



CARIM INDIA – DEVELOPING A KNOWLEDGE BASE FOR POLICYMAKING ON INDIA-EU MIGRATION

Co-financed by the European Union

Movement of Engineers and Architects between India and the EU

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CARIM-India Research Report 2013/20



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CARIM-India
Developing a knowledge base for policymaking on India-EU migration

Research Report
Thematic Report
CARIM-India RR2013/20

Movement of Engineers and Architects
between India and the EU

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CARIM-India – Developing a knowledge base for policymaking on India-EU migration

This project is co-financed by the European Union and carried out by the EUI in partnership with the Indian Council of Overseas Employment, (ICOE), the Indian Institute of Management Bangalore Association, (IIMB), and Maastricht University (Faculty of Law).

The proposed action is aimed at consolidating a constructive dialogue between the EU and India on migration covering all migration-related aspects. The objectives of the proposed action are aimed at:

- Assembling high-level Indian-EU expertise in major disciplines that deal with migration (demography, economics, law, sociology and politics) with a view to building up migration studies in India. This is an inherently international exercise in which experts will use standardised concepts and instruments that allow for aggregation and comparison. These experts will belong to all major disciplines that deal with migration, ranging from demography to law and from economics to sociology and political science.
- Providing the Government of India as well as the European Union, its Member States, the academia and civil society, with:
 1. Reliable, updated and comparative information on migration
 2. In-depth analyses on India-EU highly-skilled and circular migration, but also on low-skilled and irregular migration.
- Making research serve action by connecting experts with both policy-makers and the wider public through respectively policy-oriented research, training courses, and outreach programmes.

These three objectives will be pursued with a view to developing a knowledge base addressed to policy-makers and migration stakeholders in both the EU and India.

Results of the above activities are made available for public consultation through the website of the project: <http://www.india-eu-migration.eu/>

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Abstract

This paper examines the current and future prospects for the movement of architects and engineers between India and the EU, based on secondary information and a primary survey. Due to ageing population and a shrinking workforce, the EU Member States are facing shortage of skilled professionals, including architects and engineers. While some studies show that India has a large pool of architects and engineers, others point out that India's own demand for these skills will rise and the country will face skill shortages. None of the studies contradict the fact that India's young population, if provided the right education and training, can complement the skill requirements of the domestic economy and the EU. Thus, there is potential for enhancing trade in this sector. This is accentuated by the presence of a large number of EU companies in India and some Indian companies in the EU. The study found that there are several barriers to the bilateral movement of architects and engineers, which includes rigid work permit and visa regimes, registration and nationality requirements and differences in accreditation standards and qualifications. Some of these barriers can be addressed through trade agreements such as the ongoing India-EU BTIA, but majority of them will require domestic reforms in India and the EU and collaboration and sharing of information among professional bodies of India and EU Member States.

Introduction

Over the last few years, there has been a change in the pattern of cross-country labour movement from unskilled to high-skilled labour due to the services revolution, changes in business models and technological development (Ostrovsky 2006). The proliferation of trade agreements have also facilitated the movement of high-skilled professionals since such movements have more acceptability under international trade agreements such as the World Trade Organization's (WTO) General Agreement on Trade in Services (GATS). India and the European Union (EU) can be taken as an example of the movement of professionals between developing and developed countries.

In recent years, the movement of professionals between these two markets has shown an increase and several factors are responsible for this. While the EU is experiencing a shrinking labour force due to ageing population across all categories of the workforce (Wiesbrock and Hercog 2012), India is a major supplier of skilled and high-skilled workforce in global markets (OECD 2012). The EU is India's largest trading partner in trade in services and, in 2010, the EU contributed 11 per cent in India's services trade.¹ In the period between 2003 and 2011, bilateral trade in services between India and the EU grew at compound annual growth rate (CAGR) of 20 per cent.² Both the economies are members of the WTO and are negotiating for the liberalisation of the movement of professionals in the ongoing Doha Round of negotiations. India and the EU are also negotiating a bilateral trade agreement, known as the Broad-based Trade and Investment Agreement (BTIA), which extensively covers liberalisation of the movement of professionals.

Within the high-skilled workforce, one of the most prominent categories is the movement of engineers and architects between the two markets. Engineering and architectural services are considered as knowledge-based and technology-intensive services that require both general and highly specialised skills. According to a report, there is an expected shortage of qualified engineers in Europe³ and other skilled professionals including architects. By 2020, 16 million people will be needed to fill high-skilled jobs in the EU, some of which can be obtained from outside the EU.⁴ As per another estimate, India has a large pool of engineers and architects, with around 700,000 graduate and postgraduate engineers in 2011⁵ and 30,000 registered architects in 2008.⁶ India had the second-largest number of engineers in the world after China.⁷ Engineering and architecture are considered to be among the most lucrative professions in India and the number of students enrolling in the professions has increased manifold. Thus, India is capable of meeting the growing demand for engineers and architects in the EU markets.

The movement of engineers and architects is not a one-way flow. There is a huge need for infrastructure development in India and there has been an increase in construction activity, which, in turn, has led to an increased demand for engineers and architects. A number of companies from EU Member States are engaged in construction and consultancy services in India which has also led to the inflow of engineers and architects. More importantly, some studies even suggest that India itself is likely to face a shortage of skilled professionals including engineers and architects in the future.⁸

¹ OECD Statistics on International Trade in Services by Partner Country, available at <http://stats.oecd.org/Index.aspx?DatasetCode=TIS> (last accessed on 14 March 2012)

² The share is calculated by the authors from data obtained from the European Commission (2009) and (2012a)

³ For details see: www.cbi.nl/system/files/.../Trends_and_segments_for_ESO.pdf (last accessed on 11 February 2012)

⁴ Estimate by the European Centre for the Development of Vocational Training (Cedefop)

⁵ NASSCOM Strategic Review 2012

⁶ Council of Architecture, India

⁷ NASSCOM Strategic Review 2010

⁸ For details see RICS (2011)

Given this, the sector becomes a crucial one from the viewpoint of international professional movement and trade negotiations.

Both India and the EU have adopted a liberal approach with respect to the movement of architects and engineers across borders in their multilateral and bilateral trade agreements, compared to other professions such as accountancy and legal services. Despite this, the actual bilateral flow of engineers and architects is low and is directed towards a few EU Member States.⁹ The two economies also do not have any official record of the number and nature of such movement. Given this background, this paper tries to examine the bilateral movement of engineers and architects between India and EU, identify the barriers to such movement and suggest the way forward.

The paper is divided in six sections. Section 1 gives the definition and coverage of engineers and architects in India and the EU. Based on secondary information and a primary survey, Section 2 highlights the recent trends and patterns of the movement of architects and engineers between India and the EU. Section 3 presents the domestic regulation in India and the EU with a focus on regulations related to the movement of engineers and architects. Section 4 gives a snapshot of the international agreements in architectural and engineering services, covering Revised Offers in the Doha Round of the WTO, bilateral agreements and other international agreements. Section 5 presents the barriers faced in the movement of high-skilled professionals, particularly architects and engineers, between the two markets. The last section presents the opportunities and the way forward for the movement of architects and engineers between India and the EU.

1. Definition and Coverage of Engineers and Architects

According to the WTO,¹⁰ architectural firms provide blueprints and designs for buildings and other structures, while engineering firms provide planning, design, construction and management services for building structures, installations, civil engineering works and industrial processes, among others. Engineers and architects are involved in all stages of construction projects and allied activities and as a result, there is no clear categorisation of their work.

In their multilateral negotiations, both India and the EU follow the WTO classification known as MTN.GNS/W/120 (W/120) for defining engineers and architects. It is based on the United Nations Provisional Central Product Classification. As per W/120, architectural and engineering services are listed as subsectors of professional services under business services (see Table 1).

