the Country: Ashwani Kumar*, 24.02.2011 http://www.dst.gov.in/whats_new/press-release11/pib_24-2-2011_5.htm
194 Ernst & Young, *Ready for Transition: 2012 attractiveness survey*, 2012, page 34 http://emergingmarkets.ey.com/wp-content/uploads/downloads/2012/03/india-attractiveness-final-version1.pdf
195 Government of India, Planning Commission, *Faster, Sustainable, and more Inclusive Growth: An Approach to the 12th Five Year Plan*, 2011, page 115 http://planningcommission.gov.in/plans/planrel/12appdrft/appraoch_12plan.pdf
196 TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
197 National Innovation Council, *India Decade of Innovations: 2010–2020 Roadmap*, 2010 http://bit.ly/lonl3p
198 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 375 http://bit.ly/h5qelT
199 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 371 http://bit.ly/h5qelT

absorbs 2.5% of national GDP annually (the 5th largest figure in the world in this category),[200] which leads to a demand for innovative products and solutions. The outcome has been that the Indian defence, space and nuclear industries and research programmes are among the most advanced in the world. In space research, for example, India has become a world leader in remote sensing, satellite and launch vehicle design and manufacturing[201].

>> Defence and aerospace research and innovation are strong, receiving the largest shares of public R&D funding

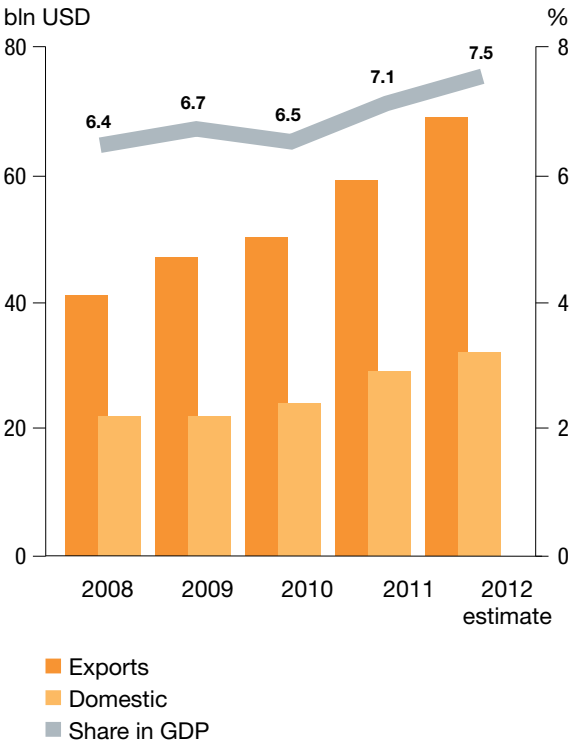
Besides these areas, India's research and innovation has several other strengths. In terms of publications, the country has traditional relevance in the field of physical and life sciences – ranging from chemistry and physics to pharmacology and toxicology[202]. In addition, India has recently been gaining ground in publications of material science, environmental science, and various medicine and biotech related fields[203].

From the composition of patenting, ICT and biotech stand out as the most active and productive areas of innovation in the country[204]. This has come about due to the fast development of related industries in India, which in turn has gained a further boost from advances in research and innovation strength.

The ICT sector has evolved a great deal from its beginnings in outsourcing business, when the Indian companies took over the handling of back office work (basic business process outsourcing – BPO) of global multinational companies. By building up experience and investing into staff, the companies moved on towards offering more complicated services step-by-step.

As of today, they have progressed as far as software development and have begun focusing on their own product offerings. As such, Indian companies have become quality partners for all kinds of companies looking to scale up their own operations in a cost effective way – from telecom and financial industries to software developing and other ICT companies.

Figure 15. India's IT and related BPO industry has enjoyed rapid growth, in both foreign and domestic markets




SOURCE: NASSCOM[205]

In the process, the IT-BPO industry has just reached the record revenue level of 100 bln US dollars, 69% of which comes from exports. The sector contributes 7.5% to national GDP and 25% of total exports. This has largely come about through the success of outsourcing still, as India has grown into being the largest player in the field globally. Its software and service export companies together with BPO and engineering R&D companies hold 59% of the global sourcing market, up from 51% in 2009. These companies directly employ 2.8 mln people, and up to 8.9 mln people indirectly.[206]

This sizeable sector is carried by 9 large companies with revenues over 1 bln US dollars (e.g. Tata Consultancy Services, Infosys, Wipro, and others). However, it also involves over 3,500 start-ups, whose

200 The Economist, "Defense budgets: Military ranking", *Graphic detail blog*, 09.03.2011 http://www.economist.com/blogs/dailychart/2011/03/defence_budgets
201 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 367 http://bit.ly/h5qelT
202 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 367 http://bit.ly/h5qelT
203 News Focus, *India Rising*, 2012, page 905 http://www.sciencemag.org/content/335/6071/904.full.pdf
204 Evalueserve, *R&D Ecosystem in India*, 2008, page 7 http://www.rcuk.ac.uk/documents/india/StudyRDIndia.pdf
205 NASSCOM, *Indian IT-BPO industry*, 2012 http://www.nasscom.in/indian-itbpo-industry
206 Ibid.

number keeps rising all the time.[207] Besides them, there are increasing numbers of research groups and foreign R&D centres working on novel ICT problems and solutions. Some of their major themes of study and work include computer security, advanced computing, sensors and networks, photonics, automation. Increasingly they also focus on new themes of cloud computing, mobile applications, voice recognition and more.[208]

» The Indian IT industry has moved from simple to complicated outsourcing work as well as its own innovation

The government's aim is to help the IT industry evolve into a 300-bln US dollar industry by 2020, with 2/3 of the revenues to come from exports[209]. The key to achieving this will be the availability of a sufficient number of qualified staff, the necessary (IT) infrastructure and increased level of international collaborations[210].

In addition, the companies have to find new markets and constantly gain ground in current ones (mainly the USA, UK[211]) by aiming at higher value creation. For these reasons, Indian ICT companies are increasingly looking towards the Nordic countries, among others.[212] Another aim of the government is to boost the domestic electronics industry development. This should help to complement the current service-focus of India's ICT sector, while keeping the benefits of serving the growing demand in domestic (and foreign) markets more in India[213].

The other newer stronghold of India's R&D and innovation – the area of biotechnology – launched from a strong foundation in chemistry. This allowed the first companies to emerge by re-engineering pharmaceutical products. In this way, they reproduced generic drugs, for which they currently account for 20% of world production. However, in the process, companies began building their own formulas and products, moving towards drug development.[214] In addition, several researchers and companies ventured into vaccine development, as one example. The outcome has been that India now produces 60% of vaccines worldwide[215].

As another side-venture at the time, Indian research institutes and companies became involved in clinical trials and contract manufacturing business in the pharmaceutical industry, as well as other biotech and medicine related areas at a later stage.[216] As with the ICT sector, they had to offer an ample availability of talent and staff, which made for foreign companies the outsourcing of initially simple and later increasingly more complicated R&D tasks lucrative.

In return, the foreign companies received drug and other development work at a fraction of the price and at a scale (and speed) that otherwise would have not been possible. In parallel, foreign pharmaceutical and medical companies have been setting up their own facilities and R&D centres in India to reap the same benefits without outsourcing. However, as the global health and wellness market has been on the rapid rise, there have been good business opportunities for all involved.

» India's biotech industry is focused on pharmaceutical R&D, research services and bio-agriculture products

As a result, the Indian biotech sector has grown to become a 4-bln dollar industry. It surged two-fold in just 5 years, with 51% of its earnings coming from exports. 62% of the sector is comprised of the biopharmaceutical segments (vaccines, diagnostics, therapeutic products); bio services (including clinical trials) contribute 19% of annual incomes.

207 NASSCOM, *The IT-BPO Sector in India: Strategic Review 2011*, 2011, page 7.
208 TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
209 "Public services to go mobile, government targets IT industry to $300 bn by 2020", *The Economic Times*, 08.10.2011 http://bit.ly/oGunyW
210 NASSCOM, *Perspective 2020: Transform Business, Transform India*, 2009, page 21 http://bit.ly/cB8QkH
211 PwC, *Changing landscape and emerging trends: Indian IT/ITeS industry*, 2011, page 11 http://pwc.to/lam04H
212 NASSCOM, *Opportunities for Indian IT-BPO Industry in the Nordic Region*, 2008 http://www.nasscom.org/sites/default/files/upload/research_report/ExecutiveSummary.pdf
213 "Kapil Sibal aims to boost domestic electronics manufacturing with new draft policy", *The Economic Times*, 04.11.2011 http://bit.ly/lr3lub
214 CREST OMC Working Group, *Country Report India: An Analysis of EU-Indian Cooperation in S&T*, 2008, page 11 http://ec.europa.eu/research/iscp/pdf/crest_india_06-12-08.pdf
215 "Indian vaccine market reaches $900 million", *Invest in India*, 14.11.2011 http://investinindia.com/news/indian-vaccine-market-reaches-900-million-12c3
216 UNESCO, *Science Report 2010: Current Status of Science Around the World*, 2010, page 363 http://bit.ly/h5qelT

The third largest segment and, in fact, India's other strong sub-area is agricultural biotech with a 14% share in the industry.[217] The country is well-known for genetically modified cotton development and use, which accounts for 80% of national cotton production. In addition, biopesticide and biofertiliser development is gathering pace as is food-related biotech.[218]

The target and expectation is that the biotech sector will reach the 10 bln US dollar revenue mark by 2015,[219] which would entail constantly rising growth rates. A major share of the additional earnings are expected from the biosimilar market. There are many key drugs about to go off-patent in the world and India's biotech strengths can be put to best use in capturing their market space with cheaper generic substitutes[220]. In addition, there are the newer research focuses that involve diagnostics, drug delivery systems and even stem cell research[221].

The demand from India's own population is on the rise as well. This has a foundation in the rising health worries that higher incidence of lifestyle or other chronic diseases bring,[222] as well as the plans of government to expand health financing from the current level 1.4% of GDP to 2.5% of GDP[223]. These combined with higher incomes of Indian consumers will surely deliver a large domestic market for the Indian biotech sector and aid in achieving the growth targets.

On the bio-agriculture side, food processing and preservation related products will be in increasing demand, as there are plans as well as a great need to develop this sector[224]. For example, 40% of farm output is wasted before reaching consumers[225]. If processed and preserved properly, food shortage worries would ease and it would be easier to keep inflation in check. Suitable biotech solutions will be in great demand for this. ■

217 "Biospectrum ABLE Biotech Industry Survey 2011", *Biospectrum*, vol. 9 issue 6, June 2011, pages 20 and 26 http://www.ableindia.in/pdf/9th_survey.pdf
218 Accenture, *New Waves of Growth for India: Unlocking Opportunities*, 2011, page 45 http://bit.ly/lR19il
219 European Business and Technology Centre, *Indian Biotechnology Sector: Overview*, 2010, page 3 http://www.ebtc.eu/pdf/Indian_Biotechnology_Sector-Overview_VO1.pdf
220 CREST OMC Working Group, *Country Report India: An Analysis of EU-Indian Cooperation in S&T*, 2008, page 13 http://ec.europa.eu/research/iscp/pdf/crest_india_06-12-08.pdf
221 TAFTIE, *Innovation Hotspots in India – Internationalisation Strategies Task Force report*, 2011 http://www.taftie.org/content/innovation-hot-spots-india-internationalisation-strategies-task-force-report-2011
222 KPMG, *Emerging Trends in Healthcare: A Journey from Bench to Bedside*, 2011, page 6–7 http://www.kpmg.com/IN/en/IssuesAndInsights/ThoughtLeadership/Emrging_trends_in_healthcare.pdf
223 Government of India, Planning Commission, *Faster, Sustainable, and more Inclusive Growth: An Approach to the 12th Five Year Plan*, 2011, page 7 http://planningcommission.gov.in/plans/planrel/12appdrft/appraoch_12plan.pdf
224 For example, the government has set the aim that by 2015 the of perishables processing should rise from 6% (in 2010) to 60% – Accenture, *New Waves of Growth for India: Unlocking Opportunities*, 2011, page 58 http://bit.ly/lR19il
225 Timmons, H. and L. Polgreen, "As India Growth Slows, Leaders Face Political Headwinds", *New York Times*, 14.06.2011 http://nyti.ms/lokOpU

# 4 Recommendations: The Most Promising Areas and Ways for Co-operation

On first, superficial glance, a match between India and Estonia might be hard to find – due to vast differences in absolute size of market and companies, numbers of people and institutions, etc. However, if we look into the situation and the future trends of both countries in a more detailed manner, it appears that Estonia and India have the potential for a good symbiosis of strengths and needs in many specific areas. Both countries can offer each other what the other side increasingly needs.

Strengths and interests are complementary, whether it is business location in and gateway to Europe or specific technological capabilities that can make Estonia an attractive partner for India, or the market and talent pool that India can offer to Estonia. Such complementarities create the best possible foundation on which to build collaborations and exchange, for joint future benefit.

Therefore, in all the areas covered in this foresight project, from mutual investments and trade to educational exchange and technological co-operation, the opportunity certainly exists to move from the current low level of relations to a much more evolved, closer partnership.

In order to go from the current point of relations towards realising this partnership potential, the first steps should be to launch focused bridgehead initiatives on which further exchange, business and relations can build on. As such, some of the recommendations below offer ways to tap the “low-hanging fruits” of co-operation that can bring the most immediate visible benefit and growth in exchanges – creating the first contacts and positive experiences, generating momentum and an appetite for more.

But the recommendations also focus on how to create the critical enabling conditions for long-term gains, which are harder to reach. These include either putting the right stimulus mechanisms in place or arranging channels and occasions for more contacts between the countries, so that relationships (as the key foundation for business and exchange) can develop.

Taken as a whole, the following proposals form an agenda that both Indian and Estonian governments, companies and universities or research institutions can follow – if they want to reap the benefits that mutual bilateral economic relations and collaboration potentially hold.

The main findings of Estonia-India foresight: the most promising co-operation paths

| 1. INVESTMENT | 2. TRADE | 3. EDUCATION AND RESEARCH | 4. TOURISM |
|---|---|---|---|
| Estonia offers a gateway to the Nordic, Russian and other European markets for Indian companies | India offers a variety of market opportunities for Estonian companies; especially in ICT, biotech and cleantech business | Collaboration can solve the skills and innovation needs of both countries; while paving the way for future business relations | Importantly facilitates other business and exchange opportunities |
| **5. HORIZONTAL SUPPORT BY GOVERNMENTS** | | | |
| Leading the way to closer relations and enhancing the enabling factors | | | |

### 1. ESTONIA AS A PRIME EUROPEAN BUSINESS LOCATION FOR INDIAN COMPANIES

Indian companies are increasingly looking to conduct business and invest abroad. While their main focus is on emerging markets or the big Western markets, it is expected that they will also turn increasing attention towards the Northern European and Russian markets.

This part of Europe is lucrative, because it has one of the highest living standards (i.e. a large share of affluent consumers). It has also managed to maintain good growth prospects, unlike most of the rest of Europe and Western markets. At the same time, this region is a hotbed for innovation and technological development, offering good business and partnership opportunities in relevant business areas – such as the strong IT industry of India.

For Indian companies attracted to the Northern Europe, Estonia has the potential to serve as the best possible location to operate in the region. It is situated right in the heart of this promising market area, directly in-between Russian and the Nordic countries, and it has locational advantages over both of these. Therefore, while Indian investors might initially overlook Estonia due to the very small size of its own domestic market, there are various wider benefits it can offer – varying by the type of company, as outlined in the recommendations below.

It is especially so in the niches within the industries of machinery and electrical equipment manufacturing and engineering (importantly including cleantech areas), ICT and other business services. In all these areas, Estonia has developed a good competence base in terms of skills and knowledge (especially in terms of technology use), clusters of local and other foreign-owned companies, and existing partnership linkages with Nordic countries and companies.

>> Estonia offers an excellent base for operations in the Nordics or Russia and beyond

Because of such benefits, the growth in Indian investments to Estonia can support a growth of exports from India to the Baltic Sea region and the EU as a whole. In addition, it can lead to new and stronger partnerships between Indian and Estonian or Nordic companies, supporting more trade and investment as well as joint innovation in return. For the Estonian side, it also brings new jobs and linkages to Indian business circles, which can be useful for local companies for their own India market entry.

Therefore, Indian investments to Estonia have the potential to bring large direct (and also relatively fast) benefits to both sides. This aspect of bilateral economic relations should therefore be on the very forefront of co-operation efforts by both governments.

## Recommendations for enterprises:

**Indian companies already operating in the Nordic countries should look into investing in Estonia as a base for expanding their business.**

Compared to the Nordic countries, Estonia has much lower costs of doing business and the costs of labour, in particular. At the same time, the business environment and working culture are just as good as in the Nordics. Thus, Estonia offers a competitive value-for-money base for any operations, whether setting up near-shore service centres or additional production facilities. Estonia's additional strengths include its proximity to the Nordic markets and good Nordic language skills, for example.

**Indian companies already operating in the Russian or other Central and Eastern European markets should look into investing to Estonia as a stable base for operations in the region.**

Compared to Russia or most Central and Eastern European countries, Estonia offers a much more stable and investor-friendly business environment. Not to mention that the majority of the Estonian population can speak Russian[1], which can facilitate doing business in these markets for Indian companies.

