Association of Indian Universities

Confederation of Indian Industry

TRENDS IN INTERNATIONALIZATION OF HIGHER EDUCATION IN INDIA 2016

Foreword

Chandrajit Banerjee
Director General
Confederation of Indian Industry

Indian campuses are today much more international than they have ever been earlier. Thanks to the realization and awareness of the fact that collaboration is the best way forward for excellence.

This year, the India-UK Excellence Awards for Collaborations in Higher Education, organized by CII and the British Council, have brought forth some interesting facts. One, that collaborations are happening in large numbers – the high number of entries in a short span of time bears testimony to that; two, that partnerships are happening in varied areas, subjects and have the potential to yield some path-breaking products and services.

I congratulate the winning teams and hope that in coming years this contest will bring to light many more interesting case studies of collaborations between Indian and international institutes.

This is the third edition of the report in partnership with the Association of Indian Universities and I thank Prof Furqan Qamar for his continued support in this endeavor.

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Annual Survey

of International Students in India 2013-14

Prof. Furqan Qamar
Secretary – General
Association of Indian Universities

Prof. Qamar, in his academic career spanning over three decades, has held the position of Professor and founder Director of the Centre for Management Studies at Jamia Millia Islamia, a Central University in Delhi; Advisor (Education) in the Planning Commission of India; Vice Chancellor of the University of Rajasthan at Jaipur; and the first and founder Vice Chancellor of the Central University of Himachal Pradesh at Dharamshala.

With research interest in public policy in higher education, Prof Qamar has been actively engaged in research and has published books and papers in journals of repute on such themes as educational planning and ad-ministration, financing of education, cost savings and resource use efficiency in education and quality and excellence in higher education. His research work on Resource Utilisation in Higher Education provided valuable input in the formulation of higher education policy during the 8th Five Year Plan. He was also actively involved in providing inputs in the formulation of 10th and 11th Five Year Plan strategies for higher education.

Dr. Veena Bhalla
Joint Secretary
Association of Indian Universities

Dr. Veena Bhalla is Joint Secretary at the Association of Indian Universities (AIU). She joined this organisation as Research Assistant in 1977 and since then has served in various divisions in different capacities. She obtained her PhD degree in History from Rajasthan Vidyapeeth in 1996 and has a double Masters in Political Science from Kurukshetra University and in History from Maharshi Dayanand University. Dr. Bhalla has been the member of 'International Advisory Group of Project Atlas' of International Institute of Education, U.S.A. She has published 34 papers, has co-authored 5 books and has assisted in editing of 6 books. The books / monographs co-authored by her include, 'International Students in Indian Universities' (1997) 'Performance Indicators in Distance Higher Education' (2000) Bibliography of Higher Education in India (1991-2000) (2001) Foreign Providers of Higher Education: Realities, Implications and Future Options (2006) Development of Question Bank: Methodology of Preparation and Prevalidation of Multiple Choice Questions (2008). She has supervised the preparation of question banks at undergraduate and post graduate level in 23 subjects.

Introduction

1. With nearly 800 universities and over 40,000 colleges, Indian higher education systems is undoubtedly the largest system of higher education found anywhere in the world. With total enrolment crossing 33 Million, Indian higher education system is only second to China. Going by the demographic trends and rapid expansion, it will soon become the single largest system of higher education in the world. Going by the policy framework which enables universities and colleges to admit foreign/NRI/PIO students up to 15 percent of their sanctioned intake, India should have been having about 4.85 million foreign/NRI/PIO students studying in its campuses. As against this vast potential, the country, in the academic year 2013-14 had just 31,126 foreign students studying in its campuses.

2. To sensitise the academic community and also to the policy planners and the regulators in higher education on the subject, the AIU has been bringing out an annual occasional paper on the international students in India. The occasional paper is based on the data annually collected by the AIU from its member universities. The present occasional paper is the continuation of the activity but this year the occasional paper is wider in scope and coverage as it also incorporate some critical data on global trends in internationalisation as available from secondary sources. The Occasional Paper essentially focuses on the mobility of students alone. Thus the mobility of faculty and other forms of internationalisation are beyond the scope of this work. Further, while international mobility of students could include Outward as well as Inward mobility, this occasional paper is largely focussed on Inward mobility with only limited data and comments on the outward mobility.

3. For the purpose of this study, the outward mobility means the number of students going outside the country to pursue their higher education. The Inward mobility, on the other hand means the number of foreign students coming to the country for pursuing their studies in the higher educational institutions of that country.