⁹ Report on Trade, Investment and Collaboration in Construction and Consultancy Services: India-EU Trade and Investment Agreement, by Durgesh Kumar Rai, ICRIER, September 2009, New Delhi

¹⁰ See WTO Document No. S/C/W/44, 1 July 1998

Table 1. Classification of Engineers and Architects under the WTO

Classification	Coverage
Architectural services (CPC 8671)	Covers all types of architectural services except those classified below under urban planning and landscape architectural services
Engineering services (CPC 8672)	Covers all engineering activities except integrated engineering services
Integrated engineering services (CPC 8673)	Covers engineering services related to turnkey projects, which are: (i) integrated engineering services for transportation infrastructure turnkey projects (86731), (ii) integrated engineering and project management services for water supply and sanitation works turnkey projects (86732), (iii) integrated engineering services for the construction of manufacturing turnkey projects (86733), and (iv) integrated engineering services for other turnkey projects
Urban planning and landscape architectural services (CPC 8674)	Covers (i) urban planning services (86741) and (ii) landscape architectural services (86742)

Source: Authors compilation from World Trade Organization S/C/W/44, 1 July 1998 and WTO MTN.GNS/W/120

Nevertheless, India and the EU use different occupational classification to classify engineers and architects. In India, the National Occupational Classification, 2004 of the Department of Employment and Training, Ministry of Labour and Employment, Government of India (GOI) is used to define occupational categories. Architects, engineers and related professionals fall under the subgroup 214 of Group 2 on professionals. In the EU, the International Standard Classification of Occupation (ISCO) of the International Labour Organisation (ILO) is used to define occupational categories. According to that, engineers and architects fall under the Group 2 on professionals under subgroups 214 and 215 respectively. These two classifications categorise the subcategories of architects and engineers somewhat differently as shown in Table 2. Overall, the EU's classification is more similar to the ILO classification, followed internationally.

Table 2. Classification of Engineers and Architects followed in the EU and in India

International Standard Classification of Occupation-2008, ILO		National Classification of Occupation-2004, GOI	
Division	Classification	Division	Classification
2	Professionals	2	Professionals
21	Science and engineering professionals	21	Physical, mathematical and engineering
214	Engineering professionals	214	Architects, engineers and related professionals
2141	Industrial and production engineers	2141	Architects, town and traffic planners
2142	Civil engineers	2142	Civil engineers
2143	Electrical engineers	2143	Electrical engineers
2144	Electronics engineers	2144	Electronics and telecommunication engineers
2145	Mechanical engineers	2145	Mechanical engineers
2146	Chemical engineers	2146	Chemical engineers
2147	Mining engineering, metallurgists and related professionals	2147	Mining engineering, metallurgists and related professionals
2149	Engineering professionals not elsewhere classified	2148	Cartographers and surveyors
215	Architects, planners, surveyors and designers	2149	Architects, engineers and related professionals n.e.c.
2151	Building architects		
2152	Landscape architects		
2153	Product and garment designers		
2154	Town and traffic planners		
2155	Cartographers and surveyors		
2156	Graphic and multimedia designers		

Source: Author's compilation from International Standard Classification of Occupation–2008, ILO and National Classification of Occupation–2004, GOI

Since India and the EU follow different classifications for architects and engineers, it is difficult to have a common definition for bilateral movement under these two categories. In addition, there are hardly any official records of trends and patterns of bilateral movement of engineers and architects. There are some estimates of the size of the sector and trade flows, which are discussed in the next section.

2. Trends and Patterns in the Movement of Engineers and Architects

The analysis in this section is based on secondary information and a primary survey. Since there is limited secondary data on bilateral professional movement, 20 in-depth interviews were conducted with Indian companies with presence in the EU, EU companies with presence in India, Indian government officials, EU Embassies, industry bodies/associations and councils such as the Council of Architecture. The interviews focused on patterns of trade flows, barriers and prospects for the movement of architects and engineers between the two markets.

Secondary data shows that in both India and the EU, engineering and architectural subsectors fall under business services for computation of their share in the gross domestic product (GDP) and employment. Disaggregated data is not available for engineers and architects. In the EU, in 2010, business activities and financial services had a share of 29 per cent in the GDP.¹¹ Compared to this, the share of financing, insurance, real estate and business services is smaller in India, at around 17 per cent of the GDP in 2009-10.¹² In terms of share in employment, professional services accounted for around 18 per cent employment in the EU Member States in 2011. Technical and associate professions that include architectural and engineering services accounted for 87 per cent of professional employment and 15 per cent of total employment in the EU in 2011.¹³ In India, the share of professional services in employment is much smaller. Other business services that include architectural and engineering services accounted for only 0.6 per cent of the total employment in 2009-10.¹⁴

Trade in engineering and architectural services have increased with liberalisation and globalisation. With autonomous liberalisation after the 1990s and globalisation, a number of foreign construction and consultancy companies, including companies from EU Member States, have established presence in India through various modes such as representative offices, joint ventures and wholly-owned subsidiaries to cater to the large unsaturated market and benefit from the potential in developing infrastructure in the country. Among the top 50 international designing firms in the world, 22 companies are from the EU and all of them have presence in India (See Table 3).

¹¹ Eurostat database

¹² Central Statistical Organisation, Ministry of Statistics and Programme Implementation (MOSPI), Government of India

¹³ Eurostat database

¹⁴ Central Statistical Organisation, Ministry of Statistics and Programme Implementation (MOSPI), Government of India

Table 3. EU Companies in the Top 50 International Contractors and their Presence in India

Rank		Company Name	2011 Revenue (Million \$)	Presence/Projects/Operations in India
2012	2011			
1	1	HOCHTIEF AG, Essen, Germany	31,870.70	Yes
2	12	Grupo ACS, Madrid, Spain	31,147.50	Yes
3	2	VINCI, Rueil-Malmaison, France	18,674.30	Yes
4	8	STRABAG SE, Vienna, Austria	17,289.00	Yes
6	6	Saipem, San Donato Milanese (Milan), Italy	14,110.10	Yes
8	4	BOUYGUES, Paris, France	12,608.00	Yes
9	5	Skanska AB, Solna, Sweden	12,339.40	Yes
11	9	TECHNIP, Paris, France	9,313.00	Yes
12	10	FCC, Fomento de Constr. y Contratas SA, Madrid, Spain	8,569.70	Yes
14	13	Bilfinger Berger SE, Mannheim, Germany	7,146.10	Yes
16	19	Balfour Beatty plc, London, UK	5,805.00	Yes
17	18	Consolidated Contractors Group, Athens, Greece	5,520.60	Yes
19	17	Royal BAM Group nv, Bunnik, The Netherlands	5,346.00	Yes
20	22	Petrofac Ltd, Jersey, Channel Islands, UK	5,208.70	Yes
21	21	OHL SA (Obrascon Huarte Lain SA), Madrid, Spain	4,522.40	Yes
26	40	Abeinsa SA, Seville, Spain	4,129.50	Yes
33	31	Tecnicas Reunidas, Madrid, Spain	3,253.80	Yes
36	39	Maire Tecnimont, Rome, Italy	2,876.10	Yes
37	38	Techint Group, Milan, Italy	2,875.20	Yes
41	36	Danieli & C.O.M. SpA, Buttrio, Italy	2,640.00	Yes
47	44	Grupo Isolux Corsan SA, Madrid, Spain	2,378.80	Yes
49	50	IMPREGILO SpA, Milan, Italy	2,185.20	Yes

Source: Author's compilation from <http://enr.construction.com/toplists/Top-International-Contractors/201-300.asp> (Last accessed on 4 March 2013)

There are 17 European firms in the top 50 international designing firms in the world and a majority of them have presence in India (see Table 4).

Table 4. EU Companies in the Top 50 International Designing Firms and their Presence in India

Rank		Firm	Total (million \$)	Presence/Proj ects/Operatio ns in India
2012	2011			
6	6	AMEC plc, London, UK	3,935.80	No
8	8	Fugro NV, Leidschendam, The Netherlands	3,631.00	Yes
10	10	ARCADIS NV, Amsterdam, The Netherlands	2,806.00	Yes
14	13	Atkins, Epsom, Surrey, UK	2,385.10	Yes
17	18	Mott MacDonald Group Ltd, Croydon, Surrey, UK	1,734.40	Yes
23	22	ARUP Group Ltd, London, UK	1,503.40	Yes
28	27	Grontmij NV, De Bilt, The Netherlands	1,296.30	Yes
29	35	Ramboll Group A/S, Copenhagen, Denmark	1,293.30	Yes
31	23	Tecnicas Reunidas, Madrid, Spain	1,242.30	Yes
33	32	WSP Group plc, London, UK	1,150.80	Yes
34	46	Poyry, Vantaa, Finland	1,108.00	No
35	36	Egis, Saint Quentin en Yvelines, France	1,106.80	Yes
36	51	Saipem, San Donato Milanese (Milan), Italy	1,088.40	Yes
39	48	SWECO, Stockholm, Sweden	1,036.00	No
42	45	TECHNIP, Paris, France	982	Yes
48	40	Mouchel, Woking, Surrey, UK	896.5	No
50	50	ÅF AB, Stockholm, Sweden	806.2	Yes