**Indian companies interested in Nordic or Russian or even wider European Union market entry should consider establishing their regional headquarters in Estonia, which can function as a gateway to these markets.**

All of the above-mentioned benefits in combination with EU single market membership and good logistical connections make Estonia a good gateway for Indian companies wishing to enter the region – or, in fact, the European Union as a whole. Once a company sets up business in Estonia, it can freely engage in business across the EU.

Due to the existing competence base, its small size and ease of doing business, Estonia can be particularly well used as a test market or R&D centre to develop products and services for the Nordic or wider European markets.

This is particularly so for Indian innovative start-up companies aiming at European market entry, as Estonian government and industry leaders are putting extra focus on becoming a very start-up friendly location.

**Indian multinational companies or financial investors should consider Estonian technology companies as potential investment targets.**

Acquisitions have been one of the preferred modes of investments into Europe by Indian companies. Estonian technology companies, many of them start-ups, hold specific intellectual property and are engaged in top-of-the-line innovation in areas that are very lucrative for Indian companies. For example, in genetics-based products and the services field in biotechnology or several ICT areas, Estonian companies can significantly contribute to the portfolios of Indian companies.

## Recommendations for governments:

**The Estonian government should set a focus first and foremost on attracting investments into Estonia from those Indian companies who already operate in either the Nordic or Russian markets.**

These Indian companies are already familiar with the region, meaning that the initial investment decision barriers of low awareness no longer exist. In addition, a background survey of potential investors undertaken within the current study showed that several Indian companies are actively looking to expand their operations in the Baltic Sea region.

The companies active in Russia are finding the business environment there complicated, and they could look for a more stable or additional base for their facilities. At the same time, the companies (including the major Indian IT-BPO companies) doing business in the Nordic markets will be looking in the coming years to set up near-shore delivery, support or even development centres in a lower-cost location in the coming years.

Therefore, the immediate opportunity does exist to bring such investors to Estonia. Enterprise Estonia, as the national investment promotion agency, should work towards identifying Indian companies in the surrounding markets with such concrete interest, proactively establish contact with them and create and offer attractive value propositions.

1 Statistics Estonia, *2000 Population and Housing Census*, 2008 http://www.stat.ee/population-census-2000

This can especially be done in the areas that Estonian investment promotion has chosen to focus on, such as machinery (including cleantech), business services and the various areas of IT. These correspond to the main interest areas of Indian companies in the Nordics. Such work is greatly assisted by the fact that in all surrounding markets, Enterprise Estonia already has its own representative offices that can lead the effort.

Once the first significant Indian investors start their operations in Estonia, the next ones will be more likely to come as well. Indian companies prefer to enter and operate in locations where a prior Indian community exists, enabling them to have more local references and contacts as well as easier (cultural) adjustment for their staff. As currently no such community exists in Estonia, getting the first investments from near-by countries would lay the required base. Enterprise Estonia can then also further leverage the networks of these companies and use their references.

**In order to also attract the investors with no exposure to the Nordic or Central and Eastern European region, Estonia should still undertake promotional work and awareness raising in business circles in India.**

Given the large size of India as a country and the number of its companies, general promotional efforts are probably not cost-effective. Instead, Enterprise Estonia and the soon-to-open Embassy of Estonia in India should co-operate to set up a programme of annual or biannual targeted promotion work in Indian business circles. The current and future honorary consuls could be actively involved in the process, to make use of their contact networks.

The programme should involve activities along the lines of: road-show meetings at key business associations in key investor regions; presentations at the highlight events of focus industries; arranging workshops or visits to Estonia for key business journalists or outward investment promotion consultancies of India; etc. These can be best done in combination with governmental or business delegation visits from Estonia to India, which several are already planned in 2012–13.

A particularly useful way to raise interest for doing business and investing in Estonia would be for Enterprise Estonia to initiate or attract large-scale conference or summit events targeted to Indian business audience. These events can be focused thematically or by business areas (e.g. aimed at ICT companies), organised by Estonian or Nordic or Indian business associations or the companies themselves.

Such conference tourism can bring to Estonia even high-level decision-makers from Indian companies, if the event is right and a good tourism package attached to the programme (in co-operation with Estonian tourism agency and companies). These events can then be used to promote Estonia as business location overall, while arranging concrete business-to-business meets with local counterparts as appropriate.

Medium sized companies will carry the next wave of Indian outward investment and more and more often they will be coming from cities other than the largest metropolises of India (for example, Pune or Ahmedabad). Therefore, the promotion initiatives could ideally have these companies and cities or regions among the targets, aside from the large companies and the current main outward investment origin cities (like Mumbai, Bangalore or New Delhi). The next possible Indian investors will also be more likely coming from manufacturing industries and be more interested in technology acquisition and access than has been the case to date.

**Enterprise Estonia should specifically look into developing a network of Estonian companies that are potentially interested in joint ventures or mergers with (or acquisitions by) Indian companies.**

Indian investors have tended to prefer joint ventures and mergers and acquisitions as the main mode of entry to new markets or locations. It allows them to start operations faster and bridge the (local market) learning curve.

Given the size and business models of most Estonian companies, they have not been good candidates for such partnerships in the past. Yet, better information on such willingness and suitable companies from Estonia would allow for more effective promotion work to engage potential Indian investors. Therefore, it can facilitate the entry of Indian companies if Enterprise Estonia can build the information network on such joint venture and M&A opportunities from among Estonian companies.

**Indian governmental representatives should involve delegations of Indian companies in their visits to Estonia.**

Such delegations can involve representatives from both companies that are already operating in countries near Estonia, and those companies looking to investing into Nordic or Russian or EU market entry for the first time. They can be formed in co-operation with general industry representative bodies (like Federation of Indian Chambers of Commerce and Industry – FICCI) or sectoral associations (like NASSCOM – the IT-BPO sector association of India), depending on the interest and the purpose of the visit for the government delegation.

Enterprise Estonia and the Estonian Chamber of Commerce and Industry can host these delegations. They can offer the visiting companies a programme of introduction to doing business and setting up in Estonia as well as specific business-to-business meetings in the local industries. To raise attractiveness of Estonia among potential participants (indeed, also get them to participate) and cater to the interests of guests coming a long distance from India anyway, an engaging tourism package should always be built into the programme. This can be done in co-operation with the Estonian tourism agency and the local travel agencies.

It will be a welcomed development if the Indian business delegations can already attend the governmental visits being planned and prepared for 2012 and 2013.

### 2. INDIA OFFERS A VARIETY OF GROWTH OPPORTUNITIES FOR ESTONIAN COMPANIES, PARTICULARLY IN KEY TECHNOLOGY BUSINESS AREAS

The Estonian companies looking to expand their businesses internationally should certainly consider the vast and consistently fast-growing Indian market as one of their potential destinations. A large part of potential market demand is only just about to open up in India – for example, with the foreseeably beginning growth of middle class.

Therefore, there is now a prime time to start aiming for and entering the India market, to avoid missing out once Indian market growth is at full throttle within the next decade. There will be only a few other countries in the world offering similar new market potential. Also, gaining a foothold in India now would be comparatively easier compared to the future, as global companies are increasingly targeting this market and it might soon become much harder for new entrants to expand there.

>> It is prime time to start aiming for and entering the India market, to avoid missing out on the coming growth

However, such market entry will not come easy and the bilateral trade surge overnight. India is both geographically and culturally distant from Estonia, although compared to most emerging markets it offers the important bonus of English as the main business language. Also, Estonian companies have had very little experience in similar market settings until now (not to mention in India) and have to start from very basic learning steps. Many companies will not be up to the challenge at all. Their small size leaves them little capacity for production and service provision, and their financial investment means are limited.

However, the biggest obstacle for most companies is their business model, which is often designed for subcontracting work from neighbouring markets based on the cost competitiveness of operating in Estonia. That advantage will not be there in the Indian market, where much cheaper labour is plentiful. The main way how such Estonian companies can expand to India is within the value-chains of their Nordic (or other) partners, performing subcontracting work for others' products and services aimed at India.

An alternative way would be for financially able companies to carry the existing business over to India and start their own production there, for the Indian or other markets (even European ones). This would help maintain the cost competitiveness aspect at the core of their business, combining the specific production and management competences of Estonia together with the labour advantages of India.

India presents the best opportunity for Estonian companies that have specific valuable competences like technological or process know-how – or companies that have the capacity to develop innovative, high-quality products and novel service models in specific niches. Given the differences in market conditions and demand, the tastes or preferences as well as purchasing power, innovation efforts are indeed crucial for success in India.

>> The main India opportunities are in niche areas for Estonian companies with valuable competences, innovative products and services

In most cases, it will not be possible to enter this market with the same selection and business model

that the companies use in their current (developed) markets. Smaller or larger adjustments or rethinking is necessary. However, such innovation and experience can yield larger benefits. Based on these, the companies can more easily move to further emerging markets beyond India, such as in South Asia or elsewhere. This will make the initial India-related investment and innovation give an even better return.

The companies who are ready for this can enjoy advantages over local and other foreign companies in India, while also receiving a sufficient premium price to cover the costs of new market entry and required innovation. The experiences of other countries like Finland and Sweden should offer encouragement to Estonian businesspeople: with hard work and bold approach is possible to indeed enter the Indian market successfully, despite the initial costs and new business territory.

In this respect, the main challenge might instead be the capability to produce goods or provide services on a sufficient scale. It has been the experience of Finnish and other European companies that once a foothold is gained, business demand takes off exponentially as trust and reputation become established and market knowledge grows. In order to capitalise on such possibility, the Estonian companies with India potential should prepare for the fast growth of their business, once things do take off in this manner after going to India.

>> To achieve the required scale, Estonian companies should consider setting up own facilities in India more

To this end, Estonian companies should be ready to modify their practices of exporting or market entry. The current understanding is that expanding to a foreign market involves either a production base in Estonia followed by shipping the goods out to the target country or offering services across the border.

Instead, the cases of Nordic manufacturing companies shows that it is far more efficient to expand to the Indian market with the company's own facilities – to manufacture (final) products or deliver services locally. This facilitates better productivity as well as benefits from India's labour cost competitiveness and skills pool. At the same time, it helps surpass the critical matter of scalability and makes the most out of the rising business opportunities in this lucrative market.

The Indian side stands to gain from the benefits of the new and much-needed products and services from Estonia as well as from the technology transferred. These can increase wellbeing of consumers and productivity of companies in India. There-by, the biggest demand and promise of return await companies in business areas that match the largest challenges and needs, i.e. the highest-rising demand of India in the next decade or so.

For example, the expected high infrastructure and housing investment can lead to good business for suppliers of special machinery, construction materials or all kinds of wood-based products. Rising health and wellness demand opens up opportunities for all related equipment (such as electronic devices and especially all kinds of smart gadgets) and services, relevant clothing or functional foods (including dairy products, the core speciality of the Estonian food industry).

>> ICT, biotech and cleantech are the most promising business areas for Estonian companies in India

The quickly developing automotive sector and transportation market offers a demand base for all manufacturers that can supply useful vehicle components. The Estonian logistics sector can stand to gain from the increased globalisation of Indian companies, if in the process they will start trading more to Northern Europe and will need good logistics partners here.

The list of good business opportunities in India is long. This market should offer food-for-thought for companies from all kinds of industries and sectors, including traditional ones. However, such opportunities will be open to companies with particular features, as described above, and such strengths do not really cluster industry-wide.

The main business areas in which India offers good potential for more than just a few individual companies are the technology industries, especially for the Estonian ICT, biotech and cleantech firms. These should be taken as priority areas for Estonian business opportunities in India.

The reason is partly that these technology areas are the most advanced in innovation and competences in Estonia. In each, Estonia already has or is (further) developing competences that are of high interest in India, given the market and policy trends in motion there. In ICT, Estonian companies have a strong

record in e-governance, cyber security, banking and the development of other e-business solutions. This can lead to lucrative consulting and system development opportunities from the Indian government and companies, especially given the Internet 'revolution' taking place in this country.

In biotech, health and food-related molecular diagnostics and testing as well as cell therapy and specific drug development (e.g. related cancer research) are the Estonian strengths that are increasingly required in India. In the rapidly growing cleantech business, there are various promising solutions for India's energy management and efficiency, water treatment, environmental monitoring and other needs that are in development in Estonia.

It has to be said that in all the above technology business areas most Estonian companies are also rather small and often still in the early stages of development. Thus, they are to break into the Indian market on their own. That is why there is even better growth potential hidden in local partnership-based entry modes. In fact, India can offer Estonian technology companies the much-needed scale to enable them to unleash their full business potential in any markets.

>> Estonian technology companies can find the scale needed for growth with Indian partners

Indian (technology) companies can be valuable symbiotic partners in this regard. The Estonian side has its core competences and innovative solutions, while the Indian side brings sufficient labour and a talent pool to the partnership together with local market know-how and business contacts. This creates the opportunity to offer the products/services to big markets at the required scale, whether in India or elsewhere in other big (emerging) countries.

It also facilitates the further joint development of such products/services. Indeed, Indian companies are quickly developing their own unique competences, making potential partnership benefits ever higher. Estonian know-how can help them to bridge a gap or leap a few steps in this process, thereby increasing their stakes for collaboration.

In addition, leading Estonian manufacturing and service companies can stand to gain in terms of efficiency, margins and scalability of their operations if they source more non-core work and parts from Indian companies. To date, the outsourcing and subcontracting potential of India has been little used in Estonia. Whether it is textiles, machinery components or IT development and support functions, there is room to purchase more from India. Indian companies are making significant progress in quality and expertise, becoming more and more reliable, effective and attractive for such partnerships.

### Recommendations for enterprises:

**Estonian companies, especially the leading and more innovative ones of all industries, should study and test the India market and partnership opportunities there more actively.**

So far, India has been largely absent from the radar of Estonian companies. This mind-set is worth changing given the various growth opportunities India can offer. This is especially true for ICT, biotech and cleantech sector companies, as these are amongst the most promising areas in terms of India-related growth potential.

The first steps should be for companies to undertake market research to identify in precise detail, whether and which opportunities they might have in India – from exports to local partnerships to outsourcing. This should also offer an insight into which specific geographical areas of India should be targeted, as this market is very large and varies greatly in terms of customer pool, competition and regulations within different states.

Based on such research, the next steps should be to make some market visits and start seeking out some local partners, with whose assistance to begin with actual market entry. The local partners can be agents or representatives, producers, distributors, etc. The searching can be undertaken within the framework of larger or thematic Estonian (business) delegation visits, by visiting key national/regional industry events on their own, establishing networking relations with Indian companies operating in similar business areas in the neighbouring countries of Estonia, etc.

Naturally, pursuing this path will require investment and much patience from company executives, as the results often do not come fast. But this should not keep them from considering and trying out the India market, as the potential long-term returns can greatly outweigh the initial expenses.

**Estonian companies should use the various existing international networks and programmes for India market study and entry purposes.**

Estonian companies should seek out information about such international opportunities more actively than they have done to date. Making more use of these channels and schemes for market study and contact making will reduce the risks and costs of entry into India, easing the process. It opens up access to wider and already existing beneficial networks and external funding.

Under the umbrella of the European Union, in particular, several networking and thematic funding schemes exist. These support European SMEs in their approach to distant markets, India included (like European Business Group of India or European Business and Technology Centre). Other such schemes will probably emerge in the coming years, as EU-India cooperation develops and becomes more intensive. For example, the recently announced plans for new EU-India energy collaboration can provide B2B networking modes and new funding for the development of solutions for Indian clients.

Similarly, there is potential for individual Estonian companies to join Nordic networks like Cleantech Finland in order to be part of their India-related activities, missions, etc. This would also facilitate going to the Indian market together with Nordic companies, even if it means doing subcontracting work to them and not directly offering own products/services to India.

**Estonian companies should also co-operate more with each other and make joint approaches to the India market, in order to improve their competitive position and share costs.**

The simplest way for co-operation would be for companies from certain industries to come together for joint thematic missions or market visits or undertaking market research (commissioning studies or consultancy work). Alternatively, companies can pool resources to jointly send a representative to India for making contacts and sales there for the whole group at once, or share a local representative or agent in the market.

In addition, co-operation for forming consortia would be very beneficial as it can allow for more competitive participation in tenders in India. By joining forces, the Estonian companies that are otherwise too small or niche-focused can achieve sufficient (production) scale or offer complete solutions based on their complementary products and services (e.g. turnkey projects). The latter is especially attractive in areas of ICT or cleantech, where various competences often have to be combined into the project to effectively meet the buyer's needs.

**As a specific matter, leading Estonian companies should experiment with outsourcing to Indian partners.**

In various industries, the domestic sector leaders could start with pilot projects to find outsourcing partners from India, increase their own outsourcing management capabilities (including in project and quality management) and gain experience in this. Based on the lessons learned, long-term and more wide-scale outsourcing attempts can then be made.

Such a direction is most important for companies that are seriously lacking local skills and talent in Estonia and could leverage the labour advantage that India offers (e.g. ICT sector)[2]. The same holds for companies who are otherwise losing the cost competitiveness as the labour costs rise in Estonia (e.g. clothing or machinery industry).