Outward Mobility

4. Outward mobility essentially means the number of students pursuing higher education outside their home country. Going by the Project Atlas, presently, nearly 5 Million students world over are studying outside their home countries. The available data reveals that the number of Chinese students studying outside China, which was around 1.2 lakh in 2006 has shot up rapidly to 4.15 Lakh in 2013, so has been the case with regard to the USA where the number of US students outside their country has gone up from 1.54 Lakh to 3.04 Lakh during the same period. As regards India, the number of Indian students pursuing higher studies abroad had risen from 67,000 in 2006 to 2.27 Lakh in 2009 but has since then declined to 2.00 Lakh in 2013.

Chart 1: Number of Students Pursuing Higher Education Outside their Country

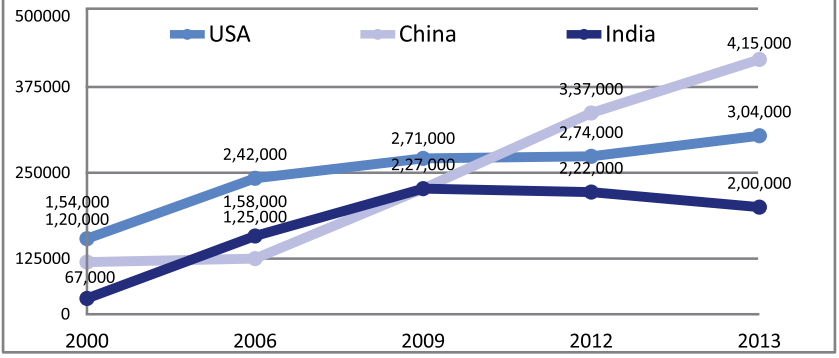


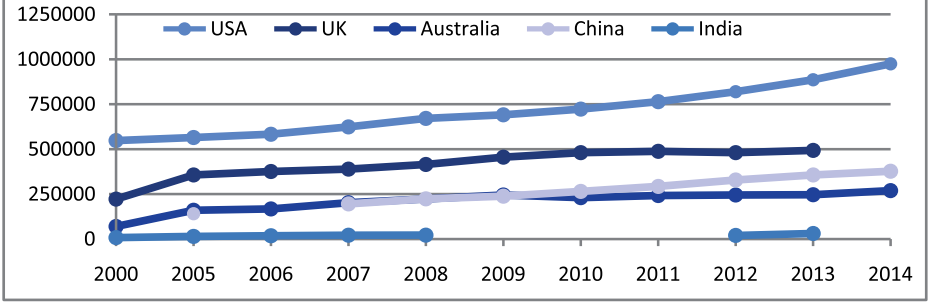
Table-1: Number of Students Pursuing Higher Education Outside their Country					
Years	World	USA	UK	China	India
2000		1,54,000	22,000	1,20,000	67,000
2006	30,00,000	2,42,000	27,000	1,25,000	1,58,000
2007		2,62,000	24,000	1,22,000	1,61,000
2008		2,60,000	22,000	1,74,000	2,18,000
2009	37,00,000	2,71,000	23,000	2,27,000	2,27,000
2010		2,73,000	23,000		2,54,000
2011	41,00,000			3,39,000	
2012	45,00,000	2,74,000	28,000	3,37,000	2,22,000
2013	47,00,000	3.04,000		4,15,000	2,00,000
2014	50,00,000			4,59,000	
Source: Project Atlas, International Institute of Education					