Source: Author's compilation from <http://enr.construction.com/toplists/Top-International-Design-Firms/101-200.asp> (Last accessed on 4 March 2013)

Compared to the widespread presence of EU companies in India, few Indian consultancies, contracting and design firms have presence in the EU. These include companies such as IRCON International Limited, Shapoorji Pallonji & Company Limited, RITES Limited and Punj Lloyd Private Limited, among others. Secondary information also reveals that most of these companies concentrate in niche activities and have limited capability to provide end-to-end services.¹⁵

With globalisation and technological development, there are new modes of delivering engineering and architectural services which have an effect on cross-country movement of engineers and architects. In the past, engineering and architectural services were primary traded through commercial presence (Mode 3) and the movement of natural persons (Mode 4).¹⁶ If a company establishes

¹⁵ Report on Trade, Investment and Collaboration in Construction and Consultancy Services: India-EU Trade and Investment Agreement, by Durgesh Kumar Rai, ICRIER, September 2009, New Delhi

¹⁶ Under GATS services are traded through four different modes. *Mode 1: 'Cross-border supply of services'* refers to the delivery of services across countries such as the cross-country movement of passengers, electronic delivery of information. *Mode 2: 'Consumption abroad'* refers to the physical movement of the consumer of the service to the location where the service is provided and consumed. *Mode 3: 'Commercial presence'* refers to the establishment of foreign affiliates and subsidiaries of foreign service companies, joint ventures, partnerships, representative offices and branches. It is analogous to FDI in services. *Mode 4: 'Presence of natural persons'* refers to natural persons who are themselves service suppliers, as well as natural persons who are employees of service suppliers, temporarily present in the other member's market to provide services

presence abroad, there is movement of people for activities such as management of the office, providing expertise on a project-by-project basis and for training, among others. Architects and engineers often travel for short periods using business visa for getting business; they may move between their offices in two countries as intra-corporate transferees or work as contractual service suppliers on a fixed contract basis at client locations. Apart from this, the movement of architects and engineers is also covered under the independent professional movement category. A number of Indian students go to European countries like the UK and France for studying engineering and architecture. Many of them get absorbed in the job market of these countries. With the advent of Internet and growth of technology, there has also been an increase in trade through Mode 1 and this is in some cases complementing while in other cases replacing Mode 4 trade.

As mentioned earlier, there is lack of data on bilateral movement of architects and engineers. The Organisation of Economic Cooperation and Development (OECD) maintain data on immigration in OECD countries that cover some EU countries and India. It provides data on the number of immigrants by occupation from India to the OECD countries. However, it does not give disaggregated data for the movement of architects and engineers. Combined data for architects, engineers and other related professionals as given in Table 5 show that the total number of architects and engineers going to the EU Member States from India is very small and the movement is highly skewed towards the UK (85 per cent). The main reason for this is familiarity with the English language.

Table 5. Movement of Engineers, Architects and other related Professions from India to Selected EU Member States Cumulative as in February 2013

Country of residence	Number	Share
Austria	17	0.4
Denmark	35	0.8
Finland	30	0.7
France	209	5.0
Greece	12	0.3
Hungary	3	0.1
Ireland	66	1.6
Luxembourg	3	0.1
Poland	3	0.1
Portugal	69	1.6
Spain	23	0.5
Sweden	75	1.8
Switzerland	95	2.3
United Kingdom	3580	84.8
Total – EU (selected countries)	4220	
Total – OECD	5504	

Source: <http://stats.oecd.org/> (last accessed on 18 February 2013)

The number of architects and engineers coming to India from the EU Member States is likely to be even smaller, though there is no source of data on this. However, since India is an emerging market with high potential for infrastructure development, there is a rise in demand for architects and engineers, making them prospective sectors for foreign professionals.

Existing literature shows that there is shortage of professionals in EU (European Migration Network (EMN) 2011). While some studies indicate large number of engineers in India (NASSCOM 2012), others point to shortage of engineers and architects and/or shortage of specialised skills (RICS 2011). Existing studies also show that prior to the slowdown, in the EU between 2004 and 2008, there was a shortage of high-skilled professionals in almost all the Member States. Skilled workers formed the largest group of third-country national migrant workers in the EU. Engineers are in short supply in Austria, Belgium, Germany, Hungary, Ireland, Latvia, Luxembourg, Sweden and the UK. In Bulgaria, Finland, France, Italy, Lithuania, Poland, Portugal, Slovenia and Spain, construction workers, including architects, are in a short supply. In Hungary, for instance, 44 per cent of the architects, engineers and other related professionals are third-country nationals.¹⁷

In India also, there is likely to be a shortage of skilled professionals in the coming years. Since the Indian economy is projected to grow, there is a possibility of increased domestic demand for architects and engineers. However, this is not being matched by an increased supply of skilled professionals in the country. According to an estimate,¹⁸ between 2010 and 2020, there is likely to be a demand for 46 million civil engineers in India. With a cumulative supply of 533,000 civil engineers in 2011 and nearly 27,000 of supply estimated to be coming each year, there could be a shortage of 39.4 million civil engineers by 2020. Similarly, between 2010 and 2020, the total demand of architects is likely to be 4.4 million. With a cumulative supply of 40,000 architects in 2011 and nearly 3800 of supply estimated to be coming each year, there could be a shortage of 3.6 million architects by 2020. There is also likely to be a shortage of 1.1 million planners by 2020 in India. It will be interesting to study how the shortages in the two markets will impact bilateral labour mobility in engineering and architecture. India does have an advantage over the EU Member States. It has a large young population which is keen to study engineering and architecture. However, there are other issues related to the quality of education, accreditation process and ability of educational institutes to meet the future demands which are discussed in later section of this paper.

2.1 Survey Finding

The survey conducted in India found that Indian engineering and architectural companies largely provide specific or specialised services, they are less globalised than EU companies and only a handful are capable of providing end-to-end services. Engineering services provided by Indian companies to the EU Member States include design, drawing, specifications for various assets including nozzles for wind tunnels, dynamic modelling and 3-D modelling of water and waste-water networks, waste-water treatment plants, pumping stations and networks, civil engineering services for dams and hydroelectric projects, basic and detailed engineering services for balancing, rehabilitation of pulp mills and soda recovery plants, and process engineering for petrochemical projects, among others. Architectural services being exported to EU countries include urban design for cities, buildings, etc.

Consultancy companies like Engineers India Limited, Development Consultant Private Ltd (DCPL) and TCE Consulting Engineers Limited (TCE), are engaged in some EU countries, although the contribution of EU countries to their international revenue is small. Most Indian companies are of the view that the market in Western Europe is saturated, while there is some scope in Eastern Europe. In addition, the cost of operation in the EU is much higher than in India and profit margins are low. This has an effect on the mode of delivery of services. Architectural and engineering services to the EU from India are primarily exported through the Internet or Mode 1. Some engineering consultancy companies prefer to provide their services online although they have offices in the UK, because it is more cost-effective. Most services provided to EU countries are of short duration, the quantum of business is not sufficient to maintain a permanent office, and office maintenance costs in the EU are

¹⁷ EMN (2011)

¹⁸ RICS (2011)

high. Only a few firms like DCPL and Engineers India Limited (EIL) have permanent offices in EU countries, and these are concentrated in a few countries, mainly the UK. They do send representatives to EU Member States for business development, understanding clients' requirements, training, etc. However, the movement of people or Mode 4 trade is limited. The survey found that majority of the Indian consultancy companies work as subcontractors to EU or other foreign companies. Indian companies, like Intercontinental Consultants and Technocrats Pvt Ltd (ICTL), collaborate with the EU companies to provide services in third-country markets like African and East Asian countries.

Indian companies get information about projects or businesses through personal contacts, direct marketing in EU countries or newspaper advertisements. Large companies such as DCPL go to EU countries with a team of senior employees to demonstrate their expertise/skills to potential clients and for business development. Smaller companies depend on personal contacts.

Several EU consultancy firms are operating in India. Although engineering companies, like Fichtner GmbH & Co. KG, Germany, and UHDE India Pvt Ltd, Germany, started their operations before the liberalisation of the 1990s in India, majority of the companies entered the Indian market in the late nineties and later. The National Capital Region (Delhi, Gurgaon, Noida) along with Kolkata, Mumbai, Chennai and Bangalore are most preferred locations for EU engineering and architectural companies. Some EU engineering companies (for example, Tecnimont ICB Ltd), entered the Indian market in the joint venture format with an Indian company but later became wholly-owned subsidiaries. This shows their long-term commitment to the Indian market. In the architectural segment, many firms operate as joint partners with an Indian firm or architect.¹⁹ Overall, the main mode for providing services by EU companies in India is Mode 3.