The pilot projects can also be undertaken by groups of companies or associations, to facilitate extensive learning in the sector or to carry out joint development projects more cost-effectively. An example of this would be for the Estonian Association of Information Technology and Telecommunications to consider sourcing parts of the planned joint project on the national eReceipt system development from Indian IT companies. This would help develop the know-how and experience of outsourcing to India in the IT business, just as most of the rest of the world's efficiency gains crucially rely on India in this sector.

**Indian companies should also visit Estonia more to seek out business and partners there – especially in the identified key technology business areas.**

Indian companies could form or join delegations to visit Estonia with the aim of creating contacts, introducing their own products/services as well as

2 This case has been well elaborated in the case of Finnish software companies in the paper Kyöstilä, V. and W. Cardwell, *The Impact of offshoring on value creation in Finnish venture-backed software companies*, Helsinki University of Technology, 2005 http://bit.ly/JydqJn

sourcing new ones to import from Estonia. The industry associations like NASSCOM in ICT could lead and facilitate this process, forming the groups and arranging the visits with the assistance of the relevant Estonian counterparts.

**Once Indian companies start investing more in Estonia, local companies should work towards establishing partnerships with them.**

At the very least, this would allow Estonian companies to conduct certain local subcontracting work for the new investors. The Indian companies can gain from outsourcing the required parts of the operations to local producers with high quality standards. In addition, in technology-related business, the useful innovation partnerships can also be created.

If successful, such partnerships offer a win-win solution in growing the business in a symbiotic manner and even moving to other markets in Europe or beyond by offering joint products or services.

### Recommendations for governments:

**Both governments should facilitate more contact making and partnering between Estonian and Indian companies by more actively arranging business delegation and market visits.**

Business delegations should be invited along for as many high official visits to the other country as possible. These delegations can be general ones consisting of potential investors and exporters of various industries, or they can be thematic and sectoral if relevant officials are the ones making the visit.

To make such visits effective, sufficient time should be left for planning and preparation, by both the hosts as well as the attending companies. It would be useful if at least for each half-year a tentative visit calendar plan would be prepared in advance. This should be done under the co-ordination and mutual consultations of the embassies and foreign affairs ministries of both countries.

**Enterprise Estonia should make India market related information and entry support more widely available to Estonian companies, through organising related promotion events and trainings.**

Such activities would encourage more companies to consider the Indian market as a potential destination for their goods and services, or for finding partners for development and production there. It would also reduce the costs and barriers to market entry, if good first information is available for companies without charge.

The first step in this range would be for the currently planned Asian information centre at Enterprise Estonia to include market intelligence and information services about India. This should include purchase and provision of access to relevant databases, reports, service providers' contacts, etc.

Crucially, the information centre should collect and disseminate information on EU and Nordic networks and funding opportunities for selling to and partnering with Indian companies. At the same time, it can also channel information on public procurement, especially the calls for proposals for new and demo solutions by Indian governmental agencies (at least in priority areas of technology business, for example).

Secondly, Enterprise Estonia should also work towards establishing consulting arrangements with service providers in the Indian market (at the level of most attractive regions/states). These providers should be able to offer good quality market entry support for companies, especially in due diligence of potential local partners.

The centrally arranged consultant partnerships will help companies avoid the extra costs of finding service providers on their own. In addition, Enterprise Estonia usually subsidises the purchase of their services. The soon-to-open Estonian Embassy can also assist in the process, by seeking out suitable consultants and building relevant contact networks based on the division-of-labour to be agreed with Enterprise Estonia.

In parallel, this agency and the Estonian industry associations (including Estonian Chamber of Commerce and Industry) should arrange periodical promotion events. Their aim would be to introduce the growth opportunities in India and facilitating the sharing of the entry experiences of companies. This will further encourage interest and the testing of India opportunities. That is crucial for the current narrow base of Estonian exports and for investment to India to become more extensive and grow in a stable manner.

There is a particular need to gather and disseminate the information and lessons from the market visits

and fact-finding trips of other companies that they arrange or finance. This can be done again through the planned Asian information centre.

As a specific matter, the future information centre and Estonian Chamber of Commerce and Industry could commission and publish a guide for Estonian companies to do business in India. Available electronically, this would serve as the first information point for all companies with an interest in Indian business opportunities.

Enterprise Estonia and industry associations should jointly commission and offer public trainings in the topics and competence areas that will be of high importance in doing business with India – but are currently lacking. Such trainings could offer know-how on sourcing from India, innovation and business models needed for India market entry, contract research or other development collaboration with Indian companies, Indian business culture and IPR protection in this market, etc.

The specific topics and calendar of trainings should be determined annually, based on the requests from potential participants and the lessons learned from market visits and the experiences of other countries.

**The Estonian government should develop more targeted funding schemes to support the companies on their approach to the India market.**

Currently, Enterprise Estonia, and KredEx as the other export-financing agency, offer several guarantee schemes as well as general subsidies for companies expanding their export activities. However, such funding is often project-based and insufficient for undertaking sustained market entry efforts that a new and distant market like India would require.

In addition, there are several specific key activities that are not sufficiently covered in the existing funding schemes. First of all, more support should be there for the purchase of incubation services for initial market entry periods, or joint product development with Indian counterparts.

Also, it should be possible to use support more directly for developing demo solutions and facilities or engaging in technology transfer in the Indian market. This is a particular necessity to enter the cleantech market there, in terms of attracting interest as well as proving functionality.

In the long term, measures to boost demand for Estonian products and services could be considered, such as offering grants for potential Indian buyers for the purchase of test solutions or patches[3]. In addition, measures should be developed to motivate Estonian companies set up their own sales or production units in foreign markets, which may be the most competitive way to enter India.

Within funding schemes, priority support could be given to companies that are looking towards India jointly with others (in group or via industry associations) to encourage such collaborative market entry.

The Asia programme, which the Estonian Ministry of Economic and Communication Affairs is currently developing, foresees a new form of market entry scheme to be tested in China in the coming years. Called Export Bulldozer, the programme would gather a group of interested companies to offer coordinated and proactive governmental support in developing the market entry strategies, facilitate contact-making, arrange market visits, etc.[4] Upon success of the programme, a similar initiative should in the next years be offered for India market, too.

**Both governments should jointly prepare and sign agreements or co-operation memorandums in the most promising technology business areas, to set the foundation for sourcing demo solutions from each other's companies.**

Governments can lead the way for company contact making as well as technology transfer and employing each other's competences in areas of ICT, biotech and cleantech. This can be achieved most effectively through bilateral agreements or memorandums, based on which the parties would launch and fund calls for demonstration solutions in areas where the other has developed significant expertise. For example, the Indian government can benefit greatly in its e-governance development when employing the expertise of Estonian ICT companies who are the world leaders in offering such solutions.

3 This is what has been proposed as a novel idea to boost Swedish innovation exports to India, to address a particular funding gap in addition to the more usual supply-side measures of supporting activities of own companies in India. Swedish Agency for Growth Policy Analysis, *An Analysis for a Stronger Collaboration with India in Research, Education and Innovation*, 2011 http://tillvaxtanalys.se/en/publications/reports/article0030.html

4 Ministry of Economic Affairs and Communications of the Republic of Estonia, *Asia Programme*, 2012 (in Estonian) http://www.mkm.ee/aasia

Based on the governmental agreements, a better exchange of information on tenders and calls for proposals can also be established in these priority areas to facilitate mutual trade and business-to-business collaborations.

**The Estonian government should be an avid supporter of the expansion of EU networking and funding schemes towards India, especially in the technology business areas.**

Relevant proposals in progress require support at all levels and forums within the EU, while the Estonian government should also champion new initiatives in areas not yet covered under EU collaboration with India but that are highly lucrative for Estonian businesses.

For example, there could be specific collaboration schemes for business-to-business contact making and financing of technological solutions development in India in the areas of e-governance and cyber security. These areas and potential collaboration in them is attractive for both the EU and India as their priorities and also general summit statements show.

The next step could be to put forth joint funding in the areas. The Estonian companies stand to gain in this through reduced costs (via funding) and eased access. Therefore, the Estonian officials should develop and put forward relevant proposals in EU circles. Similar initiatives can also be considered and proposed in the biotech and cleantech areas in the future.

### 3. EDUCATIONAL EXCHANGE AND RESEARCH CO-OPERATION HOLD THE LARGEST MUTUAL BENEFIT

India and Estonia need to co-operate not just in the sphere of business but also and even more importantly in higher education and research. This will be particularly important in reaching full potential in the most promising business areas of ICT, biotech and cleantech.

As identified above, there is good opportunity for joint development and innovation in these areas based on complementary capabilities and competences. Given the technologically complex and rapidly evolving nature of such business, the relevant research and innovation often needs to involve universities and institutes rather than just companies themselves. For this reason, research collaboration can lead to enhanced or completely new solutions resulting in actual business (between the countries or jointly in other markets).

>> Research and innovation collaboration leads to joint business in most promising (tech-)business areas

It is especially so as in both Estonia and India the leading technology developing companies often directly belong to or are linked with top academics and researchers. In these cases, scientific partnerships have a high chance of leading towards business partnerships.

In all the three identified technology business areas, the main obstacle for the growth of Estonian companies is the lack of highly qualified labour and talents. Nevertheless, it is in these very same areas that the Estonian universities have built up their world-class academic and research excellence: in topics ranging from software engineering and cyber security to polymer materials and genetic studies (to name a few).

Therefore, there is good potential to provide Estonian companies access to the much-needed skills and knowledge when in these areas the talented Indian students come to conduct their Masters and Doctoral level studies (or internships) in Estonia.

The same also applies for inviting faculty and researchers from India to teach and work in Estonian institutions. Aside from the direct academic and business contribution they make, such students and experts bring along their connections and networks. It can also happen if the Estonian students and faculty study, teach and work in Indian institutions more, bringing to Estonia new know-how and relations. All this can open up good new marketing channels and partnership opportunities for the Estonian technology companies in India and beyond.

>> Faculty and student exchange can bring much-needed skills and know-how to both countries

However, the benefits of collaboration in higher education and research will not be solely limited to the priority business areas of ICT, biotech and cleantech. In fact, increased contacts and knowledge about the other culture and market among students and researchers can lead to wider business development. It is often in classrooms or dormitories where future

breakthrough business ideas and partnerships are born, namely.

As such, the more academic and research exchange there is between India and Estonia, the more chances for such long term benefits. This will hold if the Indian students return to their home country, as they often tend to do. As more of gifted Indian students and experts work and study in Estonia, it will also make the country more attractive to foreign investors from India (or other countries). It enlarges the potentially available talented labour pool.

Higher education and research can also bring inherent benefits to the respective sectors of both countries, not simply mutual business. In India, there is a dire need to offer young people good-quality higher education, particularly in the higher study levels. This will allow reaching its innovation potential and reap demographic dividends to the full extent. If the students do return to India after their studies in Estonia with new knowledge and skills from the high-quality study programmes, they can make a good contribution to economic development and well-being there. At the same time, Estonian universities need to attract more foreign students to become more international and also fill the available spots.

In the field of research and science, collaboration and its knowledge outcomes strengthen the research and technological base of participating countries. In the process, Estonia and India can benefit by combining forces in areas of mutual excellence, such as ICT. In addition, they can match the competences and find synergies in areas that are underdeveloped in one country but strong in the other. The same holds for areas that are considered strategically important for the future (e.g. cleantech-related material science).

From an Estonian perspective, partnering more with India is important in one more way. India is on its way to becoming one of the new research powerhouses in the next decade. In order to stay at the forefront of knowledge creation and technological development, top-level Estonian institutions and experts have to maintain close links with the leaders of the world. As such leaders will be more often India-based, it would be wise to start building alliances with the Indian counterparts already now. Estonian research excellence (albeit small in size, but of world-class quality) can in turn offer additional strength for the Indian side, facilitating their ascent on the world level.

» Research collaboration allows both India and Estonia to stay at the forefront of innovation

Discussions with stakeholders in both India and Estonia, as well as analysis of both countries' collaboration drivers, possible focus interests and current strengths, have highlighted in the current foresight project the great potential for closer co-operation in higher education and research spheres.

Even the current small but growing Indian student population in Estonia and their discipline choices show that the starting platform is ready. The task now is to build on it to make the exchange of people and ideas much more frequent and systematic, while also creating the conditions for the resultant initiatives to take off.

### Recommendations for universities and research institutions:

**Institutions from both countries should engage more in partner searches and discussions in the other country, based on their core interest and strength areas.**

For technical reasons, the exchange of students and faculty or joint research is easiest to arrange between individual universities and research institutions (least bureaucracy is involved). In addition, co-operation ultimately takes place between individual departments and scientists anyway. Therefore, the partnering initiatives should reach or even start from their level as much as possible.

At present, no institutional-level relations and bilateral treaties or collaboration memorandums included, exist between any Estonian and Indian universities or institutes. Therefore, changing this is of primary importance in higher education and the area of research collaboration between the countries. However, instead of striving to sign agreements, the aim would have to be actual people exchange and co-operation projects. These can then be cemented in agreements or memorandums of understanding.

The first step would be for institutions, especially the top institutions, in the priority technology areas to conduct background research on the other country's top-level institutions. In Estonia, these include not just universities but importantly also individual centres of excellence as well as the competence

centres[5]. In India, the majority of research is conducted in separate (public) institutes or centres rather than universities. These should accordingly be covered in the exploratory work, and they themselves could also take up the search for possible partners in Estonia.

The aim should be to seek out potential partners with matching strengths and capabilities. Based on that, contacts can be established and discussions started between the administrations and specific departments of concerned institutions. This will be important to test out actual collaboration interest and potential, as not all contacts necessarily lead to wide co-operation in the end. For that purpose, the first mutual visits should also be used to intensively build the relationship and exchange ideas.

Based on the discussions, concrete collaboration (pilot) projects can be initiated and launched. These can cover the sending of first students to study in each other's programmes on a temporary basis; the exchange faculty for teaching or research work or advising on curriculum development; developing joint research projects and arranging joint scientific events; or even developing shared study programmes and modules that would be jointly offered in both institutions.

Naturally, these initiatives should then also be formalised in the written agreements. But putting a focus on developing joint activities instead of the agreement pays more in the end. It is in this manner that the actual collaboration will take off and not remain on paper declarations only, as often happens with agreements otherwise. A sign of this is that both of the governments have various means of funding available to support various practical exchange and collaboration initiatives, but these have been underused so far for Estonia-India ties. It is also important that additional public funding be available should the initiatives be developed.

**To find potential partners, both sides could organise more bilateral (or multilateral) scientific events, especially in the priority technology areas.**

Contacts are most often made, partnerships established and concrete joint research projects born from the exchanges taking place during scientific meetings and discussion events – seminars, work-shops, conferences. For the most part, these are thematically focused, in order to attract the right range of partners and experts to participate.

Both the Estonian and Indian institutions interested in finding partners could organise more of such events in the other country. This will allow for inviting and meeting various potentially interested institutions and people at once, while also allowing for concentrated discussion and introductions.

Such events can also be organised in collaboration of several Estonian universities or Indian institutions, in order to pool resources and effort. On the Estonian side, this can be best done under the aegis of existing competence centres and centres of excellence, as well as the Estonian doctoral schools, which several universities share[6].

In addition, the events can also involve third countries and parties to be even more efficient – when such multilateral complementarities exist. As an example, Estonian biotech institutions could co-operate effectively with Finnish institutions in having joint sessions with their Indian counterparts in area of diagnostics.

**In order to attract more Indian students to study in Estonia, the universities should start the related marketing activities and develop more English-based study programmes in the priority technology-related areas.**

Given Estonia's small and India's large size as well as the little existing relations, awareness about study and research opportunities in Estonia is almost non-existent in India. It will not be possible and practical to make Estonian academic and research strengths known in the whole of India. But the universities still need to undertake wisely targeted promotional efforts so that more Indian students and researchers would know to find their way to Estonia.

Developing bilateral institutional partnerships and arranging scientific events for target audiences is one way of achieving this. In addition, universities should also look into arranging some road shows in key geographical areas or visiting educational conventions of priority (thematic) areas (e.g. ICT studies).

5 The full list of Centers of Excellence is available online: http://www.hm.ee/index.php?1512873. The full list of competence centres is available online: http://www.eas.ee/en/for-the-entrepreneur/innovation/competence-centre-programme

6 The full list of Estonian doctoral schools can be seen here: http://bit.ly/IKjOht

Given India's fast uptake of the Internet, a clever use of e-marketing and social media channels is a cost-effective way to reach audiences that would otherwise not be possible. In this manner, universities can spread the word about their specialties as well as the good value-for-money education that Estonia can offer compared to most other Western countries. Most of such promotional activities can be easily undertaken jointly among several universities, to expand the reach and reduce the costs.

As one particular channel, Estonian institutions should make more use of the graduate students and the postgraduate researchers who have already come to Estonia. They are very willing to offer their help in spreading the word in their contact networks or acting as ambassadors of Estonian institutions even after they have returned to India, if they are asked and provided with the relevant means. Indeed, such word-of-mouth and references is often the most effective way to raise interest. In addition, it also gives the university an additional reference for the quality of the new applicants.

To be attractive for more Indian (and other foreign) students, Estonian institutions should offer more opportunities to study in English. The situation has improved over the last few years, but more can be done to cover all the Estonian strength areas in this range. For example, currently no English-based graduate programmes exist in the biotech or medicine areas. Yet, these are among the most sought-after study abroad disciplines among Indian students overall.