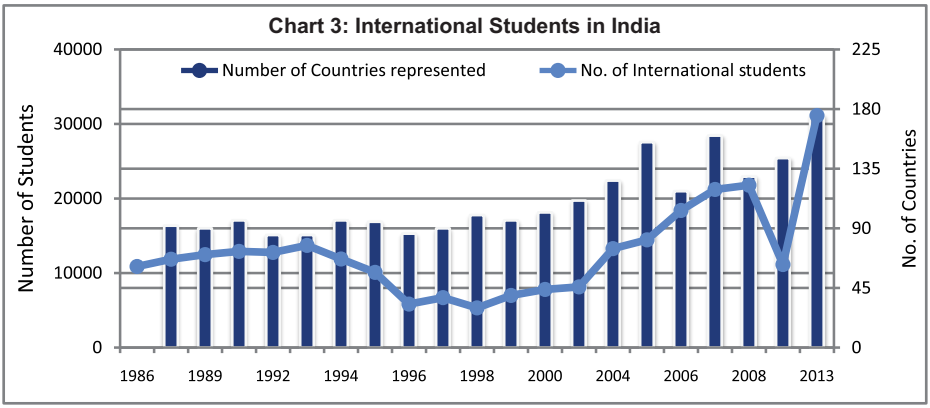
Inward Mobility

5. Inward mobility of students in higher education means the number of international students studying in a country. Analysis of the available data shows that the United States of America has continued to remain the most popular destination and the number of international students studying in USA has consistently been growing and has doubled in 2013 as compared to 2006. The number of international students going to the United Kingdom has more than doubled during the same period. Most strikingly, the China has surpassed Australia as in 2014 it attracted 3.77 Lakh international students whereas the number of international students going to Australia has been no more than 2.7 Lakh.

International Students in India: A Trend Analysis

Chart 2: Number of International Students in Different Countries





6. India, with only 31,126 international students in 2014 has been attracting only a fraction of international students, though the number has gone up from a mere 7,791 in 2000. The share of India in the internal students has been abysmally low at only 0.61%.

7. This is not to say that the number of international students coming to India have been stagnant or have not been growing, but a trend analysis since 1986 shows that the numbers have seen ups and downs. In 1986, the number of international students in India were 10,877 which rose to 13,707 in 1993. After that the numbers started declining and touched an all time low of 5,323 in 1998. Since then, the numbers have been increasing to touch 31,126 in 2013.

International Students In India: Major Continents

Number of Countries from where the international students have been coming to Indian has also gone up from 92 in 1988 to 175 in 2013. International Students from all the continents come to India but students from Asia and Africa dominate. The proportion of students from Asia, which was about 48 percent in 1995 has now gone up to 75 percent in 2013. African students which in 1995 constituted nearly 40 percent of the student population has now been reduced to about 19 percent. Over the period, the number of students from Americas have also more than doubled but the numbers still remain in hundred. So is the case of students from Europe.

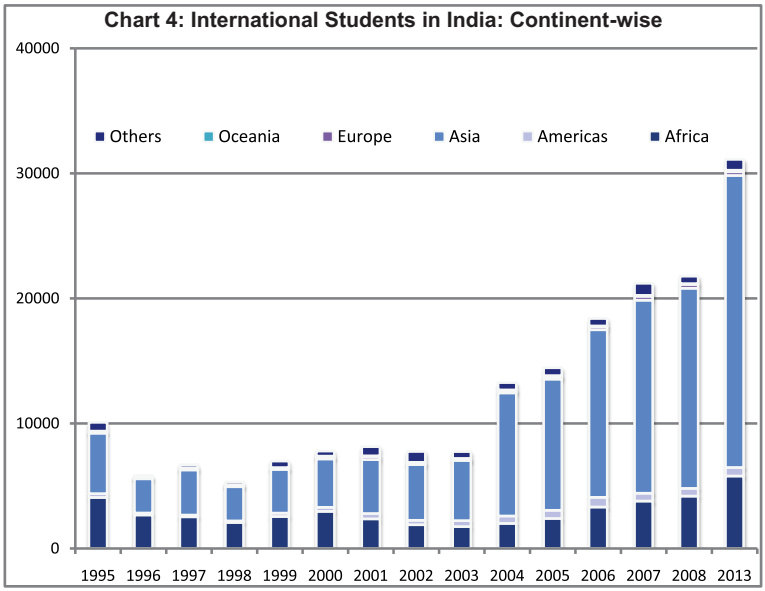
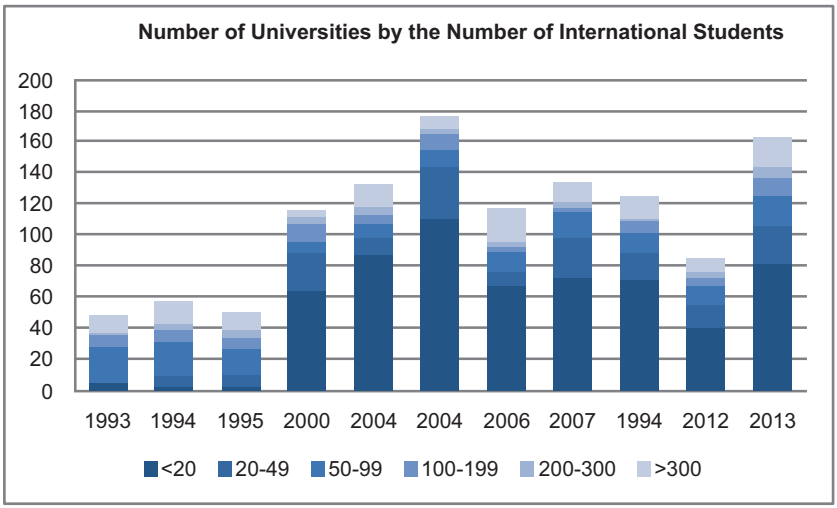