Most EU companies operate in infrastructure sectors. They also provide architectural services for modern commercial and office spaces. EU consultancy firms often provide end-to-end services from concept to commissioning of projects; the main services are engineering services, detail design services, system design, preparation of construction tender documents, project management, and supervision of works. They often work as part of a consortium for different projects.

When the Indian companies were asked about their major competitors, some engineering companies stated that their competitors in the EU are bigger EU multinationals, whose main strengths lie in superior technology, strong financial capability, large scale of operations, strong managerial skills and worldwide network. Their weaknesses are lack of flexibility in their service offerings and high cost of services including high labour costs. The EU companies likewise stated that in India large Indian companies are their main competitors. Their strengths are cost-effective services, a well-qualified workforce, better understanding of government regulations, knowledge about the local market, better client management, etc. The weaknesses of Indian companies lie in their inferior technology, limited scope for innovation, quality of services that do not meet European standards, lack of experience in several new technical areas and lack of adequate international exposure. Most of these weaknesses of Indian companies are the strengths of EU companies and thus the complementarities provide scope for cooperation between Indian and EU companies and the movement of engineers and architects for sharing of knowledge training and skill development, etc.

On their future plans for delivering services in the EU Member States, most Indian consultancy companies are mainly interested in providing services through Mode 1 in countries such as Italy, Germany, the UK and France along with Eastern Europe. The majority of the companies said that movement of people would increase if there were mutual recognition of education and qualifications. Due to the lack of recognition, often the designs that are done in India have to be signed and vetted by a person based in an EU Member State. This restricts the ability of Indian professionals and their companies to provide high value-added services. Similarly, many architecture degrees in the EU are

¹⁹ One Indian architect firm was of the view that EU firms form joint partnerships with an Indian architect firm or individual to get the final output (design) signed

not recognised in India. So individuals from EU Member States do the architecture designing but they get it approved through an Indian architect. Thus, there is a lot of collaboration and joint work delivery, which is unaccounted for and may even be considered as illegal. Companies feel that India should sign Mutual Recognition Agreements (MRAs) with EU countries, especially Italy, Germany, France, the UK and Belgium, in both architectural and engineering services. However, they were not sure about the procedures in which this could be done.

The survey revealed that some EU companies, especially the wholly-owned subsidiaries, not only provide services to the Indian market but also serve other world markets from India. They pointed out that majority of their staff in India is locally appointed which is available at competitive rates. There is limited inflow of professionals from the EU for some senior management jobs. Companies also bring in specialists, master planners, concept architects and domain knowledge experts for training and project delivery and as per clients' demands.²⁰ Although India is endowed with skilled manpower, because of the increasing demand and slow pace of skill formation, there is a shortage of manpower, especially of architects and civil engineers, which both Indian and EU companies pointed out is going to increase.

Overall, bilateral trading pattern shows that Mode 4 is important but not the key mode of trade in engineering and architecture services. Mode 4 facilitates trade through other modes such as Mode 1 and Mode 3. The survey could not record precisely the movement of independent professionals as there is no data on it. However, survey participants argued that in terms of the movement of independent professionals, apart from the UK, the EU is a more difficult market and less preferred compared to countries such as Canada, the United States and Australia due to rigid work permit and visa regimes. They, however, pointed out that the EU Blue Card system may facilitate the movement of independent professionals.

The next section discusses the applicable domestic regime in India and the EU that affect the movement of architects and engineers between the two markets.

3. Domestic Regulations and Visa Regime

India and the EU have certain domestic regulations governing the engineering and architectural services. These regulations directly or indirectly impact the movement of professionals. Over the years, both India and the EU have introduced different categories of visa to facilitate smoother movement of professionals, including architects and engineers. This section discusses the domestic policies and visa regime applicable to architects and engineers in the two markets.

a. Policies in India

Both engineering and architectural services are accredited professions. In India, the All India Council of Technical Education (AICTE) is the body for accreditation of engineering colleges. There are 3393 engineering colleges in India with a capacity of 1.48 million seats across 36 courses approved by the AICTE.²¹ However, engineering is not a regulated profession in India and does not fall under the purview of any Act. The government is trying to formulate an Engineers Bill to regulate the profession, but it is still in a draft stage. The Bill aims at developing a definition for engineers and providing for registration of engineers in India.

Architectural services is under the purview of Architects Act, 1972 and is a regulated profession in India. The Act provides for registration of architects, standards of education, recognised qualifications and standards of practice to be followed by the practising architects in India. Under the provisions of

²⁰ It was highlighted during the survey that many Indian clients ask for design from expatriate experts.

²¹ <http://timesofindia.indiatimes.com/tech/careers/education/Engineering-tops-as-most-favoured-discipline/articleshow/13601864.cms> (last accessed on 15 February 2013)

this Act, the Council of Architecture (COA) was constituted by the Government of India, which is the regulatory body for architects and professional architects have to register themselves with the council. There are more than 300 colleges accredited by the COA. Under Section 15(1) of the Architects Act 1972, the COA recognises degrees granted by foreign universities and institutes. Among the EU Member States, these include a few institutes such as Diploma-Ingenieur awarded by the Technical Universities in the Federal Republic of Germany in Architecture; Degree of Architecture awarded by the Universities of Cambridge, Durham, Edinburgh, Glasgow, Liverpool, London, Manchester, Sheffield, Wales; Associate-ship Examination of the Royal Institute of British Architects, London; and Chartered Membership of Royal Institute of British Architects awarded by the Royal Institute of British Architects, UK. Thus, an architect from an EU Member State cannot practise in India unless s/he is registered with the COA. The COA tends to recognise foreign institutes on a reciprocal basis and the present Act covers limited institutes and is outdated. The COA also works with its counterparts in other countries for information sharing and mutual recognition of qualification.

The private sector has played a key role in higher education in India and a majority of the institutions offering engineering and architectural courses are in the private sector.²² According to a study, 91 per cent of engineering colleges and 67 per cent of architectural colleges in 2006-07 were privately owned.²³ However, only 44 per cent of the total private colleges and universities are recognised or deemed universities. In India, an admission test is required for enrolment in most engineering and architecture institutes. However, the level of the test varies and many private institutes have their own system of evaluation of candidates. There are wide variations in curriculum across the different institutes and thus there is variation in the quality of students who qualify from these institutes.

With regard to the inflow of foreign nationals, in India, there are two work-related visas – *Business Visa* (B Visa) and *Employment Visa* (E Visa). A Business Visa with multiple entry facility can be granted for a period up to five years or for a shorter duration as per the requirements. A stay stipulation of a maximum period of six months will be prescribed for each visit by the concerned Indian Mission keeping in view the nature of the business activity for which such Business Visas is granted.

1. The *Business Visa* includes foreign nationals coming to India for meetings, business support, manpower recruitment, as experts/specialists, as foreign trainees of multinational companies/corporate houses for in-house training in the regional hubs of the concerned company located in India, and foreign students sponsored by the International Association of Students in Economic and Commercial Sciences (AIIESEC) for internship on project-based work in companies/industries.
2. An *Employment Visa* is granted to foreigners desiring to come to India for the purpose of employment with certain conditions as listed below:
 - The applicant has to be a highly-skilled and/or qualified professional, who is being engaged or appointed by a company/organisation/industry/undertaking in India on contract or employment basis or is visiting India to execute a project in India.
 - Employment Visa is not granted for jobs for which qualified Indians are available and is also not to be granted for routine, ordinary or secretarial/clerical jobs.
 - The foreign national should draw a salary in excess of US\$ 25,000 per annum.

The duration of Employment Visa varies according to the service supplier.

- A foreign technician/expert coming to India in pursuance of a bilateral agreement between the Government of India and the foreign government, or in pursuance of a collaboration

²² This is despite the fact that government played a major role in the setting up of IITs and other premier institutes and regional engineering colleges. In recent years, these colleges have not been able to keep up with increasing demand and this has led to the establishment of private funded institutes which are growing at a very fast rate.

²³ Ernst & Young (2011)

agreement that has been approved by the Government of India, can be granted an Employment Visa for the duration of the agreement, or for a period of five years, whichever is less, with multiple entry facilities.