Additionally, more English-based programmes could be offered in disciplines where otherwise is a lack of interest for PhD-level studies or research positions. For example, the applied mathematics programme can attract students from India who might then stay over to continue teaching the discipline afterwards.

**As an example of one particular opportunity, Estonian universities could also organise and offer more summer study and internship programmes to Bachelor level students from India.**

Such short-term programmes in the academic excellence areas can serve as the springboard to attract the same students to continue their graduate studies in Estonia afterwards. Alternatively, if the core of the programme would be an internship in local company (for example, in ICT sector), it can attract these students back to work in Estonia. Such programmes would also be relatively novel for India as well as other Western countries, and would gain the attention of potential applicants easier than regular study opportunities alone perhaps.

To advance this proposal, a pilot project with a top-level Indian university is being launched in the ICT area. On the Estonian side, the project could be organised in co-operation between the new Estonian IT Academy (which combines all higher ICT education in the country under one umbrella) and the Estonian IT-sector companies (or their association).

**Institutions from both countries should make more use of the existing multilateral or international networking and funding schemes, to launch the collaboration efforts.**

Once the potential partners and specific initiatives get identified and developed, the educational and research institutions can employ several international financing sources for that purpose. At the same time, various multilateral networking channels and collaboration platforms are in place to assist universities and researchers in finding partners in India or Europe (respectively). These ease the process significantly.

A wide variety of such opportunities already exist under the aegis of the European Union, in particular. EU has been and will increasingly be making an effort to enhance educational exchange and joint research between Europe and India. For example, universities should make use of Erasmus Mundus "India Window" to create consortia and start academic exchanges among themselves. Similarly, bilateral research networks (like New Indigo)[7] or thematically focused collaboration initiatives (like Euro-India Spirit Project in ICT field)[8] can be joined.

This recommendation holds especially for the Estonian side as many Indian partners are already participating in the existing schemes with other European partners. Estonian institutions should actively participate in the new network and platform formations, should these emerge in their core interest and priority technology areas.

7 http://www.newindigo.eu/
8 http://www.euroindia-ict.org/Default.aspx

Additionally, there is potential for Estonian institutions to join in with Nordic networks aimed at India. For example, leading Nordic universities have joined the Nordic Centre in India (NCI) to jointly conduct partner searches, facilitate organising of events and discussions with Indian counterparts, undertake promotional work and send their own students to study about India[9]. Estonian institutions could consider joining the NCI in the years to come.

Similarly, certain thematic research platforms have emerged that allow researchers to carry out fieldwork or R&D collaboration in India. An example of this is the Health Kiosk initiative for health-related innovative (market) research, the services of which can be opened to Estonian parties for a fee[10].

### Recommendations for governments:

**Both governments could facilitate the partner search and contact-making efforts of individual institutions by arranging joint visits.**

The relevant ministries or agencies and the embassies of both countries can encourage and assist faculty and researchers in reaching out towards the other country, by arranging joint visits for various institutions at the same time.

During such visits, the academic and research staff of participating schools and institutes get a chance to meet various potential counterparts; learn more about the educational and science and technology system in the other country as a whole; have focused discussions at joint seminars or workshops; or even participate in study fairs and conventions to promote their own study programmes.

Such visits can involve either wide delegations or discipline-wise focused ones. In either case, they will reduce the work and cost barrier for institutions to undertake the visit and seek partners, potentially leading to higher motivation to take part.

The Estonian government has the opportunity to arrange a first such visit as early as the autumn of 2012, as the Estonian Minister of Education and Research, Mr Jaak Aaviksoo, has been invited to India by his counterpart, Shri Kapil Sibal. The minister could be joined by a delegation of the top administration of the main Estonian universities (at the level of vice-rectors at least), together with international relations staff. However, the delegation would be best to include some departmental staff members from selected discipline areas that have highest potential and interest for collaborations in India (ICT being the prime candidate, for example).

**Archimedes Foundation and the new Estonian Research Agency, the national agencies in charge of the internationalisation of higher education and research, should co-ordinate the individual institutions towards joint marketing and partnership search efforts directed towards India.**

Combining of resources and efforts facilitates cost efficiency whilst increasing the chances of visibility for Estonian institutions. They are otherwise rather small compared to their Indian counterparts and the potential target audience.

As such, the Archimedes Foundation and Estonian Research Agency can show and help the way for individual institutions towards collaboration. This could entail mainly the co-ordination for development of research partnerships or marketing of study opportunities.

To attract Indian students to study in Estonia, the universities should craft and develop a joint marketing strategy. This should entail activities ranging from organising joint visits to educational fairs and conventions in key target areas or disciplines in India; inviting influential higher education journalists to visit Estonia and its schools; planning for targeted online media campaigns; adding India-specific sections to the overall Study in Estonia common website[11]; etc. The Archimedes Foundation can then also take the role of co-ordinating the execution of such planned activities, to ensure their coherence as well as timely implementation.

On the research side, similar joint visits, events or other promotional co-ordination can be undertaken to raise in India the profile of Estonian research excellence areas, attract the interest of potential partners and set up (thematic) discussions to develop concrete collaboration projects, etc. The Estonian Research Agency can co-ordinate the process among the Es-

9 http://www.nci.uu.se/
10 http://www.oppo.fi/open-projects
11 http://www.studyinestonia.ee/

tonian universities, centres of excellence, competence centres, research institutes, etc. The national research facilities and strengths are often shared among them, anyway.

In addition, Archimedes and the Research Agency have important roles to play in channelling information about international networks and collaboration funding schemes to universities. For example, the Euraxess Service Centre operates for such a general purpose and it should extend its reach and services to make more information about India-related opportunities available[12].

The Estonian agencies could also facilitate joint collaboration at Nordic level. For example, they could look into partnering with the Nordic Centre in India on behalf of Estonian institutions, and facilitate the purchase of services and trainings that the centre offers for contact making and visits in India.

**Both governments should offer more stipends for talented students to study in priority areas in both countries.**

Talented students often have multiple offers on the table for continuing their studies and research. As such, for them the financial conditions are an important part of the consideration for study abroad choice. In addition, coming to study from a faraway country as India and Estonia entails significant costs for the students.

While some funding has been available for full Masters and Doctoral level studies in the past (in Estonia, especially in the recent English-based programmes like MSc in Cyber Security), such funding should be continued and expanded. Although it cannot be made available to Indian or Estonian students exclusively, it will still function as an attraction to them as well.

In addition, both governments could still offer more specific stipends for temporary study and work in Estonian institutions in the priority technology fields. The aim is to facilitate the emergence of contacts between the academic communities. This can best be done in the form of bilateral governmental agreements, whereby both sides pool funds for the purpose. It will be useful to renew the previous governmental educational agreement to this end.

Additionally, a specific initiative of bringing an Indian cyber security professor to the Tallinn University of Technology has been discussed and in principle agreed between the educational ministers of Estonia and India. That initiative should be followed through as soon as possible in order to create an example to other institutions and disciplines in this matter.

**The Estonian government should set up a collaboration platform to increase the chances of incoming students staying in Estonia for work and further study.**

In order to raise the chances of receiving a return on the marketing and stipend expenditures, steps should be taken to induce the Indian graduates to stay for work or further study in Estonia. This can also benefit the Indian side, as its specialists and students gain even more experience in this manner, which they can then bring back home at some point.

The Ministry of Education and Research should facilitate the creation of a new kind of collaboration platform between companies and universities for this purpose. The aim of this platform would be twofold. First, it should feature a systematic way to engage the students (at least in priority technology areas) more with companies and researchers through internship placements and offerings. This would allow for creating ties with these students, and would offer them first-hand experience of working in Estonia.

Second, another process should be set up to ensure that all talented Indians (and other foreigners) studying in Estonia would always receive a job or further study offer from an Estonian company, institute or academic department by the time of their graduation. Currently, this occurs on an *ad hoc* basis, but should be turned into a coherent and systematic process.

**The governments should consider preparing and signing a bilateral agreement on the mutual recognition of qualifications and diplomas.**

Such an agreement can do much to ease the process of admissions to each country's universities, guaranteeing them that the prior education of applicants is at a sufficient level. In addition, it facilitates attracting students as it offers them a guarantee that

12 http://euraxess.ee/

their academic effort will be recognised by the potential employers or the next academic institutions.

**Both governments should together launch the work of the joint scientific committee foreseen in the bilateral Agreement on Co-operation in the Fields of Science and Technology.**

Instead of meeting biannually as was agreed upon, this committee has never gathered to determine the priority areas for research collaboration, initiate exchanges and other measures as needed.

Given the good research interest match and benefit potential between the two countries, such a committee could help to invigorate the bilateral institutional-level exchanges of people and ideas, the establishment of partnerships, the development of joint projects or the organisation scientific events, etc. In addition, it would serve as the platform to discuss and agree on future agendas, priorities and measures for collaboration at governmental level.

A perfect opportunity to launch the commission would be when the Estonian Minister of Education and Research, Mr Jaak Aaviksoo, visits India in the autumn of 2012 along with the representatives of major universities.

**The Estonian government should consider increasing the level and variety of funding aimed at research co-operation with countries outside the EU, crucially including India.**

It is the experience of other Nordic countries that in case of low previous contacts and collaboration level, it is specifically targeted funding will induce the interest of institutions and researchers at start. It can motivate them to seek partners and make contacts at all, leading then towards wider collaboration. This sort of initial targeted funding functions, like seed money of sorts, is often the key element in getting actual collaborations off the ground.

The Estonian government should consider setting up similar mechanisms to encourage Estonian institutions to consider their India collaboration opportunities more. Namely, it should be a long-term strategic interest for the government to lead the way in the emergence of such linkages with future scientific and technology leaders like India.

The easiest way to offer such funding is to reserve or earmark certain pockets of money in the existing research collaboration schemes that the government offers. Alternatively and with even greater possible impact, the Estonian and Indian governments can jointly develop a funding scheme aimed for bilateral projects – with a particular focus on the most promising technology areas.

Within the confines of the current foresight project, preliminary discussions have taken place for setting up a joint scheme of call for proposals in the biotechnology area. The funding could come jointly from Estonian Ministry of Education and Research and the Department of Biotechnology of India. This initiative should be fully crafted out and implemented, by preparing and signing a relevant Memorandum of Understanding as soon as possible and then agreeing the action plan for first call for proposals.

In addition, the Estonian government should actively support the extension and expansion of EU-level funding schemes that support collaborations with Indian counterparts. For example, the new “Indo-European Research and Innovation Partnership” can offer various new funding and networking channels, including in all the main Estonian academic core strength areas.

**Both governments should make more concerted efforts to publicise the opportunities of the Indian Technical and Economic Co-operation (ITEC) programme among Estonian students and professionals of the technology and business fields.**

Each year, a few dozen Estonians get the chance to study in professional development programmes in Indian higher education or governmental institutions. It offers a beneficial chance to obtain experience from India and make some contacts there. This is useful from the Estonian side, as still not too many Estonians have first-hand awareness of India. This contributes to the information and ignorance barriers regarding the opportunities that India can offer for business and other collaborations.

To ensure that this opportunity is utilised to the full extent, more promotion on its opportunities could be done on both the Estonian (Archimedes Foundation as the national co-ordinator) as well as the Indian side (the embassy in Helsinki). For example, more targeted electronic marketing could be undertaken for that purpose each time a new application round is opened. This promotional work should be particularly aimed at the audience of business

and technology students or professionals, as their participation has the most potential to lead business or research exchange between Estonia and India.

### 4. TOURISM LEADS TO GROWTH IN OTHER BUSINESS AND TO MORE EXCHANGE

Both India and Estonia offer scenic sights and memorable encounters for travellers, whether they stay for short or long. The experience and growing numbers of total tourists to both countries attests that. The current low levels of mutual tourism does not reflect the inherent attraction of these countries but rather the inconvenience and cost of international travel and the visa difficulties, low awareness or unsuitable product offerings.

>> Direct flight connectivity is the key stepping stone toward unleashing mutual tourism potential

Against this backdrop, the move towards high levels of tourist traffic between Estonian and India will not come fast and easy. It will require significant measures like the introduction of direct flights between the countries or thorough investment into tourism promotion, in order to lift the tourist exchange to a significantly higher plateau. Should that happen, both countries stand to gain from the increased service trade and job and business opportunities, directly in tourism sectors and indirectly in related areas. The overall outbound tourism is to grow from Estonia and India anyway, and then bigger share of it would go in each other's way.

However, tourism is not important for just the trade, income and jobs it brings. It instead functions as an important enabler or 'channel' for other business and exchange in even more important ways. Mutual tourism development and, in particular, the increase in direct connection routes can facilitate trade and FDI flows. It can have a similar effect in areas of education and R&D co-operation as well, leading to an increased flow of students, faculty and researchers.

>> Tourism development is a 'channel' to increased flows of students, researchers and investors

For example, a business trip that features a pleasant stay and exciting sightseeing or events will be conducive for potential investors in making the decision to invest in a country or a potential exporter to commence trade.

This is exactly why the inclusion of engaging tourism packages was suggested in previous sections in relation to arranging (group) visits or conference events of potential investors. Therefore, the national tourism and investment promotion agencies under Enterprise Estonia should work tightly together.

#### Recommendations for tourism enterprises:

**Estonian tourism companies and agencies should invest into product development and marketing that would increasingly attract Indian tourists to Estonia.**

Typically, the outbound Indian tourist wishes to use travel packages (including group travel), most often visiting several countries on the way. Working together domestically as well as importantly with other Baltic or Nordic colleagues, the Estonian tourism providers can assemble attractive packages that would be targeted to the preferences of the Indian tourist. This can also include focused packages, such as in nature-driven tourism (which is a particular strength of Estonia).

In terms of marketing, the companies should focus their efforts on novel marketing channels and method, as traditional marketing (outdoor, print, etc.) often proves to be overly costly due to the large distance and size of India. It is possible to instead tap into growing Internet usage and the consumption of entertainment in India, crafting smartly targeted online or social media or televised campaigns and messages.

This surely requires much market research and some local partnering to be effective – consequently, it opens up business opportunities for the Indian side as well.

In Estonia, the current governmental tourism development funding mechanisms can be a source of support and risk-reduction for companies working in this direction. The funding schemes can be used for market research, finding partners, direct marketing, and product development.[13]

13 Enterprise Estonia, *For the entrepreneur – tourism* http://www.eas.ee/for-the-entrepreneur/tourism

This recommendation is particularly relevant should regular direct flight connections be established between Estonia and India, bringing in much direct and transfer tourism business interest.

**Indian tourism agencies or outbound tourism operators should consider investing directly into setting up an office in Estonia.**

Such an office can first serve as the base from which to develop and offer packages as well as directly serve Indian traveller groups coming to lucrative Northern Europe, including Estonia. Secondly, it can be used as the base from which to offer India travel packages and services to the lucrative Nordic and Russian markets, and potential Estonian travellers as well.

For such a base, Estonia is among the best value-for-money locations in the Northern European region, given the cost of labour in the country, the widespread ability to speak the Nordic and Russian languages, easy travel access to other countries in the region as well as the general ease of doing business.

This recommendation is particularly relevant should regular direct flight connections be established between Estonia and India, bringing many direct and transfer tourists.

### Recommendations for governments:

**The Estonian government should work towards direct flight connectivity between India and Estonia, including by signing with the Indian government a bilateral aviation agreement.**

The flow of tourists, as well as the flow of potential investors or students, can particularly accelerate when travel access between the countries is easy. As such, the biggest enabler for inter-country business and tourism would be the launch of regular direct airline flights between Estonia and India.

Although the potential flow of people between the two countries will by itself probably not make such lines profitable, Tallinn Airport can function as an interim hub for airlines connecting Europe or the US and India. Namely, Tallinn and Estonia are perfectly positioned geographically in that sense, offering the nearest transfer route from India to most of Europe and importantly the USA, as well.

The Estonian government, as the owner of both Tallinn Airport and currently also the national carrier Estonian Air, should actively approach Indian airline companies who are potentially interested in such hub and connecting partnerships. In addition, there is a need to develop the airport facilities and services, so that there is capacity to serve the potential growth of transferring and incoming travellers.

In order to enable and support direct flight connectivity opportunity, both governments should jointly move forward towards a bilateral aviation agreement. Such treaties are the necessary corner-stones and prerequisites for setting up regular airline connections between any countries. The first draft of the agreement already exists, but governments on both sides should work towards concluding the negotiations and signing the treaty as soon as possible.

**To support the private sector efforts in tourism product development and marketing, both governments and especially their tourism promotion arms could take steps to increase general awareness about their country in the other.**

These steps include, but are not limited to, arranging study and introductory tours for travel journalists and travel company representatives; developing general promotion campaigns (especially in online channels) and targeted information content (such as special interest section for Indian travellers on the www.visitestonia.com website): arranging road shows or workshops to present tourism opportunities in key regional locations and travel events.

For the Estonian side, a good opportunity for such first promotion work already arises in September 2012. The Society of Foreign Travel Operators of India plans to bring their annual conference to Estonia, with delegates from dozens of outbound operators participating[14].

As before, this recommendation is particularly relevant, should the regular direct flight connections be established between Estonia and India. An increased general promotion effort will then help to ensure that the new connection opportunities will be

14 http://sftoindia.com/

harnessed effectively and the increased travel potential realised.