Table-3: International Students in India from Different Continents							
Years	**Africa**	**Americas**	**Asia**	**Europe**	**Oceania**	**Others**	**Total**
1995	4081	309	4831	127	40	699	10087
1996	2680	163	2735	91	28	144	5841
1997	2536	140	3605	151	35	234	6701
1998	2085	124	2733	111	32	238	5323
1999	2558	275	3492	120	31	512	6988
2000	2969	327	3866	180	44	405	7791
2001	2369	432	4312	253	45	732	8413
2002	1904	353	4452	145	40	862	7756
2003	1755	475	4809	128	42	544	7753
2004	2005	593	9849	178	55	587	13267
2005	2403	654	10493	206	71	629	14456
2006	3316	776	13400	238	69	592	18391
2007	3796	626	15437	309	81	957	21206
2008	4193	614	16004	304	66	597	21778
2012							
2013	5799	686	23350	293	124	864	31126
Source: AIU Occasional Papers on Internationalisation of Higher Education for the years							

Universities by the Number of International Students

While the number of universities reporting presence of international students on their campuses and colleges affiliated thereto have gone up over a period of time, their number has never been more than 175. Besides, the number of international students in most universities have been very low. The number of universities reporting 300 or more international students have during different years varied in the range of 5 in 2000 to 22 in 2006. Bulk of the universities have been reporting less than 20 international students on their campuses including those enrolled in colleges affiliated to them.



International Students in India During 2013-14

10. Considering the importance of internationalisation and inflow of students in India, the AIU has been conducting an annual survey of universities and has been reporting data and analysis of international students in India since 1995. For the purpose, the AIU has developed a data collection tool which is sent to all universities in the country. The AIU does persistent follow up to ensure that responses are received from the maximum number of universities in the country.

11. The tool for data collection seeking information on international students during the academic year 2013-14 was dispatched to 710 universities/university level institutions. This was followed by the telephone contacts requesting the universities to expedite the submission of information. The data so received from 164 universities/university level institutions was compiled and collated. These include 15 central universities, 9 institutions of national importance, 74 public funded state universities, 16 self-financed private universities and 50 institutions deemed to universities.

12. It is assumed that all those universities that had international students reported the data and thus those not reporting the data do not have international students on their campuses. It may be mentioned that mostly all universities that had presence of international students responded and submitted the data on international students. Hence the number of universities not returning the filled up data tools are invariably those which do not have international students on their campus. Still, accounting for the fact that there could have been some universities which add international students but did not submit their details to the AIU, the number of international students may, at the most go up by a maximum of 10 percent.

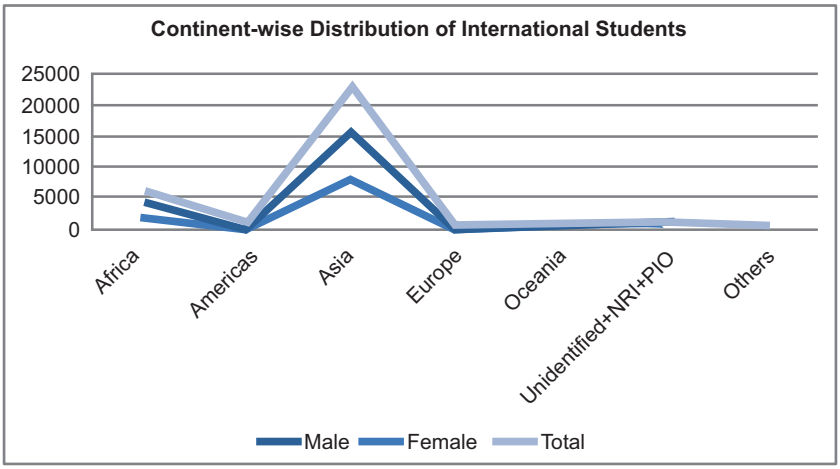
Table-5: Number of Universities Responding to the AIU's Questionnaire International Students

Type of Universities	Total Number	Number Responded
Central Universities	45	15
Institutions of National Importance	51	9
Public Funded State Universities	312	74
Self-financed Private Universities	173	16
Institutions deemed to be Universities	129	50
Total Number of Universities	**710**	**164**

Total Number of International Students

13. Data reported by the universities reveals that a total of 31,126 international students were enrolled in different universities during the academic year 2013-14. Distribution of the international students in India is highly skewed in favour of female as more than 67% of the international students are men.