- In the case of highly-skilled foreign personnel being employed in the IT software and IT enabled sectors, the Missions/Posts can grant Employment Visa with validity up to three years or the term of assignment, whichever is less, with multiple entry facility.
- A foreigner coming to India for employment not covered in (i) or (ii) above can be granted Employment Visa with validity up to two years or the term of assignment, whichever is less, with multiple entry facility.

The following categories of professionals, including architects and engineers, among others are included for granting Employment Visa,

- Foreign nationals coming to India as consultant on contract for whom the Indian company pays a fixed remuneration (this may not be in the form of a monthly salary).
- Self-employed foreign nationals coming to India for providing engineering or such other highly-skilled services in their capacity as independent consultants provided the provision of such services by foreign nationals is permitted under law.
- Foreign engineers/technicians coming to India for installation and commissioning of equipment/machines/tools in terms of the contract for supply of such equipment/machines/tools.
- Foreign nationals deputed for providing technical support/services, transfer of knowhow/services for which the Indian company pays fees/royalty to the foreign company.

b. Policies in the EU

In the EU, both engineering and architectural services professions fall under the purview of several European Commission Directives. These include Directives for the EU internal market integration and for entry of third-country professionals (Directives applicable to external market).

Internal Market

Professional services in the EU, including engineers and architects, fall under the purview of the *Directive 2006/123/EC of 12 December 2006 on services in the internal market*. This directive specifies the conditions for harmonisation of services for the EU Member States. Apart from this, the *Directive 2005/36/EC of 7 September 2005 on the recognition of professional qualifications*, sets rules for the recognition of professional qualifications in the EU Member States and for harmonisation of the qualifications.

Architectural service is a regulated profession in all EU Member States. Engineering services, however, follow two models – the UK/Ireland Model and the Continental Europe Model.²⁴ In UK and Ireland, engineering is a regulated profession and they have a dedicated professional body. In continental Europe including France and Germany, there is no dedicated professional body for engineers and the education institutes are responsible for their development and control. In countries like Italy, there is a provision for ‘albo’ or registration of engineering professional with the Consiglio Nazionale Degli Ingegneri. However, there is no independent regulator for the professional in the country. Like India, in the EU, there is an entrance test required for admission in engineering and architectural disciplines, which is conducted in each EU Member State.

²⁴ For details see The Bologna Declaration and Engineering Education in Europe:
http://www.mie.uth.gr/labs/lte/grk/quality/..%5Cquality%5Cbologna_declaration_engene.pdf (last accessed on 11 March 2013)

External Market

Facilitating temporary entry of foreign professionals to meet skill shortages in various professions is an important policy agenda in the EU. Some of these are highlighted below:

1. *The Schengen Visa:* The Schengen Area is an area within which non-EU nationals, travelling for business and tourism purposes, can freely circulate without being subjected to border checks. The EU has set up a common visa policy for short stays, i.e. stays up to three months, in some EU Member States and other European countries.²⁵ Architects and engineers who are travelling to the EU Member States for business for a short duration can apply for the Schengen Visa, which will facilitate intra-EU mobility. They have to first enter through the country that grants the visa. This visa has facilitated the movement of foreign architects and engineers for business development purposes especially on a project-by-project basis.
2. *The EU Blue Card Directive:* The EU Blue Card is a uniform entry and residence authorisation which enables highly qualified workers from non-EU countries to enter, re-enter and reside – for more than three months – in the territory of a Member State of the European Union (except the UK, Ireland and Denmark, where the EU Blue Card system is not applicable). The EU Blue Card is both a work as well as a residence permit. Blue cardholders enjoy equal treatment with nationals of the EU country in which they reside. The Blue Card system also fosters and sustains mobility of skilled third-country workers and their families across the EU Member States. Both architects and engineers are under the high-skilled professional category and they can make use of the EU Blue Card system. This is likely to facilitate the entry and the movement of independent professionals.
3. *EU Directive for Intra-corporate Transfer of Non-EU Skilled Workers:* According to the European Commission, the total number of intra-corporate transfers each year in the EU at about 16,500 accounts for 4 per cent of temporary migrant workers. Keeping in view the growing importance of the category of service suppliers, in 2010, the EU proposed a *Directive for intra-corporate transfer of non-EU skilled workers*, which is currently under discussion within the European Parliament and the Council. This new directive would introduce a common set of rules to make it easier for companies outside Europe to send key staff to their branches within the EU. The new directive would be addressed to non-EU managers, specialists and trainees who reside outside the EU and possess knowledge specific to the company. Non-EU workers who have been granted an intra-corporate permit in a Member State should be able to work in a branch belonging to the same group of companies located in another EU country and at the sites of clients. If implemented, this will facilitate Indian architects and engineering companies that have offices in the EU Member States to send their employees to the offices in the EU Member States and client locations within the EU.
4. *The EU Single Permit Directive:* The EU Single Permit Directive was adopted in December 2011. It creates a set of rights for non-EU workers legally residing in an EU Member State. The Directive is applicable to non-EU nationals with authorisation to reside or work in the EU, independently of their initial reason for admission. Its scope includes both non-EU nationals seeking to be admitted to an EU State in order to stay and work there and those who are already resident and have access to the labour market or are already working there. It provides for:
 - a single residence and work permit
 - a single application procedure for this permit

²⁵ Countries in the Schengen Area include Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and Switzerland

- a set of rights, for all non-EU workers already admitted but who have not yet been granted long-term resident status, in a number of key areas: working conditions, education and vocational training, recognition of diplomas, social security, tax benefits, access to goods and services including procedures for housing and employment advice services.

The above directives of the EU aim to facilitate different types of professional movements including both short term and long term. Despite the presence of these directives, national legislations and entry norms take precedence over the provisions of the directives in some cases. For instance, some Member States such as Bulgaria and Romania continue to have authorisation conditions on architects and engineers. There are nationality requirements for foreign professionals in countries like Austria, Denmark, Finland, France, the Netherlands, the United Kingdom and Germany. While engineering is not a regulated profession in most EU Member States,²⁶ architectural services are regulated by different authorities in each Member State. Foreign nationals have to register or take authorisation from the Member State-specific authorities to practise in the respective EU Member States.

There are other measures taken by India and the EU to facilitate the bilateral movement of professionals including architects and engineers – for instance, social security agreement. The Indian government has entered into bilateral social security agreements with some EU Member States such as Denmark, Luxembourg, the Netherlands, Belgium, France, Germany, Hungary, the Czech Republic, Sweden and Finland. However, only India's agreements with Germany and Belgium are in force. The agreements cover old-age and survival pension and permanent and total disability pension.

4. International Agreements in Engineering and Architectural Services

India and the EU are actively engaging in international negotiations covering architectural and engineering services. The number of EU Member States has increased since the Uruguay Round of WTO negotiations and hence in this section we discuss what the EU is willing to liberalise in architectural and engineering services in the Doha Round. In their WTO Revised Offer, submitted in the ongoing Doha Round of WTO negotiations, both India and the EU have covered all architectural and engineering subsectors referred to under W/120 (see Table 1). India and the EU have also covered all four categories of service suppliers – namely business visitors (BV),²⁷ intra-corporate transferees (ICT),²⁸ independent professionals (IP)²⁹ and contractual service suppliers (CSS)³⁰ in their Revised Offer to the WTO. In the horizontal offer under independent professionals and contractual service suppliers, both India and the EU have offered to make commitments in architectural and engineering services.

Compared to the EU, India offers a longer duration of stay to foreign professionals, including architects and engineers. Both India and the EU did not make any sector-specific offers in Mode 4 under the architectural and engineering services and only referred to their horizontal offers. Certain EU Member States have imposed additional conditions on these two professional services. For instance, Cyprus has kept architectural service (CPC 8671), engineering services (CPC 8672), integrated engineering services (CPC 8673) and urban planning and landscape architectural services (CPC 8674) unbound for all four categories of service suppliers while Lithuania has kept them unbound for CSS and IP. Latvia has kept them unbound for CSS. For CSS and IP, Finland has imposed a requirement that professionals should possess special knowledge, relevant to the service being supplied. Such

²⁶ With an exception of the UK and Ireland

²⁷ A person who visits another country specifically for business negotiations and/or for preparatory work for establishing presence for short duration

²⁸ Employee of a company who transferred from originating country's office to office of the same company in another country

²⁹ A self-employed person who enters another country to perform a service on contract basis

³⁰ Employee of a foreign company who enters another country temporarily in order to perform a service pursuant to a contract

requirements are not imposed by India. Thus, overall, the EU's offer related to the movement of architects and engineers is limited than India's and this is especially true for CSS and IP.