**From the Estonian side, a particularly attractive promotion opportunity is to become a shooting location for a popular Bollywood movie – the government could develop pilot promotional project to make it happen.**

The experience of other countries like Spain shows that a Bollywood movie shot in the country can bring about a hike in tourism interest and inflow[15]. This comes from the high impact that Bollywood movies and its stars have in India in affecting trends and consumption.

Governments can facilitate such opportunities by targeting movie projects through their tourism development agencies and offering support for them. Naturally, to reap the benefits that such "product placement" can bring, it has to be supplemented by a matching promotional effort afterwards.

As such, it is advisable that the Estonian tourism promotion agency together with the to-be-opened Estonian Embassy in Delhi and the Estonian film production companies' cluster would develop a pilot project in this aim. The project would consist of crafting a targeted proposition to selected Bollywood production studios for bringing a first high profile movie shooting to Estonia. The studios will find many fascinating (natural and urban) locations to use as well as growing local production facilities and qualified staff to employ.

**The Estonian government can stimulate cross-border tourism package development and marketing, by working with their Baltic and Nordic colleagues to make the public tourism funding measures supportive of such joint investments.**

For example, the eligibility rules of existing funding measures can be further designed to allow more flexibility for pooling the resources of various countries. Alternatively, in the future, the national or regional tourism promotion agencies can also consider launching specific joint investment and marketing funding schemes.

**The Estonian investment and promotion agencies should jointly work towards attracting major Indian tourism agencies or outbound operators to set up an office and service base in Estonia.**

This recommendation is particularly relevant, should the regular direct flight connections be established between Estonia and India, bringing in many direct and transfer tourists.

**Once the airline connection materialises, the governments would be best to arrange for collecting tourism statistics to know the numbers of mutual tourists.**

Currently, no precise information is available on the number of tourists entering, staying or the amount they are spending in either Estonia or India. For both governmental promotion work as well as to induce the efforts of private tourism companies, such statistics would be most useful on both sides as a basis for the evaluation and planning of activities.

## 5. VARIOUS GENERAL WAYS FOR GOVERNMENTS TO ENABLE MORE BUSINESS AND RELATIONSHIPS

The previous sections feature various very detailed recommendations on which steps to take to advance co-operation and business between India and Estonia for the full benefit it can bring.

In addition, there are also a few more general ways that both governments can employ to make the already cordial governmental relations even closer, as well as enhance the factors that enable mutual business and relations to flourish.

>> To support collaborations, governments should enhance the general conditions that facilitate interactions

Several such general recommendations entail lessons for the Estonian government in a larger sense on how to advance economic relations and identify interests with currently distant countries, not just India. These are presented separately below.

15 For example, Spain enjoyed annual growth in 2011 of above 50–60% in visitors coming from India, after attracting the making of movie 'Zindagi Naa Milegi Dobara' to Spain and being strongly featured in its scenes. Ambwani, M.V. "Bollywood plats lead in lobal turism promos", *The Economic Times*, 21.11.2011 http://bit.ly/GRyJpk

### Recommendations for governments:

**There should be more high-level official visits in both directions.**

Such visits can help cement general relations, while also allowing the opportunity to invite along specific stakeholders (companies, universities, etc.) to advance contacts and discussions in specific areas in a concentrated manner.

Both governments should plan more ahead and coordinate for the mutual visits, possibly agreeing a tentative calendar for at least each half-year and then carrying it out as closely to what was agreed as possible.

**The governments should jointly consider setting up a governmental high-level economic commission that would gather regularly.**

The role of such commissions in bilateral economic relations is to discuss and agree the strategic collaboration priorities and initiatives between the governments, facilitating mutual business and exchange.

Currently, no such commission has been foreseen in the existing bilateral agreements. Yet, setting up one could do much good in the joint planning of governmental and business delegation visits, the development and monitoring of key collaboration initiatives in various areas (like the ones proposed above), etc. The commission could consist of high-level officials from both countries as well as industry and other stakeholder associations (including academic representatives).

As such, the governments of Estonia and India should consider drafting and signing the agreement for such commission to be initiated – especially if the relations do take off as suggested in the current report.

**Both countries could expand and better employ the network of honorary consuls.**

Estonia currently has consuls in the New Delhi and Mumbai regions, but there are various other business and academic hotspots that need to be covered in India. At the same time, India still has no honorary consul in Estonia who could promote India opportunities and assist in consular matters here.

In addition, their role should be reconsidered by both sides. Honorary consuls can do much to assist the advancing of business and relations between the countries by engaging actively for facilitating contacts, organising promotional or other events and missions. As they are chosen from the business or academic leaders of their geographical area, they can leverage their network and connections to make business deals happen or get universities acquainted. That would also give them a stronger and more positive role compared to the current purely consular one of assisting the citizens in their emergencies in the other country.

**Both countries should move forward quickly towards the full ratification and entry-into-force of the Agreement for the Avoidance of Double Taxation that was signed in September 2011.**

Such agreements are the cornerstone of investor confidence towards investing in another country, and they can greatly facilitate business, trade and financial flows. As such agreements are usually also rather straightforward, there should be no obstacle on either side to move forward promptly with completing the necessary ratification procedures that will allow the agreement to enter into force. Then, it can start to function as the important enabler of mutual business between Estonia and India that it is intended to be.

**The Government of Estonia could do more to push at EU level for the development of relations between India and Europe.**

Within several thematic collaboration areas, it was found above that the Estonian government should have an interest for the development of collaboration schemes between the EU and India. It should also do more to propose and champion such initiatives in the areas of its core collaboration interest (like cyber security or e-governance).

In addition, Estonia could support more vocally the common EU-level initiatives that do not necessarily offer a specific benefit to Estonia but lead to more exchange and business between India and the EU as a whole. This would allow for the bilateral partnership between India and Estonia to deepen in the process.

For example, Estonia could be more active on the EU side to push and work towards an agreement on free-trade between the EU and India, which has been rather stuck for some time.

**The Embassy of India and Enterprise Estonia could work together to facilitate the creation of an Estonia-India Chamber of Commerce.**

Such bilateral business associations or chambers of commerce serve as networking and contact making organisations, sometimes offering certain market entry related support services. They are often very useful as the first reference and contact point for potential investors and exporters looking for partners or information. The leaders of such associations usually act as unofficial ambassadors for promoting mutual business opportunities, enticing investors, etc.

Once the few first larger investors from India have entered, the Embassy of India together with Enterprise Estonia could work towards encouraging the creation of an Estonia-India Chamber of Commerce. This should unite both Indian businesspeople who are active or interested in doing business in Estonia and Estonians who are doing likewise in India. In addition, companies that offer useful consulting or support services (like law or accountancy firms) should be invited to join as well.

This association should aim to become the heart of mutual business and investment activity, facilitating contacts and partnerships both ways. It can also importantly co-operate with the already active Indian Cultural Association of Estonia in arranging events and communication, offering a welcoming community for new businessmen and specialists from India.

In addition, with the assistance of the Embassy of Estonia in India, they can also launch a charter or organise information sessions and social events in India in the future.

### Recommendations for the Estonian government for advancing relations with India or other new partners in the future:

**The government has a leadership role to play when the existing relations and bottom-up interest are meagre but the relationship potential is large and strategically important.**

As Estonian Development Fund's experience during the Estonia-India foresight project has shown, once someone brings and promotes knowledge about opportunities and offers assistance to take the first steps, interest from bottom-up will follow. Therefore, in strategic future partnerships, the Estonian government should lead the way in undertaking future-looking studies to identify the most promising areas and necessary ways for the relationship to develop. It rarely pays to wait for ground-level interest to accidentally emerge by itself.

The key lies in setting targets on determined interests and practical follow-up initiatives as concretely as possible, involving the stakeholders themselves very closely in the process. Then there is hope that actual collaboration will indeed pick up. In the implementation phase, the government should hold the role of a co-ordinator and supervisor to make sure that all goes to plan.

Namely, achieving significant results will often take time and effort, if things are indeed starting from a very low level of initial exchange and experience. Patient and steady commitment on the government's behalf has proven to bring results in other countries, and there is no reason why it should be different in the case of Estonia.

**In terms of economic co-operation, the educational, research, trade and investment interests collide more and more – leading to the need to define and pursue them in an intertwined manner.**

In the case of India, it has been proposed in this study that the key areas for collaboration in business, higher education and research co-operation should be in the technology fields like ICT, biotech, cleantech. In these areas, Estonia also has good potential and high interest in attracting foreign investors to the country.

Such interwoven interests are more and more the case in the increasingly talent- and knowledge-based modern economy. Therefore, the identification of economic interests and collaboration potential should always cover education, research, trade and investment matters in unison. In addition, the policy planning and implementation should function across these various policy areas and measures to ensure the required co-ordination. Furthermore, foreign policy and diplomacy has to be ready to advance the economic interests in such a comprehensive manner.

If collaboration and relations do take off with India, as is envisioned in the current project, the Estonian side should consider opening additional representative offices in India in the future. Again, these should not solely be aimed at export assistance or investor promotion work as is usual. Rather, they should also cover activities in the areas of business promotion, educational exchange and research co-operation.

**The Estonian embassy in India should not just serve as a representation post, but as the active middle-point of networks and exchanges – with an appropriate mission, methods of operation and staff level.**

The Estonian economic relationship with India can receive a significant boost as the government has decided to open its embassy in New Delhi for the first time. However, the mere act of opening up an embassy will not suffice in realising the potential of mutual relations and carrying out the agenda proposed in this report. Instead, good consideration has to be given now on how to make this new Embassy function best to that end. This opening of the embassy in New Delhi offers a good chance to craft out the suitable role and methods for carrying out foreign economic policy in India and beyond.

One of the main proposals in the current report is that the best opportunities in business, higher education and research collaboration are centred in the fields of ICT, biotech and cleantech. As such, there is a need to utilise the synergy as well as effectively co-ordinate for full benefit among the fronts of economic, educational and science diplomacy and policy. For example, it makes sense to undertake awareness-raising work jointly in India for all the areas if the promoted strengths and co-operation interests are indeed combined.

Given this, the new embassy in India should not serve as the usual diplomatic outpost. Experiences from countries like Finland show that the most successful operating model for advancing economic interests from the initial low level of exchange is to function as the heart of the network[16].

The Embassy should be the contact point as well as contact provider and co-ordinator to all agencies and stakeholders involved or interested in relations with the other country – in both India as well as at home in Estonia. It is especially so if considering that the core interests are horizontal across policy areas and collaboration initiatives, as is the case with the proposed prioritisation of technology-related business areas.

In the form of such a network node, the embassy can assist in the areas that are of key importance for establishing the partnership: whether identifying potential partners, making contact or due diligence on them, arranging visits or events. A small and free-of-charge incubation centre for Estonian companies or universities would make the new embassy even more effective in helping to establish partnerships in India.

In addition, the state could ideally develop and offer a small demo centre facility in which the companies or researchers can set up their demonstration products and services to entice the Indian partners or buyers. For example, there could easily be a small ICT demo centre in the New Delhi embassy to showcase Estonian e-governance solutions.

Upon the success of such activity model, the New Delhi embassy can then become a pilot and role model when rethinking other Estonian embassies or opening new additional ones. By testing the new kinds of economic diplomacy approaches in this manner, there is a chance to make the whole Estonian foreign service more effective in advancing economic relations and business support.

Carrying out such an active foreign economic policy agenda is dependent on having dedicated staff and resources in the new embassy. Currently, there is no plan yet to send an economic diplomat to the soon-to-be-opened Estonian embassy in New Delhi. However, given the potential and the extent of possible work, resources have to be found to send at least one staff member to cover the full scale of economic affairs in India.

Furthermore, the additional economic diplomacy staff member(s) should have competences and duties that span all the required fields of education, research and innovation, trade and investment – not just the latter two as is at best the usual case for economic diplomats.

**Estonia should make visa and residential or work permit application processes more simple, so that it would not become an obstacle to the development of relations with countries outside the EU – including the potential relations with India.**

The above-described steps to advance mutual business and collaborations between India and Estonia strongly feature the desire to bring more Indian businessmen, students, faculty and researchers to visit,

16 The FinNode model established in collaboration between the Finnish research and innovation agencies, could offer valuable lessons and a role model for this – http://www.finnode.fi/en/india/

work and stay in Estonia. In the past, this has been rather cumbersome, as the visa and in particular the residential and work permit application procedures have been too complicated and unduly strict.

Given the potentially wide economic and other benefits that increased business and co-operation can bring to Estonia, the government should work hard to ease the related entry and application processes. This should not be done just for India, but considered in terms of several countries remaining outside the border-free EU Schengen area.

At the very least, careful consideration of simpler and faster procedures should be considered for the businessmen, experts and students of priority collaboration areas like ICT. In these areas, Estonia needs all the talented staff, researchers and capital it can attract.

Alternatively, 'fast-track' procedures can be perhaps offered to certain professions like faculty and top specialists of foreign-invested companies. Otherwise, there is a chance that such joint projects and investments might not come to Estonia at all if the people associated with them cannot be sure of being allowed in the country.

Finally, as a specific matter, the government should establish and stick to a one-time-check rule. If a student or employee has once been cleared for entry and a residence or work permit, there is no need to do the same level of checking and procedures again. Instead, for students and staff their visa and permit extensions or new issuances could be automatic instead. This would do much to facilitate Estonia's attractiveness among the talented workforce, including that from India. ■

# Recommended first steps towards realising the potential for co-operation between Estonia and India

The full agenda proposed in the promising co-operation areas is extensive. It covers recommendations aimed at various institutions and stakeholders for activities that can place the business, educational or research collaborations on a long-term footing.

That said, because not everything can be done immediately, several activities have been proposed as priorities. These steps can open up other venues of exchange or offer a chance to test out new approaches and develop initial contacts to get broader collaborations off the ground.

These recommendations constitute a proposal for both the Estonian and Indian governments and stakeholders for a practical set of first steps to take, in order to start with realising the potential for co-operation the two countries have.

## 1. FOR BUSINESS OPPORTUNITIES FOR INDIAN COMPANIES IN ESTONIA:

- **Initial contacts with Indian companies in nearby markets.** Enterprise Estonia, the national investment promotion agency, should work towards identifying Indian companies in the Nordic and Russian markets with a potential interest in relocating or expanding to Estonia. The next step is to proactively establish contact to offer attractive value propositions to such companies.
- **Regular promotion in India.** Enterprise Estonia and the soon-to-open Embassy of Estonia in India should cooperate to establish a programme of annual or biannual targeted promotion work in business circles and target regions in India (done in combination with governmental or business delegation visits).
- **Business participation in official visits.** Indian governmental representatives should involve delegations of Indian companies more in their visits to Estonia, in co-operation with relevant business associations and already for the visits planned in 2012–2013.
- **Delegations from India.** Indian companies should also visit Estonia more to seek out business and partners there and also offer their own products and services as well – especially in the identified most promising tech-related business areas. For example, NASSCOM could take Indian ICT companies on a business/market development visit to Estonia.

## 2. BUSINESS OPPORTUNITIES FOR ESTONIAN COMPANIES IN INDIA:

- **Getting to know India.** Leading and innovative Estonian companies should start researching the India market and seeking partnership (including outsourcing) opportunities more actively – especially in co-operation with each other within cluster groups, for example.

  A large general business delegation should visit India at the launch of the Estonian embassy in New Delhi. Groups of companies from the most promising areas of ICT, biotech and cleantech should go on sectoral market study and partnering missions as well.
- **Pilot experience in outsourcing.** Pilot projects could be undertaken by groups of Estonian companies or associations to jointly gain experience of outsourcing partnerships with India. Estonian ICT companies could consider sourcing parts of the planned joint project on the national eReceipt system development from India, for example.
- **Information services.** The planned Asian information centre at Enterprise Estonia should, from the outset, offer market intelligence and information services about India, at least in the most promising technology-related business areas.
- **Guide to doing business in India.** The planned Asian information centre and the Estonian Chamber of Commerce and Industry could commission and publish a guide for Estonian companies on doing business in India, made available electronically.
- **Creation of a consulting network.** Enterprise Estonia should also work towards establishing consulting arrangements with service providers in the Indian market, using the assistance of the soon-to-open Embassy of Estonia.
- **Co-operation agreements in tech fields.** Both governments should jointly prepare and sign agreements or memorandums of co-operation in the most promising technology business areas. These would laydown the foundation for sourcing demo solutions from each other's companies – starting with the ICT and biotech fields.

## 3. EDUCATIONAL EXCHANGE AND RESEARCH CO-OPERATION:

- **The bilateral partnering of institutions.** Institutions from both countries should start searching for

a partner among, and begin (thematic) collaboration discussions with institutions in the other country, based on their core areas of interest and strength. Once this develops into practical co-operation initiatives or at least first (pilot) projects, institutional agreements can then be signed to cement the plans.