As regards the bilateral trade agreements, this paper discusses the commitments of India and the EU in four agreements – namely the India-Singapore Comprehensive Economic Cooperation Agreement (CECA) (1 August 2005), India-Korea Comprehensive Economic Partnership Agreement (CEPA) (1 January 2010), the EU-Korea Free Trade Agreement (1 July 2011) and the EU-CARIFORUM Economic Partnership Agreement (EPA) (provisional applied).³¹

In the bilateral trade agreements, commitments for architects and engineers are listed in both the trade in services chapter and in a separate chapter on the movement of natural persons. While the trade in services chapter lists the sector-specific commitments, the chapter on the movement of natural persons gives the horizontal commitments for all categories of services suppliers. In the India-Singapore CECA and India-Korea CEPA, India has made commitments in all four categories of service suppliers in the chapter on the movement of natural persons. The EU has made commitments in all four categories of service suppliers in the EU-CARIFORUM EPA but it has not made any commitments on IP and CSS in the EU-Korea FTA.

Both India and the EU have listed the services subsectors in which CSS and IP are allowed to supply service in their respective markets. At the outset, the classification of service supplier used by India and the EU in their respective agreements is not similar. While the EU uses the WTO classification for categorising the service supplier, India does not use any of the international or national occupational classifications. In addition, while the EU specifies the broad subsectors under engineering and architectural services, India has listed specific professions within engineering and architectural services.

Engineers are one of the most important professional subsectors for India seeking access in Mode 4. This is reflected by the list of professionals appended in the India-Singapore CECA and the India-Korea CEPA. In the India-Singapore CECA, out of the 127 professional service suppliers where India seeks greater market access, 45 are engineers including a number of engineering professionals such as software engineers, civil engineers, electronics engineers and telecommunications engineers, among others. In the India-Korea CEPA, out of the 163 professional service suppliers, 84 are engineers including computer hardware and software engineers, construction engineers, aircraft engineers, exploration engineers and civil engineers, among others.

Compared to this, architects have a smaller coverage in India's bilateral agreements. In the India-Singapore CECA, architects in five subsectors, namely building architects, interior architects, landscape architects, naval architects and town planners are allowed access as CSS and IP. In the India-Korea CEPA, architects are not covered in the list of professionals appended to the chapter on the movement of natural persons. During the survey, it was pointed out that the COA is apprehensive about taking commitments in trade agreements and, therefore, India has taken a position where it does not aggressively seek or give market access in architecture under Mode 4. Thus, there is a difference in India's negotiating strategy across these two professional categories. Since the professional categories are interlinked, it can adversely impact Mode 4 trade.

In the EU-CARIFORUM EPA, the EU has allowed CSS in 29 services subsectors and IP in 11 services subsectors. Within this, it has allowed access to CSS and IP in architectural services, engineering services, urban planning and landscape architecture service and integrated engineering services, similar to the WTO classification.

³¹ The CARIFORUM members who are signatories to the EPA are: Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St Kitts and Nevis, St Lucia, St Vincent, Suriname, and Trinidad and Tobago

Both India and the EU have also listed market access limitations for the engineering and architects under the schedule of specific commitments in their trade agreements. As shown in Table 6, the EU Member States have imposed specific conditions including requirements of economic needs test and residence, among others, for engineers and architects. India has imposed a numerical ceiling and licensing and registration requirements in the India-Singapore CECA. However, in the India-Korea CEPA, India has not imposed any additional conditions or limitations on professionals in the engineering and architectural subsectors. Compared to the India-Singapore CECA, India has made better commitments in the India-Korea CEPA, especially with respect to the movement of engineers. However, neither India's nor the EU's commitments are beyond the autonomous regime. For example, none of the agreements of India has provision of a North American Free Trade Agreement (NAFTA) type of visa.

Table 6. Limitations/Conditions imposed in Trade Agreements over Horizontal Commitments

Subsectors	India Korea CEPA	India Singapore CECA	EU Korea FTA	EU-CARIFORUM EPA
For all subsectors	None		In case of key personnel and graduate trainees, in Estonia, there is a need for hiring at least one responsible person (project manager or consultant) who is a resident of Estonia. In Bulgaria, a foreign specialist must have experience in the field of construction of at least two years. In Slovakia, there is a residence requirement. In Greece and Hungary, there is residence requirement and in case of integrated engineering services, it applies only to graduate trainees	In case of key personnel and graduate trainees, in Estonia, there is a need for a hiring at least one responsible person (project manager or consultant) who is a resident of Estonia. In Bulgaria, a foreign specialist must have experience in the field of construction of at least two years. In Greece, Hungary and Slovakia, there is a residence requirement. In Spain, Italy and Poland, there is a requirement of an economic needs test for independent professionals. In Latvia, there is a need for economic needs test for contractual service suppliers, In Finland, an independent professional or a contractual service supplier must demonstrate that s/he possesses special knowledge relevant to the service being supplied. In Bulgaria, the Czech Republic, Denmark, Finland, Hungary, Lithuania, Romania and Slovakia, there is a requirement of an economic needs test. In Belgium, economic needs test is required except for CSS when the annual wage is above the amount defined by relevant laws and regulations. In Austria, in planning service only there is requirement of an economic needs test. In Denmark economic needs test is required except for CSS stays of up to three months. In Hungary, there is a residence requirement

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Architectural services (CPC 8671)		Registration requirement with the Council of Architecture		
Engineering services (CPC 8672)		Horizontal commitments are applicable to independent professionals and employees of a juridical person in the highly-skilled and managerial categories on the basis of contract with a final client in India and subject to fulfilment of qualification and licensing requirements. In the case of juridical persons, also subject to ceiling of 5 per cent of the total work force on a project		
Integrated engineering services (CPC 8673)		Horizontal commitments are applicable to independent professionals and employees of a juridical person in the highly skilled and managerial categories on the basis of contract with a final client in India and subject to fulfilment of qualification and licensing requirements. In the case of juridical persons, also subject to ceiling of 5 per cent of the total work force on a project		
Urban planning and landscape architectural services (CPC 8674)		Registration requirement with the Council of Architecture and or any other designated body	In Bulgaria is there a nationality condition	In Bulgaria there is a nationality condition

Source: Compiled by the authors from India and EU's bilateral agreements accessible at: <http://commerce.nic.in/> and <http://ec.europa.eu/trade/creating-opportunities/bilateral-relations/agreements/> (last accessed on 14 February 2013)

One of the key issues related to the movement of high-skilled professionals is recognition of professional qualifications by the trading partner. To overcome this, a majority of bilateral agreements have a provision for mutual recognition agreements (MRAs) between the trading partners for mutual recognition of qualifications and standards. MRAs enable professional service suppliers who are certified or registered by the relevant authorities in their home country to be mutually recognised by other signatory countries. This can be facilitated by the professional bodies of the trading partners through information-sharing and transparency, developing disciplines on qualification requirements, mutually approved accreditation processes and having some guidelines for procedures and registration requirements.

Both India and the EU have provisions for the mutual recognition of qualifications in their trade agreements to support the movement of natural persons. However, they have not concluded any MRAs with their trading partners. India has started negotiations with Singapore for mutual recognition of qualifications under key professional categories, which include architectural services. Regulatory authorities in the two countries are having discussions for establishing common standards for recognition. However, a number of years have passed without any significant breakthrough in the discussions.

Survey participants argued that architectural service is a regulated profession in India and the EU. As a result, there can be provisions for signing an MRA in the sector. Discussion with sector experts and policymakers show that in the case of the EU, there has to be first mutual recognition of qualifications within the EU Member States. Each EU Member State has different regulators regulating professional services. The regulatory body in each EU Member State has to give authority to the European Commission (EC) to negotiate MRA and then the EC can negotiate it with the relevant authority in India. Engineering services, however, are not a regulated profession in India and in most EU Member States. As a result, it may be difficult to have an MRA in engineering services.

In order to have common qualification standards in engineering services, several initiatives are being undertaken at the international level. There are six international agreements governing mutual recognition of engineering qualifications and professional competence. These are:

- The Washington Accord
- The Sydney Accord
- The Dublin Accord
- The APEC Engineer Agreement
- International Professional Engineers Agreement
- International Engineering Technologist Agreement

The first three agreements cover mutual recognition in respect of tertiary-level qualifications in engineering. The other three agreements cover recognition of equivalence at the practising engineer level, i.e. it is individual people, not qualifications that are seen to meet the benchmark standard. The concept of these agreements is that a person recognised in one country as reaching the agreed international standards of competence should only be minimally assessed (primarily for local knowledge) prior to obtaining registration in another country that is party to the agreement. The details of each of these agreements are given in Table 7 below.

Table 7. List of International Engineering Agreements

Agreement	Signed	Objective	Representation by India/EU	Other Members
Washington Accord	1988	The Washington Accord, signed in 1989, is an international agreement among bodies responsible for accrediting engineering degree programmes. It recognises the substantial equivalency of programmes accredited by those bodies and recommends that graduates of programmes accredited by any of the signatory bodies be recognised by the other bodies as having met the academic requirements for entry to the practice of engineering	Ireland and the UK are members and India and Germany have provisional status	Australia, Canada, Chinese Taipei, Hong Kong China, Japan, Korea, Malaysia, New Zealand, Russia, Singapore, South Africa, Turkey, United States
Sydney Accord	2001	Flowing from the Washington Accord, a similar Agreement was developed for Engineering Technologists or Incorporated Engineers, called the Sydney Accord (SA)	Ireland and the UK are members	Australia, Canada, Hong Kong China, New Zealand, South Africa and United States
Dublin Accord	2002	The Dublin Accord is an agreement for the international recognition of Engineering Technician qualifications	Ireland and the UK are members	Canada and South Africa

APEC Engineer Agreement	1999	<p>There is an agreement in place between a numbers of APEC countries for the purposes of recognising ‘substantial equivalence‘ of professional competence in engineering. APEC countries can apply to become members of the agreement by demonstrating that they have in place systems, which allow the competence of engineers to be assessed to the agreed international standard set by the APEC Engineer agreement.</p> <p>Registration on the IPER register with APEC Engineer ensures that professional engineers have the opportunity to have their professional standing recognised within the APEC region, thereby contributing to the globalisation of professional engineering services. This is of particular benefit to engineering firms that are providing services to other APEC economies but it also adds value to individuals who may wish, at some stage, to work in these economies.</p> <p>Each member economy of the APEC agreement has given an undertaking that the extra assessment required to be registered on the local professional engineering register will be minimised for those registered under the APEC Engineer agreement.</p>	None	Australia, Canada, Chinese Taipei, Hong Kong China, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Russia, Singapore, Thailand and United States
International Professional Engineers Agreement	2001	<p>The International Professional Engineers Agreement, IPEA is a multinational agreement, which creates the framework for the establishment of an international standard of competence for professional engineering, and empowers each member organisation to establish a section of the International Professional Engineers Register</p>	India, Ireland and the UK are members	Australia, Canada, Chinese Taipei, Hong Kong China, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa, Sri Lanka and United States
International Engineering Technologist Agreement	2003	<p>The agreement presents the principles and outline processes by which the substantial equivalence in competence of experienced engineering technologists could be established. The Engineering Technologists Mobility Forum (IETA) forum was reached, to: a) develop, monitor, maintain and promote mutually acceptable standards and criteria for facilitating the cross-border mobility of experienced engineering technologists; b) seek to gain greater understanding of the existing barriers to mobility and to develop and promote strategies to help governments and licensing authorities manage those barriers in an effective and non-discriminatory manner; c) encourage the relevant governments and licensing authorities to adopt and implement</p>	Ireland and the UK are members	Canada, Hong Kong China, New Zealand and South Africa

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		<p>mutual mobility procedures consistent with the standards and practices recommended by the signatories to such agreements as may be established by and through the IETA; d) identify, and encourage the implementation of, best practice for the preparation and assessment of engineering technologists intending to practise internationally at the professional level; and e) continue mutual monitoring and information exchange by whatever means are considered most appropriate. A draft Agreement to establish and maintain an International Register of Engineering Technologists was also reached. This Agreement to establish and maintain an IETA International Register of Engineering Technologists is intended to provide a framework for the recognition of experienced practising engineering technologists by the responsible bodies in each of the signatory economies who are encouraged to use the Register as a secure benchmark for arrangements, which provide mutual recognition or exemption and/or streamlined access by engineering technologists to licensing, registration or certification in economies other than that in which they first gained recognition</p>		
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Source: Author's compilation from <http://www.washingtonaccord.org/> (Last accessed on 18 February 2013)

As shown in Table 7, both India and the EU Member States have limited representation in international engineering agreements. Within the EU, Ireland and the UK are the two most active participants in international engineering agreements. Engineering is a regulated profession in the two markets and the two countries are represented by Engineers Ireland and Engineering Council UK in international forums. India has a provisional status in the Washington Accord. It is represented by the National Board of Accreditation of AICTE. India is a member of the International Professional Engineers Agreement, where it is represented by the Institution of Engineers India. However, there is limited progress in each of these agreements in establishing common norms in engineering services, partly due to the wide variation in domestic standards and lack of domestic accreditation processes. Rigid norms in some EU Member States such as Germany have made it difficult for them to sign the Washington Accord.

5. Barriers faced in the Two Markets

In terms of commitments in the trade agreement, engineering and architectural services have one of the most liberal commitments compared to other professions such as legal or accountancy services. Nevertheless, the actual movement of architects and engineers between India and the EU is limited. This is due to several barriers to the movement of professionals, including architects and engineers. Some of these are related to the ongoing BTIA negotiations while other are related to domestic reforms. These are listed below.

- a. *Definitional issues in occupations:* India and the EU use different occupational classifications that lead to problems in harmonisation of professional categories. While the EU follows the International Labour Organisation's classification for defining occupational categories in its trade agreements, India does not follow a fixed classification. This makes it difficult to have a common standard of identification and recognition in case of high-skilled professionals while negotiating trade agreements such as the ongoing India-EU BTIA.
- b. *Unavailability of data:* One of the most crucial barriers faced with respect to the movement of professionals is that there are no official records of professional movement between the two countries. As a result, it is difficult to have an estimate of Mode 4 trade between India and the EU. In addition, there is a lot of unaccounted trade in these services. Technology is progressing faster than institutions and, therefore, a huge volume of online services given by architects and engineers is not even recorded anywhere. Unless one has a record of the movement of professionals, it is difficult to negotiate trade agreements, especially the India-EU BTIA where the two economies are negotiating quotas for the movement of professionals.
- c. *Difference in qualification standards:* India does not follow international standards of qualification recognition. In case of engineering services, there are a large number of colleges and universities imparting technical skills in India, degrees from which are not recognised in India itself. Thus there is wide variation in standards within the country. As per the EU Blue Card system, in order to ensure that the third-country national possesses higher education qualifications, the United Nations Educational, Scientific and Cultural Organisation's (UNESCO) International Standard Classification of Education (ISCED) 1997, level 5a and 6 are used.³² These are not in line with what is followed in India. As a result, it may be difficult

³² According to the classification, level 5a is the first stage of tertiary education. It includes programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements. Level 6 is the second stage of tertiary education that leads to advanced research qualification. This level is reserved for tertiary programmes, which lead to the award of an advanced research qualification. The programmes are, therefore, devoted to advanced study and original research and not based on course-work

to have mutual recognition of qualification while signing trade agreements. Within the EU, there is no parity in the ISCED qualifications. For instance, programmes leading to a 'graduate' or second degree in many English-speaking countries like the UK have to be classified at level 5 as is the case for long first degrees in many German-speaking countries.³³ As a result, even if there is an agreement with the EU as a whole, recognition in the individual EU Member States may still be a challenge.

In addition, in case of engineering services in India, accreditation and regulatory roles are played by different authorities in international agreements, leading to a multiplicity of authorities with conflicting interests and limited decision-making powers. For example, accreditation is given by the National Board of Accreditation of AICTE while the Institution of Engineers India plays the regulatory role.