- **Governmental visits.** Both governments could facilitate the partner search and efforts to make contacts of individual institutions by arranging for joint visits. The Estonian Minister of Education and Research could lead a high-level delegation from Estonian universities and institutes to India already in autumn 2012.
- **Joint events.** Both governments and the institutions themselves should arrange more bilateral (or multilateral) scientific events, especially in the most promising collaboration areas of ICT, biotech and cleantech (but also medicine and others).
- **Educational marketing in India.** In order to attract more Indian students to study in Estonia, the Estonian universities should start (joint) marketing activities in India, especially over internet-based channels. In addition, the schools should develop more English-based study or internship programmes in the priority technology-related areas (especially in biotech and medicine).
- **New programme offerings.** As one particular opportunity, Estonian universities could organise and offer more summer study and internship programmes to Bachelor's level students from India. A pilot project with a top-level Indian university is being initiated in the ICT area.
- **National marketing coordination.** Archimedes Foundation and the newly-established Estonian Research Agency should coordinate the individual institutions towards joint marketing and partnership search efforts. This should include the creation and execution of an India-oriented marketing strategy as well as information centre services and the organisation of networking events.
- **Targeted stipends.** The governments should offer more stipends for talented students to study in priority areas in both countries, based on bilateral governmental agreements. The Estonian government should extend and expand the funding for foreign students studying in key Master's and Doctoral programmes.
- **Joint cyber security chair.** The initiative of bringing an Indian cyber security professor to Tallinn University of Technology, agreed in principle between the educational ministers of Estonia and India, should be followed through as soon as possible.
- **Student-company meeting platform.** The Estonian government should set up a collaboration platform for companies and universities. It would allow offering systematically to Indian students the internship opportunities at Estonian companies during their studies, and job or further study positions before the graduation.
- **Joint scientific committee.** In the research sphere, both governments should start the work of the joint scientific committee foreseen in the existing bilateral Agreement on Co-operation in the Fields of Science and Technology.
- **Targeted funding for research co-operation.** The Estonian government should consider increasing the level and variety of funding aimed at research co-operation with India. The Estonian and Indian governments could jointly develop a pilot funding scheme aimed at bilateral projects – with a possible focus on the most promising technology areas, such as biotechnology where the greatest interest for such a pilot currently exists.

## 4. TOURISM:

- **Direct air connection.** The Estonian government should work towards direct flight connectivity between India and Estonia, starting from the signing of bilateral aviation agreement with the Indian government.
- **Indian tourism agencies to Estonia.** Indian tourism agencies or outbound tourism operators should consider investing directly into setting up an office in Estonia. The Estonian investment and promotion agencies should jointly and actively work towards making this a reality.
- **Estonia as a location for a Bollywood movie.** From the Estonian side, a particularly attractive promotion opportunity would to become a shooting location for a popular Bollywood movie. The government could develop a relevant pilot promotional project.

## 5. HORIZONTAL SUPPORT FOR ALL AFOREMENTIONED INITIATIVES:

- **Frequent official visits.** There should be more high-level official governmental visits in both directions, with a tentative calendar agreed between the governments sufficiently in advance.
- **Joint economic commission.** The two governments should consider the establishment of an inter-government high-level joint economic commission that would meet regularly. Its role should be to coordinate and advance the agenda and initiatives of economic co-operation.
- **Double Taxation Agreement ratification.** Both countries should move forward fast towards the full ratification and entry-into-force of the Agreement for the Avoidance of Double Taxation that was signed in September 2011.
- **Embassy as the centre of bilateral networks.** The Estonian embassy in India should serve not just as a representation post, but as an active hub of networks and exchanges with an appropriate mission, methods of operation and staff level.

# Annex 1
## The Stages and Main Events of the Estonia-India Foresight Project

Estonian Development Fund's (EDF) first task within the project was to determine the existing foundation of economic relations between Estonia and India, based on which future co-operation can be built. The aim was to assemble a statistical picture and also learn in anecdotal detail about experiences and readiness for mutual trade and investments as well as educational and R&D co-operation.

This stage lasted from February to June 2011 and involved various background research activities such as contact-making, short interviews and meetings with companies and state agencies on both sides (including a visit to India in April). Furthermore, information was gathered through public documents and first-hand discussions on the initiatives and aims towards economic co-operation with India of countries neighbouring Estonia (Finland, Sweden, Latvia, Lithuania, Poland, Russia and Denmark).

In the second stage from May to September 2011, EDF carried out a thorough analysis of the future trends of the Indian economy – with a perspective of 2015–2025 in sight. This was mostly done as desk research of available secondary sources, including various overview and trend reports from international consulting companies, multilateral organisations and governmental agencies (especially from India). EDF also commissioned some primary research for background knowledge. For example, a survey about the opinions and plans of potential outward investors from India was jointly commissioned with the Estonian Investment and Trade Agency, and it was carried out by a leading investor consultancy firm from India.

Based on the findings from both of the previous stages, between August and November 2011 a comprehensive synthesis and follow-up analysis were undertaken to identify several promising areas for collaboration and to develop ideas on necessary follow-up steps.

Most importantly, a series of thematic workshops and meetings were organised. The aim was to increase the interest towards trends and opportunities in India among key business, academic and governmental stakeholders from Estonia in areas of largest co-operation potential. The possible required follow-up initiatives were jointly brainstormed. In most cases, the events were organised in close co-operation with institutions in charge of relevant international relations work on the Estonian side (for example, Archimedes Foundation in the area of R&D and higher education), in order to lay the ground for uptake of any follow-up initiatives.

The last stage of the project lasted from December 2011 to April 2012. It concentrated on calibrating the final recommendations, developing of various concrete collaboration pilot initiatives with relevant stakeholders in both Estonia and India (including a visit to India in March 2012) and drafting of the final report. In the end, the findings and recommendations were disseminated among the key governmental, academic and business decision-makers of both countries to ensure the uptake of the proposed agenda.

The main events organised during the project were as follows:

| | |
|---|---|
| 25 February 2011 | **Kick-off seminar** – to discuss the aims of the project and the context of current relations.<br><br>Participants: Indian businessmen active in Estonia and a few Estonian companies with some experience of India market, representatives of Estonian ministries and state agencies. |
| March–April 2011 | **Series of webinars** on business culture and trends of India with Dr Amit Kapoor (Institute of Competitiveness, India).<br><br>Participants: Estonian businessmen interested in the Indian market. |
| 1 April 2011 | **Coffee morning event** – introduction of main future trends of the Indian economy and the first discussion on mutual co-operation potential.<br><br>Participants: representatives of Estonian ministries and state agencies, Estonian company executives either engaged or interested in business with India.<br><br>Keynote speaker: Dr Amit Kapoor (Institute of Competitiveness, India). |
| 14–22 April 2011 | **Delegation visit to India** – to initiate contacts with potential co-operation partners (business organisations and state agencies) on the Indian side, as well as to learn first-hand views on India's future economic directions.<br><br>Participants: EDF, Estonian Ministry of Economic Affairs and Communications and Estonian Ministry of Foreign Affairs representatives.<br><br>The delegation met with Department of Biotechnology, Ministry of External Affairs, Department of Industrial Policy and Promotion, NASSCOM, Federation of Indian Chamber of Commerce and Industry, Invest in India, European Business and Technology Centre, FinNode India, World Bank in India, Indian STEPs and Business Incubators' Association, Birla Institute of Technology & Science (BITS-Pilani). |
| 24 August 2011 | **Thematic workshop** on Estonia-India co-operation potential **in higher education and R&D.**<br><br>Organised together with the Archimedes Foundation, the state agency in charge of higher education and R&D internationalisation in Estonia.<br><br>Participants: representatives of all the main Estonian universities and research institutions, relevant state agencies.<br><br>External speaker: Dr Mirja Juntunen, Director of the Nordic Centre in India. |
| 25 August 2011 | **Thematic discussion** on Estonia-India co-operation potential **in tourism.**<br><br>Organised together with Estonian Ministry of Economic Affairs and Communications, within tourism-related discussions of the future governmental Asia strategy.<br><br>Participants: representatives of Estonian tourism companies and agencies. |
| 30 August 2011 | **Coffee morning event** – introduction of bottom-of-the-pyramid markets, including India, with a discussion on relevant business opportunities for Estonian companies.<br><br>Participants: various Estonian companies and state agencies, also NGOs.<br><br>External speaker: Christian Aspegren, Global Venture Lab and Finnish Health Kiosk initiative in India (a platform for BOP innovation). |
| 19 September 2011 | **Hosting the visit of Shri Kapil Sibal**, Minister of Human Resource Development as well as Minister of Communications and Information Technology of India – discussion of the main co-operation points and interests in higher education and ICT. |
| 21 September 2011 | **Thematic workshop** on Estonia-India co-operation potential **in biotechnology.**<br><br>Organised together with the Estonian Biotechnology Association, the industry body supporting and representing the sector.<br><br>Participants: representatives of the main Estonian biotechnology research institutions and companies, Enterprise Estonia.<br><br>External speaker: Auli Pere, Chief Adviser of TEKES, Finland (head of India activities and biotech co-operation). |

| | |
|---|---|
| 10 October 2011 | **Thematic workshop** on Estonia-India co-operation potential **in cleantech**.<br><br>Participants: representatives of Estonian companies engaged in cleantech research and business, relevant state agencies and universities.<br><br>External speaker: Santtu Hulkkonen, director of Cleantech Finland. |
| 22 November 2011 | **Business seminar "From Estonia to India market: whether and how?"**<br><br>Organised together with the Estonian Chamber of Commerce and Baltic Innovation Agency.<br><br>Participants: representatives of 60+ Estonian companies interested in India market entry.<br><br>External speaker: Poul Jensen, Director of the European Business and Technology Centre in India. |
| 17 February 2012 | **Thematic discussion** on Estonia-India co-operation potential **in logistics.**<br><br>Participants: Estonian Logistics Cluster board members (representatives of all the main Estonian logistics companies). |
| 5–9 March 2012 | **Delegation visit to India** – to introduce foresight project results on co-operation potential to possible Indian partners, as well as elaborate the concrete collaboration initiatives.<br><br>Participants: EDF, Estonian Ministry of Economic Affairs and Communications, Estonian Ministry of Foreign Affairs, Enterprise Estonia/Estonian Investment and Trade Agency, eGovernance Academy representatives.<br><br>The delegation head was Mr Marko Mihkelson, Chairman of External Affairs Committee of the Riigikogu (Estonian parliament).<br><br>The delegation met with Department of Electronics and Information Technology, Department of Biotechnology, Ministry of Civil Aviation, Ministry of External Affairs, Government of Maharashtra, Birla Institute of Technology & Science (BITS-Pilani), IIT Bombay, Jet Airways, Federation of Indian Chamber of Commerce and Industry, Europe-India SME Business Council, Maharashtra Chamber of Commerce Industries and Agriculture, Swedish Trade Council, FinNode India, various biotech consulting companies and potential Indian investors. |

For a number of these events, relevant materials (including presentation slides and videocasts) can be found on the Estonia-India foresight project website at http://www.arengufond.ee/eng/foresight/india.

# Annex 2
# Estonia-India Foreign Trade in Commodities in 2011

## Annex 2.1. Estonian exports to India by commodity groups, sorted by relative size

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total exports to India (%)* |
|---|---|---|---|---|---|
| Commodities total | 34 846 165 | 88.7% | 18.0% | 0.29% | 100.00% |
| *Exports by major categories* | | | | | |
| XVI Machinery and mechanical appliances; Electrical equipment; Parts thereof; Sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles | 13,992,937 | 333.5% | 65.6% | 0.42% | 40.16% |
| X Pulp of wood or of other fibrous cellulosic material; Recovered (waste and scrap) paper or paperboard; Paper and paperboard and articles thereof | 8,864,196 | -7.2% | 30.7% | 2.82% | 25.44% |
| XV Base metals and articles of base metal | 6,114,570 | 80.2% | -7.4% | 0.59% | 17.55% |
| VIII Raw hides and skins, leather, furskins and articles thereof; Saddlery and harness; Travel goods, handbags and similar containers; Articles of animal gut (other than silkworm gut) | 1,612,330 | 2,767.3% | 108.8% | 3.70% | 4.63% |
| XVIII Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; Clocks and watches; Musical instruments; Parts and accessories thereof | 1,544,790 | 62.5% | 64.8% | 0.61% | 4.43% |
| IX Wood and articles of wood; Wood charcoal; Cork and articles of cork; Manufactures of straw, of esparto or of other plaiting materials; Basketware and wickerwork | 1,459,152 | 141.3% | 106.5% | 0.16% | 4.19% |
| VI Products of the chemical or allied industries | 1,024,436 | 203.9% | 135.6% | 0.18% | 2.94% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total exports to India (%)* |
|---|---|---|---|---|---|
| V Mineral products | 80,881 | -33.8% | -10.2% | 0.00% | 0.23% |
| IV Prepared foodstuffs; Beverages, spirits and vinegar; Tobacco and manufactured tobacco substitutes | 36,011 | -43.5% | 169.2% | 0.01% | 0.10% |
| XI Textiles and textile articles | 30,245 | 345.7% | -36.7% | 0.01% | 0.09% |
| XIV Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; Imitation jewellery; Coin | 26,985 | 17.4% | 100,0% | 0.02% | 0.08% |
| VII Plastics and articles thereof; rubber and articles thereof | 26,529 | -43.1% | 63.8% | 0.01% | 0.08% |
| XX Miscellaneous manufactured articles | 20,315 | -33.7% | -0.5% | 0.00% | 0.06% |
| XIII Articles of stone, plaster, cement, asbestos, mica or similar materials; Ceramic products; Glass and glassware | 11,713 | -75.6% | 100.0% | 0.01% | 0.03% |
| XXII Other products | 1,000 | 415.7% | -11.2% | 0.00% | 0.00% |
| XII Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; Prepared feathers and articles made therewith; Artificial flowers; Articles of human hair | 76 | 100.0% | 100.0% | 0.00% | 0.00% |
| I Live animals; animal products | 0 | 0.0% | 0.0% | 0.00% | 0.00% |
| II Vegetable products | 0 | 0.0% | -100.0% | 0.00% | 0.00% |
| III Animal or vegetable fats and oils and their cleavage products; Prepared edible fats; Animal or vegetable waxes | 0 | 0.0% | 0.0% | 0.00% | 0.00% |
| XVII Vehicles, aircraft, vessels and associated transport equipment | 0 | -100.0% | -100.0% | 0.00% | 0.00% |
| XIX Arms and ammunition; parts and accessories thereof | 0 | 0.0% | 0.0% | 0.00% | 0.00% |
| XXI Works of art, collectors' pieces, and antiques | 0 | 0.0% | 0.0% | 0.00% | 0.00% |
| *Exports by finer categories* | | | | | |
| ..85 Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessiories of such articles | 13,189,018 | 860.4% | 134.8% | 0.54% | 37.85% |
| ..47 Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard, paper and paperboard and articles of thereof | 8,543,473 | 17.1% | 100.0% | 11.42% | 24.52% |
| ..72 Iron and steel | 4,860,896 | 138.1% | -7.3% | 1.13% | 13.95% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total exports to India (%)* |
|---|---|---|---|---|---|
| ..41 Raw hides and skins (other than furskins) and leather | 1,612,330 | 2,767.3% | 108.8% | 17.76% | 4.63% |
| ..90 Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus | 1,544,790 | 90.0% | 64.8% | 0.63% | 4.43% |
| ..44 Wood and articles of wood; wood charcoal | 1,459,152 | 141.3% | 106.5% | 0.16% | 4.19% |
| ..84 Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof | 803,920 | -56.7% | 5.0% | 0.09% | 2.31% |
| ..76 Aluminium and articles thereof | 735,285 | -6.2% | 6.0% | 0.74% | 2.11% |
| ..28 Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals of radioactive elements or of isotopes | 557,750 | 100.0% | 100.0% | 0.78% | 1.60% |
| ..29 Organic chemicals | 458,954 | 39.7% | 106.1% | 0.42% | 1.32% |
| ..48 Paper and paperboard; articles of paper pulp, of paper or of paperboard | 318,393 | -85.8% | -24.9% | 0.21% | 0.91% |
| ..78 Lead and articles thereof | 223,627 | 88.5% | 100.0% | 1.02% | 0.64% |
| ..74 Copper and articles thereof | 142,751 | -45.5% | -32.0% | 0.35% | 0.41% |
| ..79 Zinc and articles thereof | 141,354 | 2.1% | 14.2% | 7.22% | 0.41% |
| ..27 Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes | 69,160 | -22.8% | -9.8% | 0.00% | 0.20% |
| ..21 Miscellaneous edible preparations | 30,960 | -48.7% | 100.0% | 0.04% | 0.09% |
| ..71 Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin | 26,985 | 17.4% | 100.0% | 0.02% | 0.08% |
| ..39 Plastics and articles thereof | 24,961 | -46.4% | 62.1% | 0.01% | 0.07% |
| ..63 Other made-up textile articles; sets; worn clothing and worn textile articles; rags | 21,100 | 100.0% | 100.0% | 0.06% | 0.06% |
| ..95 Toys, games and sports requisites; parts and accessories thereof | 17,690 | -19.8% | -2.8% | 0.03% | 0.05% |
| ..26 Ores, slag and ash | 11,721 | -64.0% | -12.3% | 0.44% | 0.03% |
| ..70 Glass and glassware | 11,713 | -75.6% | 100.0% | 0.01% | 0.03% |
| ..73 Articles of iron or steel | 8,579 | -47.3% | 100.0% | 0.00% | 0.02% |
| ..51 Wool, fine or coarse animal hair; horsehair yarn and woven fabric | 6,026 | 19.6% | -1.5% | 0.19% | 0.02% |
| ..22 Beverages, spirits and vinegar | 5,034 | 49.8% | 93.9% | 0.00% | 0.01% |
| ..35 Albuminoidal substances; modified starches; glues; enzymes | 3,731 | -38.3% | 100.0% | 0.03% | 0.01% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total exports to India (%)* |
|---|---|---|---|---|---|
| ..32 Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring matter; paints and varnishes; putty and other mastics; inks | 3,230 | 768.8% | 100.0% | 0.00% | 0.01% |
| ..96 Miscellaneous manufactured articles | 2,626 | -0.6% | 100.0% | 0.01% | 0.01% |
| ..49 Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans | 2,330 | -55.7% | 100.0% | 0.00% | 0.01% |
| ..82 Tools, implements, cutlery, spoons and forks of base metal; parts thereof of base metal | 1,901 | 186.4% | 100.0% | 0.01% | 0.01% |
| ..62 Articles of apparel and clothing accessories, not knitted or crocheted | 1,613 | -7.6% | 100.0% | 0.00% | 0.00% |
| ..40 Rubber and articles thereof | 1,568 | 3,769.7% | 100.0% | 0.00% | 0.00% |
| ..59 Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use | 1,474 | 100.0% | 100.0% | 0.02% | 0.00% |
| ..99 Supplies for foreign vessels | 1,000 | 415.7% | -11.2% | 0.00% | 0.00% |
| ..38 Miscellaneous chemical products | 771 | -63.6% | 100.0% | 0.00% | 0.00% |
| ..83 Miscellaneous articles of base metal | 176 | 100.0% | 100.0% | 0.00% | 0.00% |
| ..65 Headgear and parts thereof | 76 | 100.0% | 100.0% | 0.00% | 0.00% |
| ..61 Articles of apparel and clothing accessories; knitted or crocheted | 32 | 100.0% | 100.0% | 0.00% | 0.00% |
| ..24 Tobacco and manufactured tobacco substitutes | 18 | 100.0% | 100.0% | 0.00% | 0.00% |