- d. *Labour shortages in India and the EU:* Studies have suggested that both India and the EU are facing or are likely to face a shortage of architects and engineers in their markets. Due to this, despite their commercial presence, labour mobility is becoming a sensitive issue. While in the EU there is a problem of inadequate supply of labour, in India, there is a problem related to the quality and employability of skilled architects and engineers, which further adds to the shortage. Companies pointed out that the councils and regulatory bodies such as the Council of Architecture also create an artificial shortage of skilled professionals in India in order to create excess demand and, therefore, command high prices for their professional services. These councils are not interested in signing MRAs. For bilateral trade to grow, the two markets have to address their domestic shortages, examine which skills are in short supply and whether these shortages can be filled through the cross-country movement of architects and engineers and accordingly focus on development of education and qualification to meet the skill gaps. India is in a much better position than the EU to meet skill shortages in engineering and architectural services due to the availability of a large young population. However, the country has to focus on education and skill development not only for domestic requirements but also for meeting the requirements of international markets such as the EU.
- e. *Barriers to entry in the EU:* It was pointed out by Indian architects' associations and engineers that there are several barriers to entry in the EU. To begin with, certain EU Member States like Germany have a strict visa regime. For instance, survey participants pointed out that if a German firm wants to hire a foreign national, it has to prove that it cannot find a suitable candidate within the EU. Moreover, the non-EU workers must be paid more than 66,000 Euros a year, twice the average German salary.³⁴ There is a nationality requirement in countries like Austria, Denmark, Finland, France, the Netherlands, the UK and Germany. Some engineers pointed out that there are difficult labour market tests and economic needs test in countries like Austria, Belgium, the Czech Republic, Finland, France, Germany, Poland, Sweden, the Netherlands, Luxembourg, Greece and the UK. There are delays in the visa process in almost all EU Member States and in the smaller EU countries visa procedures are burdensome. The EU Directives for easing movement of people are not applicable to the UK, which is the most preferred destination for Indian professionals. The tender bidding cost is high in most EU Member States due to the high administrative cost of bidding.

(Contd.) _____

only. They require the submission of a thesis or dissertation of publishable quality, which is the product of original research and represents a significant contribution to knowledge

³³ http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm (last accessed on 17 February 2013)

³⁴ <http://www.workpermit.com/news/2011-08-16/germany/immigration-and-skills-shortages.htm> last accessed on 13 February 2013

- f. *Language barrier*: Both Indian and the EU companies and professional bodies pointed out that lack of local language knowledge is one of the most important factors restricting professional movement. A majority of the architects and engineers from India prefer to go to the UK or Ireland due to the ease of communication. Language and cultural differences are barriers in countries such as Poland and Greece, which restrict bilateral movement of people. Local language knowledge is an important admission criterion in some EU Member States. In countries like Denmark, the green card scheme is followed for allowing foreign professionals. It is based on a points system where language and adaptation skills can help to earn points.³⁵ In countries like Austria, Slovenia, the Czech Republic, Greece and Lithuania, knowledge of the language is a requirement for permanent residence and acquisition of citizenship.³⁶
- g. *Other restrictions imposed by the EU Member States*: One of the biggest barriers faced by Indian professionals in the EU is lack of integration in the EU market. The EU Member States impose restrictions and conditions on foreign professionals including architects and engineers. These include restrictions on ownership of shares, authorisation requirements and experience requirements, among others. Some of these are listed in Table 8.

Table 8. Restriction imposed by some EU Member States on Movement of Engineers and Architects

Country	Restriction
Austria	Limitations on company structure and shareholding requirements in case of engineers
Belgium	Shareholding requirements for architects
Bulgaria	Fixed tariffs and authorisation requirements for architects and engineers
Cyprus	Architects and engineers can only practise as natural persons and not in any other legal form; advertising or commercial communication is not allowed in case of engineers
Czech Republic	Shareholding requirements for architects and engineers
Germany	Shareholding requirements and fixed tariffs for architects and engineers
Greece	Architects and engineers are required to have experience in Greece for promotion
Malta	Limitations on company structure and shareholding requirements for architects and engineers
Romania	Authorisation requirements for engineers
Slovakia	Shareholding requirements for architects and engineers, authorisation requirements for architects

Source: Author's compilation from European Commission (2012)

In some EU Member States, it is difficult to obtain information particularly on tendering opportunities. These problems are mostly faced in countries such as Estonia, the Czech Republic, Greece, Latvia, Lithuania Slovakia and Slovenia. This is because these are new member countries so they do not disclose all information easily.

³⁵ Kahanec and Zimmermann (2011)

³⁶ Language Requirements for Adult Migrants in Council of Europe Member States: Report on a Survey , Council of Europe, Language Policy Division, Strasbourg

- h. *Problems related to illegal entry:* During the survey, Indian councils and associations pointed out that a number of foreign professionals enter the Indian market on tourist or business visa and provide engineering and architectural services in the country. This leads to lack of transparency. In addition, in the case of architectural services, the regulatory authority in India cannot monitor or enforce quality standards in case the foreign architects are not registered with them. The Architects Act, 1972, in India, requires nationals to stay in India for a minimum of 180 days and obtain registration from the Council of Architecture to practise in India. In order to circumvent the existing procedures, a number of foreign professionals do not take the prescribed route as they come to provide service on a short-term basis.

6. Conclusions and the Way Forward

India and EU Member States have trade complementarities in the movement of high-skilled workers, including engineers and architects. Due to ageing population and a shrinking workforce, the EU Member States are facing a shortage of architects and engineers. While some studies show that India has a large pool of architects and engineers others point out that India's own demand for these skills will rise with economic development and the country will face skill shortages. Most of the existing studies pointed out that India's young population, if provided the right education and training, can complement the skill requirements of the domestic economy and the EU.

The movement of architects and engineers between India and the EU is a two-way flow. A number of EU-based companies have established presence in India in the post-liberalisation era and this has led to an inflow of professionals from EU Member States. Both India and the EU have a more liberal autonomous regime and commitments in trade agreements with respect to the movement of architects and engineers compared to other professional services such as legal services. Therefore, it is likely that the bilateral trade in this segment would continue to grow. This paper examines the prospects for the movement of architects and engineers between India and the EU, based on secondary information and a primary survey. The paper found that India and the EU have different occupational categories for engineers and architects and neither of the two economies has disaggregated data on bilateral inflows and outflows of architects and engineers. This is despite the fact that business services are a key component of trade in both economies. In the absence of secondary data, it is difficult to measure the exact volume of trade. Data from other OECD countries show that a large majority of Indian architects and engineers go to the UK and hence their presence in continental Europe is limited. This is largely due to the differences in language and culture and other barriers such as nationality requirements and economic needs tests.

The primary survey showed that while Indian engineering and architectural companies largely provide specialised services through Mode 1 to the EU, companies from EU Member States offer a much wider variety and more integrated services through Mode 3. Mode 4 is often related to trade through these two modes for getting businesses, delivering projects, etc. EU companies in India are keen to have local employment and only bring in specialised skills. Indian companies would prefer to trade through Mode 1 since this is more cost-effective. Mode 4 trade is somewhat limited due to these factors and because, at present, there are several market access and regulatory barriers to the movement of architects and engineers. The EU is not a single market with respect to the movement of professionals and initiatives taken by the EU through different directives to facilitate movement of third-country nationals are not being implemented by important markets such as the UK. In addition to rigid work permits and visas there are other barriers such as registration and nationality requirements, differences in accreditations standards and qualifications and differences in language and culture which limit the mobility of engineers and architects. While some of these barriers can be addressed through trade agreements such as the ongoing India-EU BTIA, the majority

of these barriers will require domestic reforms in India and the EU as well as collaboration and sharing of information among professional bodies of India and EU Member States.

As a first step, professional bodies in India and EU can work together to share information and define common criteria for education and occupational classifications. It is better to follow international classifications such as the ILO classification. The two economies should also take initiatives to record bilateral trade flows for different professional categories. Although the existing trade agreements for India and the EU have more liberal coverage for engineers and architects, they do not go beyond the autonomous regime. Hence, the benefits of these agreements are limited apart from the fact that they secure the trading partners against future restrictions on Mode 4. Overall, India's commitments in bilateral trade agreements seem to be more liberal than those of the EU. In the ongoing India-EU BTIA, both trading partners should at least try to secure the commitments that India has offered to Singapore and Korea under BV, ICT, CSS and IP. There is also need for significant domestic reform in the EU and India. Different EU Member States have to harmonise their markets and remove conditions such as nationality requirements and labour market tests. In India, too, there is need for harmonisation of standards of qualification and the country should have a proper accreditation system in line with international standards. This will reduce qualification-related barriers and enable India to sign MRAs. In case of engineering services, at present, India does not have a regulatory body but the government has proposed a Draft Engineers Bill that provides for registration of engineers in India. In addition, the government through the AICTE is trying to establish an accreditation process involving private institutions in it. More and more private institutions in India are taking accreditation from the AICTE. This will help overcoming the quality issues faced by the sector. To benefit from the demographic dividend, India needs to invest in quality education and skills. The professional bodies in India, such as the Council of Architecture, have to change their attitude and become more receptive to globalisation. This will benefit the sector in the long run.

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