**SOURCE:** Estonian Development Fund calculations based on Statistics Estonia, *Exports and Imports of Goods by Countries* (in Estonian), http://bit.ly/JiFlri

# Annex 2.2. Estonian imports from India by commodity groups, sorted by relative size

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total imports from India (%)* |
|---|---|---|---|---|---|
| Commodities total | 26 756 222 | 71.4% | 26.0% | 0.21% | 100.0% |
| *Imports by major categories* | | | | | |
| XVI Machinery and mechanical appliances; Electrical equipment; Parts thereof; Sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles | 12,134,534 | 132.3% | 93.1% | 0.35% | 45.4% |
| XI Textiles and textile articles | 3,111,883 | 20.2% | 1.1% | 0.58% | 11.6% |
| XV Base metals and articles of base metal | 2,784,746 | 83.2% | 30.0% | 0.25% | 10.4% |
| II Vegetable products | 2,246,022 | 79.9% | 20.9% | 0.90% | 8.4% |
| VI Products of the chemical or allied industries | 1,807,339 | 93.4% | 23.8% | 0.19% | 6.8% |
| XIII Articles of stone, plaster, cement, asbestos, mica or similar materials; Ceramic products; Glass and glassware | 1,715,872 | 56.2% | 91.9% | 0.96% | 6.4% |
| VII Plastics and articles thereof; rubber and articles thereof | 922,083 | -30.7% | 18.3% | 0.15% | 3.4% |
| IV Prepared foodstuffs; Beverages, spirits and vinegar; Tobacco and manufactured tobacco substitutes | 611,451 | 40.0% | 4.1% | 0.09% | 2.3% |
| XIV Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; Imitation jewellery; Coin | 401,849 | -0.3% | 25.4% | 0.38% | 1.5% |
| X Pulp of wood or of other fibrous cellulosic material; Recovered (waste and scrap) paper or paperboard; Paper and paperboard and articles thereof | 225,138 | 3.1% | 90.8% | 0.10% | 0.8% |
| VIII Raw hides and skins, leather, furskins and articles thereof; Saddlery and harness; Travel goods, handbags and similar containers; Articles of animal gut (other than silkworm gut) | 188,867 | 67.5% | -9.1% | 0.27% | 0.7% |
| XII Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; Prepared feathers and articles made therewith; Artificial flowers; Articles of human hair | 149,926 | -36.4% | -6.5% | 0.16% | 0.6% |
| XX Miscellaneous manufactured articles | 127,680 | 43.9% | -2.2% | 0.06% | 0.5% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total imports from India (%)* |
|---|---|---|---|---|---|
| IX Wood and articles of wood; Wood charcoal; Cork and articles of cork; Manufactures of straw, of esparto or of other plaiting materials; Basketware and wickerwork | 74,801 | 29.0% | 12.9% | 0.03% | 0.3% |
| XVIII Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; Clocks and watches; Musical instruments; Parts and accessories thereof | 74,674 | 157.6% | 74.1% | 0.04% | 0.3% |
| I Live animals; animal products | 65,265 | 100.0% | 102.5% | 0.03% | 0.2% |
| V Mineral products | 51,557 | 31.3% | 29.4% | 0.00% | 0.2% |
| XVII Vehicles, aircraft, vessels and associated transport equipment | 49,158 | 8.8% | 2.3% | 0.00% | 0.2% |
| XXII Other products | 11,388 | 100.0% | - | 1.04% | 0.0% |
| III Animal or vegetable fats and oils and their cleavage products; Prepared edible fats; Animal or vegetable waxes | 1,989 | 100.0% | 22.4% | 0.01% | 0.0% |
| XIX Arms and ammunition; parts and accessories thereof | 0 | 0.0% | -100.0% | 0.00% | 0.0% |
| XXI Works of art, collectors' pieces, and antiques | 0 | -100.0% | 0.0% | 0.00% | 0.0% |
| *Imports by finer categories* | | | | | |
| ..85 Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessiories of such articles | 11,966,467 | 172.6% | 103.7% | 0.53% | 44.7% |
| ..72 Iron and steel | 2,336,228 | 75.4% | 118.8% | 0.48% | 8.7% |
| ..68 Articles of stone, plaster, cement, asbestos, mica or similar materials | 1,696,488 | 57.0% | 111.9% | 2.65% | 6.3% |
| ..09 Coffee, tea, mate, spices | 1,583,694 | 77.2% | 47.3% | 3.41% | 5.9% |
| ..33 Essential oils and resinoids; perfumery, cosmetic or toilet preparations | 1,184,756 | 196.4% | 88.5% | 1.49% | 4.4% |
| ..59 Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use | 839,578 | 96.1% | - | 3.88% | 3.1% |
| ..40 Rubber and articles thereof | 696,834 | 8.7% | 24.6% | 0.56% | 2.6% |
| ..07 Edible vegetables and certain roots and tubers | 534,612 | 90.8% | 83.8% | 1.31% | 2.0% |
| ..21 Miscellaneous edible preparations | 460,086 | 90.4% | 21.8% | 0.52% | 1.7% |
| ..55 Man-made staple fibres | 430,165 | -20.3% | 6.1% | 0.57% | 1.6% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total imports from India (%)* |
|---|---|---|---|---|---|
| ..71 Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin | 401,849 | -0.3% | 25.4% | 0.38% | 1.5% |
| ..62 Articles of apparel and clothing accessories, not knitted or crocheted | 401,498 | 79.5% | 45.7% | 0.30% | 1.5% |
| ..54 Man-made filaments | 356,776 | 15.6% | 61.4% | 0.96% | 1.3% |
| ..52 Cotton and articles thereof | 344,689 | 151.8% | -23.5% | 0.99% | 1.3% |
| ..36 Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations | 244,147 | -39.4% | -2.8% | 4.42% | 0.9% |
| ..29 Organic chemicals | 242,470 | 178.6% | 24.5% | 0.16% | 0.9% |
| ..39 Plastics and articles thereof | 225,249 | -67.3% | 7.0% | 0.05% | 0.8% |
| ..63 Other made-up textile articles; sets; worn clothing and worn textile articles; rags | 200,083 | -33.3% | -4.8% | 0.52% | 0.7% |
| ..83 Miscellaneous articles of base metal | 186,070 | 61.4% | -8.0% | 0.28% | 0.7% |
| ..42 Articles of leather; saddlery and harness, travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut) | 180,076 | 85.4% | -9.8% | 0.66% | 0.7% |
| ..49 Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans | 176,503 | 9.3% | 118.1% | 1.00% | 0.7% |
| ..84 Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof | 168,068 | -79.8% | 16.7% | 0.01% | 0.6% |
| ..61 Articles of apparel and clothing accessories; knitted or crocheted | 162,216 | -33.8% | 113.7% | 0.14% | 0.6% |
| ..64 Footwear, gaiters and the like; parts of such articles | 149,636 | -31.6% | -6.5% | 0.18% | 0.6% |
| ..20 Preparations of vegetables, fruit, nuts or other parts of plants | 124,017 | -36.3% | -15.4% | 0.27% | 0.5% |
| ..73 Articles of iron or steel | 123,144 | 242.9% | -1.6% | 0.04% | 0.5% |
| ..58 Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery | 104,632 | 91.3% | 129.9% | 0.42% | 0.4% |
| ..50 Silk | 99,405 | -40.8% | -5.3% | 29.72% | 0.4% |
| ..44 Wood and articles of wood; wood charcoal | 74,801 | 31.5% | 13.4% | 0.03% | 0.3% |
| ..90 Optical, photographic, cinema-tographic, measuring, checking, precision, medical or surgical instruments and apparatus | 70,980 | 162.7% | 272.8% | 0.04% | 0.3% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total imports from India (%)* |
|---|---|---|---|---|---|
| ..76 Aluminium and articles thereof | 68,075 | 274.8% | 85.6% | 0.07% | 0.3% |
| ..03 Fish and crustaceans, molluscs and other aquatic invertebrates | 65,265 | 100.0% | - | 0.08% | 0.2% |
| ..60 Knitted or crocheted fabrics | 62,121 | 874.4% | -10.9% | 0.33% | 0.2% |
| ..74 Copper and articles thereof | 59,029 | 287.1% | -2.4% | 0.13% | 0.2% |
| ..57 Carpets and other textile floor coverings | 56,616 | -29.9% | -16.7% | 0.97% | 0.2% |
| ..96 Miscellaneous manufactured articles | 56,307 | 62.6% | 38.8% | 0.26% | 0.2% |
| ..25 Salt; sulphur; earths and stone, lime and cement | 51,557 | 31.3% | 29.4% | 0.14% | 0.2% |
| ..32 Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring matter; paints and varnishes; putty and other mastics; inks | 50,923 | 671.5% | 34.9% | 0.05% | 0.2% |
| ..87 Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof | 49,158 | 8.8% | 2.3% | 0.01% | 0.2% |
| ..13 Shellac; gums, resins and other vegetable saps and extracts | 49,020 | 100.0% | - | 1.69% | 0.2% |
| ..48 Paper and paperboard; articles of paper pulp, of paper or of paperboard | 48,635 | -14.6% | 58.9% | 0.02% | 0.2% |
| ..30 Pharmaceutical products | 47,616 | 1,379.6% | -8.7% | 0.02% | 0.2% |
| ..12 Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial and medicinal plants; straw and fodder | 47,058 | -33.8% | -24.1% | 0.30% | 0.2% |
| ..94 Furniture; bedding; mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated nameplates and the like; prefabricated buildings | 39,622 | -6.9% | -16.5% | 0.03% | 0.1% |
| ..28 Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals of radioactive elements or of isotopes | 36,814 | 10.8% | 4.6% | 0.04% | 0.1% |
| ..95 Toys, games and sports requisites; parts and accessories thereof | 31,752 | 175.5% | 7.0% | 0.05% | 0.1% |
| ..56 Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof | 29,959 | -64.6% | -20.2% | 0.16% | 0.1% |
| ..53 Other vegetable fibres; paper yarn and woven fabrics of paperyarn | 24,145 | 90.7% | 18.5% | 0.74% | 0.1% |
| ..08 Edible fruit and nuts; peel of citrus fruit or melons | 23,000 | 4,020.8% | -34.3% | 0.03% | 0.1% |
| ..22 Beverages, spirits and vinegar | 15,753 | 100.0% | - | 0.01% | 0.1% |

| | *Value (EUR)* | *Growth vs 2010 (%)* | *CAGR 2005–11 (%)* | *Share of India in commodity total (%)* | *Share in total imports from India (%)* |
|---|---|---|---|---|---|
| ..70 Glass and glassware | 13,963 | 4.3% | 19.0% | 0.02% | 0.1% |
| ..82 Tools, implements, cutlery, spoons and forks of base metal; parts thereof | 12,200 | 294.3% | -9.1% | 0.02% | 0.0% |
| ..99 Supplies for foreign vessels | 11,388 | 100.0% | - | 1.04% | 0.0% |
| ..41 Raw hides and skins (other than furskins) and leather | 8,790 | -43.9% | - | 0.03% | 0.0% |
| ..11 Products of the milling industry; malt; starches; inulin; wheat gluten | 8,638 | 174.1% | 10.3% | 0.04% | 0.0% |
| ..23 Residues and waste from the food industries; prepared animal fodder | 7,635 | 100.0% | - | 0.01% | 0.0% |
| ..69 Ceramic products | 5,421 | 6.2% | -10.7% | 0.01% | 0.0% |
| ..19 Preparations of cereals, flour, starch or milk; pastrycooks' products | 3,728 | 100.0% | 17.3% | 0.01% | 0.0% |
| ..92 Musical instruments; parts and accessories of such articles | 2,901 | 48.0% | 4.3% | 0.08% | 0.0% |
| ..15 Animal or vegetable fats and oils or their cleavage products; prepared edible fats; animal or vegetable waxes | 1,989 | 100.0% | 22.4% | 0.01% | 0.0% |
| ..91 Clocks and watches and parts thereof | 793 | 14,671.1% | 11.9% | 0.01% | 0.0% |
| ..37 Photographic or cinematographic goods | 253 | 100.0% | - | 0.01% | 0.0% |
| ..17 Sugar and sugar confectionery | 232 | -31.2% | 2.7% | 0.00% | 0.0% |
| ..38 Miscellaneous chemical products | 209 | 100.0% | - | 0.00% | 0.0% |
| ..65 Headgear and parts thereof | 168 | 174.4% | -9.9% | 0.00% | 0.0% |
| ..34 Soap, organic surfaceactive agents, washing and lubricating preparations, artificial waxes, prepared waxes, polishing or scouring preparations, candles and similar articles, modelling pastes, 'dental waxes' and dental preparations with a basis of plaster | 150 | 100.0% | -32.7% | 0.00% | 0.0% |
| ..67 Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles of human hair | 100 | -99.4% | 14.5% | 0.01% | 0.0% |
| ..66 Umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof | 22 | 100.0% | - | 0.00% | 0.0% |

**SOURCE:** Estonian Development Fund calculations based on Statistics Estonia, *Exports and Imports of Goods by Countries* (in Estonian), http://bit.ly/JiFIri

# Annex 2.3. Estonia-India trade balance by commodity groups, sorted by size

The table shows relative trade balance between the two countries, from Estonian perspective.

| | *(EUR)* |
|---|---|
| Commodities total | 8,089,943 |
| *Balance in major categories* | |
| X Pulp of wood or of other fibrous cellulosic material; Recovered (waste and scrap) paper or paperboard; Paper and paperboard and articles thereof | 8,639,058 |
| XV Base metals and articles of base metal | 3,329,824 |
| XVI Machinery and mechanical appliances; Electrical equipment; Parts thereof; Sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles | 1,858,403 |
| XVIII Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; Clocks and watches; Musical instruments; Parts and accessories thereof | 1,470,116 |
| VIII Raw hides and skins, leather, furskins and articles thereof; Saddlery and harness; Travel goods, handbags and similar containers; Articles of animal gut (other than silkworm gut) | 1,423,463 |
| IX Wood and articles of wood; Wood charcoal; Cork and articles of cork; Manufactures of straw, of esparto or of other plaiting materials; Basketware and wickerwork | 1,384,351 |
| V Mineral products | 29,324 |
| XIX Arms and ammunition; parts and accessories thereof | 0 |
| XXI Works of art, collectors' pieces, and antiques | 0 |
| III Animal or vegetable fats and oils and their cleavage products; Prepared edible fats; Animal or vegetable waxes | -1,989 |
| XXII Other products | -10,388 |
| XVII Vehicles, aircraft, vessels and associated transport equipment | -49,158 |
| I Live animals; animal products | -65,265 |
| XX Miscellaneous manufactured articles | -107,365 |
| XII Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; Prepared feathers and articles made therewith; Artificial flowers; Articles of human hair | -149,850 |
| XIV Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; Imitation jewellery; Coin | -374,864 |
| IV Prepared foodstuffs; Beverages, spirits and vinegar; Tobacco and manufactured tobacco substitutes | -575,440 |
| VI Products of the chemical or allied industries | -782,903 |
| VII Plastics and articles thereof; rubber and articles thereof | -895,554 |
| XIII Articles of stone, plaster, cement, asbestos, mica or similar materials; Ceramic products; Glass and glassware | -1,704,159 |
| II Vegetable products | -2,246,022 |
| XI Textiles and textile articles | -3,081,638 |
| *Balance in finer categories* | |
| ..47 Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard, paper and paperboard and articles of thereof | 8,543,473 |
| ..72 Iron and steel | 2,524,668 |

| | |
|---|---|
| ..41 Raw hides and skins (other than furskins) and leather | 1,603,540 |
| ..90 Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus | 1,473,810 |
| ..44 Wood and articles of wood; wood charcoal | 1,384,351 |
| ..85 Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessiories of such articles | 1,222,551 |
| ..76 Aluminium and articles thereof | 667,210 |
| ..84 Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof | 635,852 |
| ..28 Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals of radioactive elements or of isotopes | 520,936 |
| ..48 Paper and paperboard; articles of paper pulp, of paper or of paperboard | 269,758 |
| ..78 Lead and articles thereof | 223,627 |
| ..29 Organic chemicals | 216,484 |
| ..79 Zinc and articles thereof | 141,354 |
| ..74 Copper and articles thereof | 83,722 |
| ..27 Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes | 69,160 |
| ..26 Ores, slag and ash | 11,721 |
| ..51 Wool, fine or coarse animal hair; horsehair yarn and woven fabric | 6,026 |
| ..35 Albuminoidal substances; modified starches; glues; enzymes | 3,731 |
| ..38 Miscellaneous chemical products | 562 |
| ..24 Tobacco and manufactured tobacco substitutes | 18 |
| ..01 Live animals | 0 |
| ..02 Meat and edible meat offal | 0 |
| ..04 Dairy products; bird's eggs; natural honey; edible products of animal origin, not elsewhere specified or included | 0 |
| ..05 Products of animal origin, not elsewhere specified or included | 0 |
| ..06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage | 0 |
| ..10 Cereals | 0 |
| ..14 Vegetable plaiting materials; vegetable products not elsewhere specified or included | 0 |
| ..16 Preparations of meat, of fish, or of crustaceans | 0 |
| ..18 Cocoa and cocoa preparations | 0 |
| ..31 Fertilizers | 0 |
| ..43 Furskins and artificial fur; manufactures thereof | 0 |
| ..45 Cork and articles of cork | 0 |
| ..46 Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork | 0 |
| ..75 Nickel and articles thereof | 0 |
| ..80 Tin and articles thereof | 0 |
| ..81 Other base metals; cermets; articles thereof | 0 |
| ..86 Railway and tramway locomotives, rolling-stock and parts thereof; railway or tramway track fixtures and fittings and parts thereof; mechanical (including electromechanical) traffic signalling equipment of all kinds | 0 |
| ..88 Aircraft, spacecraft and parts thereof | 0 |
| ..89 Ships, boats and floating structures | 0 |

| | |
|---|---|
| ..93 Arms and ammunition; parts and accessories thereof | 0 |
| ..97 Works of art, collectors' pieces and antiques | 0 |
| ..98 Complete industrial plant | 0 |
| ..66 Umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof | -22 |
| ..65 Headgear and parts thereof | -92 |
| ..67 Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles of human hair | -100 |
| ..34 Soap, organic surfaceactive agents, washing and lubricating preparations, artificial waxes, prepared waxes, polishing or scouring preparations, candles and similar articles, modelling pastes, 'dental waxes' and dental preparations with a basis of plaster | -150 |
| ..17 Sugar and sugar confectionery | -232 |
| ..37 Photographic or cinematographic goods | -253 |
| ..91 Clocks and watches and parts thereof | -793 |
| ..15 Animal or vegetable fats and oils or their cleavage products; prepared edible fats; animal or vegetable waxes | -1,989 |
| ..70 Glass and glassware | -2,250 |
| ..92 Musical instruments; parts and accessories of such articles | -2,901 |
| ..19 Preparations of cereals, flour, starch or milk; pastrycooks' products | -3,728 |
| ..69 Ceramic products | -5,421 |
| ..23 Residues and waste from the food industries; prepared animal fodder | -7,635 |
| ..11 Products of the milling industry; malt; starches; inulin; wheat gluten | -8,638 |
| ..82 Tools, implements, cutlery, spoons and forks of base metal; parts thereof | -10,299 |
| ..99 Supplies for foreign vessels | -10,388 |
| ..22 Beverages, spirits and vinegar | -10,719 |
| ..95 Toys, games and sports requisites; parts and accessories thereof | -14,062 |
| ..08 Edible fruit and nuts; peel of citrus fruit or melons | -23,000 |
| ..53 Other vegetable fibres; paper yarn and woven fabrics of paperyarn | -24,145 |
| ..56 Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof | -29,959 |
| ..94 Furniture; bedding; mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated nameplates and the like; prefabricated buildings | -39,622 |
| ..12 Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial and medicinal plants; straw and fodder | -47,058 |
| ..30 Pharmaceutical products | -47,616 |
| ..32 Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring matter; paints and varnishes; putty and other mastics; inks | -47,693 |
| ..13 Shellac; gums, resins and other vegetable saps and extracts | -49,020 |
| ..87 Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof | -49,158 |
| ..25 Salt; sulphur; earths and stone, lime and cement | -51,557 |
| ..96 Miscellaneous manufactured articles | -53,681 |
| ..57 Carpets and other textile floor coverings | -56,616 |
| ..60 Knitted or crocheted fabrics | -62,121 |
| ..03 Fish and crustaceans, molluscs and other aquatic invertebrates | -65,265 |
| ..50 Silk | -99,405 |

| | |
|---|---|
| ..58 Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery | -104,632 |
| ..73 Articles of iron or steel | -114,565 |
| ..20 Preparations of vegetables, fruit, nuts or other parts of plants | -124,017 |
| ..64 Footwear, gaiters and the like; parts of such articles | -149,636 |
| ..61 Articles of apparel and clothing accessories; knitted or crocheted | -162,184 |
| ..49 Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans | -174,173 |
| ..63 Other made-up textile articles; sets; worn clothing and worn textile articles; rags | -178,983 |
| ..42 Articles of leather; saddlery and harness, travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut) | -180,076 |
| ..83 Miscellaneous articles of base metal | -185,894 |
| ..39 Plastics and articles thereof | -200,288 |
| ..36 Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations | -244,147 |
| ..52 Cotton and articles thereof | -344,689 |
| ..54 Man-made filaments | -356,776 |
| ..71 Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin | -374,864 |
| ..62 Articles of apparel and clothing accessories, not knitted or crocheted | -399,885 |
| ..21 Miscellaneous edible preparations | -429,126 |
| ..55 Man-made staple fibres | -430,165 |
| ..07 Edible vegetables and certain roots and tubers | -534,612 |
| ..40 Rubber and articles thereof | -695,266 |
| ..59 Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use | -838,104 |
| ..33 Essential oils and resinoids; perfumery, cosmetic or toilet preparations | -1,184,756 |
| ..09 Coffee, tea, mate, spices | -1,583,694 |
| ..68 Articles of stone, plaster, cement, asbestos, mica or similar materials | -1,696,488 |

**SOURCE:** Estonian Development Fund calculations based on Statistics Estonia, *Exports and Imports of Goods by Countries* (in Estonian), http://bit.ly/JiFlri

# Annex 3
## Comparison of Indian States Based on Competitiveness

| State Competitiveness Rank 2012[1] | States | GDP per capita (USD)[2] | Population (mln)[3] | Literacy rate[4] | No of foreign co's registered[5] | Main industries[6] |
|---|---|---|---|---|---|---|
| | **City States (GDP per capita > 1300 USD)** | | | | | |
| 1 | **Goa** | 1,788 | 1.5 | 87.4 | 3 | Tourism, food processing, IT, mining, biotechnology, pharmaceutical, fishing |
| 2 | **Delhi (National Capital Region)** | 1,652 | 16.8 | 86.3 | 1,521 | Manufacturing, construction, power, telecommunications, health and community services, real estate, retail, banking, IT and ITeS |
| | **Innovation Driven States (GDP per capita 900 to 1300 USD)** | | | | | |
| 1 | **Maharashtra** | 945 | 112.3 | 82.9 | 744 | Finance, pharma, biotechnology, IT and ITeS, engineering, auto and auto components |
| 2 | **Haryana** | 1,056 | 25.4 | 76.6 | 179 | Automotive, agro based industry, IT / ITeS, textiles, oil refining |
| 3 | **Gujarat** | 941 | 60.4 | 79.3 | 40 | Textiles, engineering and auto, chemicals, petrochemicals, drugs and pharmaceuticals, dairy, cement and ceramics, gems and jewellery |
| 4 | **Kerala** | 933 | 33.4 | 93.9 | 17 | Handlooms and power looms, rubber, bamboo, coir, village industry, tourism |
| | **Transition States (GDP per capita 800 to 900 USD)** | | | | | |
| 1 | **Tamil Nadu** | 801 | 72.1 | 80.3 | 187 | Textiles, heavy commercial vehicles, automobile and auto components, railway coaches, power pumps |
| 2 | **Punjab** | 821 | 27.7 | 76.7 | 2 | Tractors and auto components, agro based industries, bicycles, chemical products, textiles |
| 3 | **Himachal Pradesh** | 872 | 6.9 | 80.3 | 1 | Textiles, pharmaceuticals, food procurement / processing, light engineering, IT and electronics |
| | **Investment Driven States (GDP per capita 500 to 800 USD)** | | | | | |
| 1 | **Andhra Pradesh** | 698 | 84.7 | 67.7 | 74 | Agro and food based industry, biotechnology, bulk drugs and pharmaceuticals, IT and ITeS, automobile, tourism, textiles, retail, leather, mining |
| 2 | **Karnataka** | 713 | 61.1 | 75.6 | 248 | IT and ITeS, biotechnology, engineering, electronics and telecom, automotive |
| 3 | **Uttarakhand** | 650 | 10.1 | 79.6 | 0 | Agro based industry, ICT, floriculture, horticulture, pharma |
| 4 | **West Bengal** | 615 | 91.3 | 77.1 | 54 | Tea, petroleum and petrochemicals, leather, iron and steel, (IT emerging) |
| 5 | **Chattisgarh** | 534 | 25.5 | 71 | 2 | Mining, iron, cement, power, IT / ITeS |
| 6 | **Sikkim** | 669 | 6,1 | 82.2 | 0 | Tourism, agriculture, agro processing, handlooms and handicrafts, hydroelectric power |
| 7 | **Mizoram** | 629 | 1.1 | 91.6 | 0 | Bamboo, sericulture, agriculture and horticulture, tourism, food processing |
| 8 | **Meghalaya** | 571 | 3.0 | 75.5 | 0 | Agriculture, horticulture, mining, cement, tourism |
| 9 | **Arunachal Pradesh** | 553 | 1.4 | 67 | 0 | Arts and crafts, weaving, cane and bamboo, carpet weaving, wood carving |
| 10 | **Tripura** | 544 | 3.7 | 87.8 | 0 | Natural gas, food processing, rubber, tea, bamboo |
| | **Evolving States (GDP per capita 400 to 500 USD)** | | | | | |
| 1 | **Rajasthan** | 494 | 68.6 | 67.1 | 6 | Cement, auto and auto components, IT and ITeS, ceramics & marble, mining, edible oil, wool |
| 2 | **Jharkhand** | 404 | 33.0 | 67.6 | 2 | Mining and mineral extraction, engineering, iron and steel, chemicals, metallurgy |
| 3 | **Orissa** | 487 | 41.9 | 73.5 | 10 | Iron and steel, aluminium, handloom, agro based industry, mining |
| 4 | **Jammu & Kashmir** | 474 | 12.5 | 68.7 | 1 | Horticulture, floriculture, handlooms and handicrafts, tourism, mineral based industry |
| | **Factor Driven States (GDP per capita < 400 USD)** | | | | | |
| 1 | **Uttar Pradesh** | 320 | 199.6 | 69.7 | 40 | IT, agro processing, tourism, mineral based industries, textiles |
| 2 | **Madhya Pradesh** | 377 | 72.6 | 70.6 | 2 | Auto and automotive components, textiles, cement, agro based industries, forest based industries |
| 3 | **Assam** | 396 | 31.2 | 73.2 | 1 | Tea, coal / oil / gas, limestone and cement, agriculture / horticulture, food processing |
| 4 | **Bihar** | 254 | 103.8 | 63.8 | 0 | Food and beverages, rubber, transport equipment, chemicals, tobacco |
| 5 | **Manipur** | 394 | 2.7 | 79.8 | 0 | Village industry, handlooms and handicrafts, sericulture, food processing, bamboo processing |
| 6 | **Nagaland** | 378 | 2.0 | 80.1 | 0 | Bamboo, agriculture and allied industries, horticulture, sericulture, minerals and mining |


1. The State Competitiveness Report 2012 scores and ranks states in terms of competitiveness. The higher the ranking, the higher the state's ability to create prosperity from its various resources, from human to financial to technological. The states are ranked in categories according to their level of development – from basic (factor driven state) to well-developed (innovation driven states and city states), while some states are in transition from one level to another. A state's GDP per capita is not the only indicator of competitiveness. Institute for Competitiveness, India, *State Competitiveness Report 2012*, 2012
2. Institute for Competitiveness, India, *State Competitiveness Report 2012*, 2012
3. Census of India 2011 (http://censusindia.gov.in/)
4. Census of India 2011 (http://censusindia.gov.in/)
5. Minister of State in the Ministry of Corporate Affairs as on Aug. 18, 2011, – Government of India, Press Information Bureau, *Foreign Companies in India*, 25.08.2011 http://pib.nic.in/newsite/erelease.aspx?relid=75062
6. Global Intelligence Alliance, *Market Intelligence for India*, White paper 2/2010 http://bit.ly/IbgIRX

Facts on the states compiled from India Brand Equity Foundation, www.ibef.org. Except for Gujarat - "Asia's largest solar field switched on in India", *The Times of India*, 19.04.2012 http://bit.ly/KObQ5p; and Rajasthan - Ernst & Young, *Seizing Transformational Opportunities: Solar Component Manufacturing in Rajasthan*, 2011 http://bit.ly/q2HcXC

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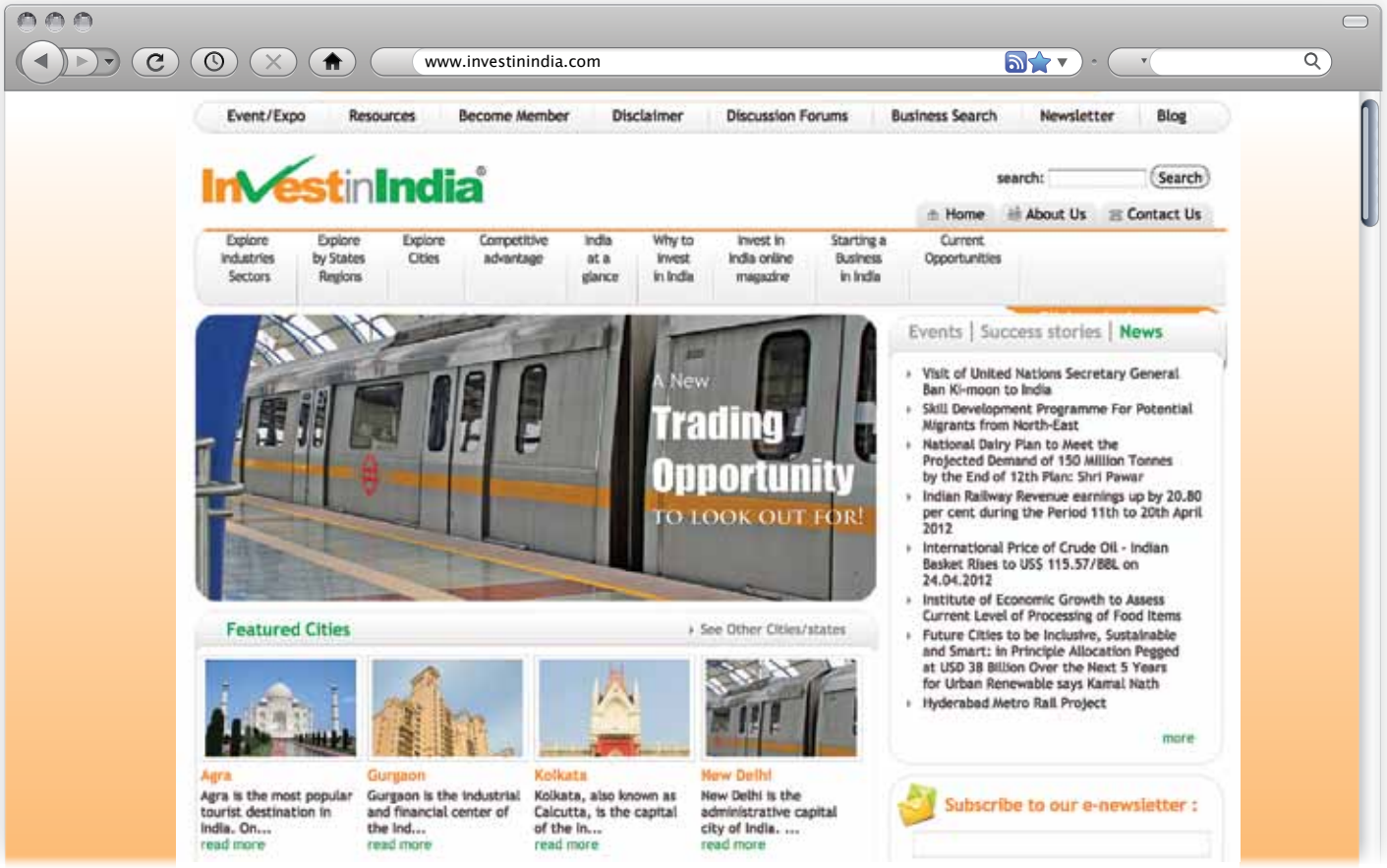
# First ports of call



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