14. The international students studying in India during the academic year 2013-14 came from as many as 160 countries from across all continents, though a predominant proportion accounting for early 75 percent were found to be from Asia followed by Africa which accounted for about 19 percent of the total international students in India. Americas, Europe, Oceania and the persons of Indian origin and the non-resident Indian account for only 6 percent of the international students studying in India.



International Students from Africa

15. With 5799 students drawn from more than 50 countries, Africa was fond to be the second most major source of international students in India. The proportion of female amongst the students from Africa was found to be only 29.12 percent. Of all the regions in Africa, the largest proportion (55%) of students came from the Eastern Africa followed by the Western and Northern Africa from where 19 and 15 percent of the total African students came to India respectively. The Middle and Southern Africa accounts for 8 and 4 percent of the total African students studying in India (Table 7).

Table-7: Region-wise Distribution of International Students from Africa

Regions	Male	Female	Total
Northern Africa	765	79	844
Western Africa	823	284	1107
Eastern Africa	2068	1108	3176

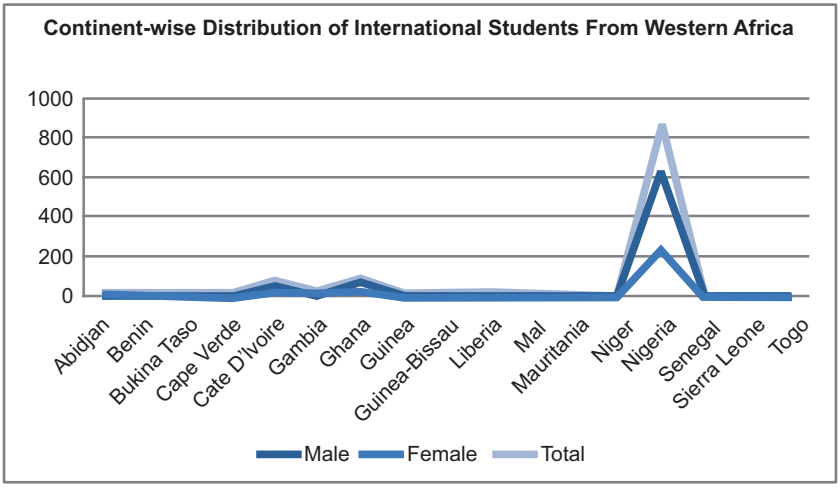
Regions	Male	Female	Total
Middle Africa	349	107	456
Southern Africa	100	116	216
Total	**4105**	**1694**	**5799**

16. Students from six countries of Northern Africa totalling 844, predominantly male, received their higher education in India. Sudan and Libya were sending the highest and the second highest number of students to India as the number of students from these two countries were 611 and 189 respectively. These were followed by Egypt with only 30 students (Table 8).

Table-8: Country-wise Distribution of International Students from Northern Africa

Countries	Male	Female	Total
Africa	2	0	2
Egypt	27	3	30
Libya	155	34	189
Morocco	4	4	8
Sudan	575	36	611
Tunisia	2	2	4
Total Students From Northern Africa	**765**	**79**	**844**

17. Nigeria stands out prominently amongst 17 countries of the Western African countries as 883 students from Nigeria were studying in India during 2013-14. Other prominent countries of Western Africa included Ghana, Gambia and Liberia which respectively accounted for 84, 24 and 10 students respectively. The number of students from the rest of the countries of the Western Africa were 5 or less.



18. India received 3176 students from 17 countries representing Eastern Africa. Ethiopia (with 871 students), Tanzania (497), Kenya (351), Rwanda (278), Mauritius (231), Zambia (230), Uganda (131) and Burundi (119) emerge the top most countries of Eastern Africa (Table 10).

Table-10: Country-wise Distribution of International Students from Eastern Africa

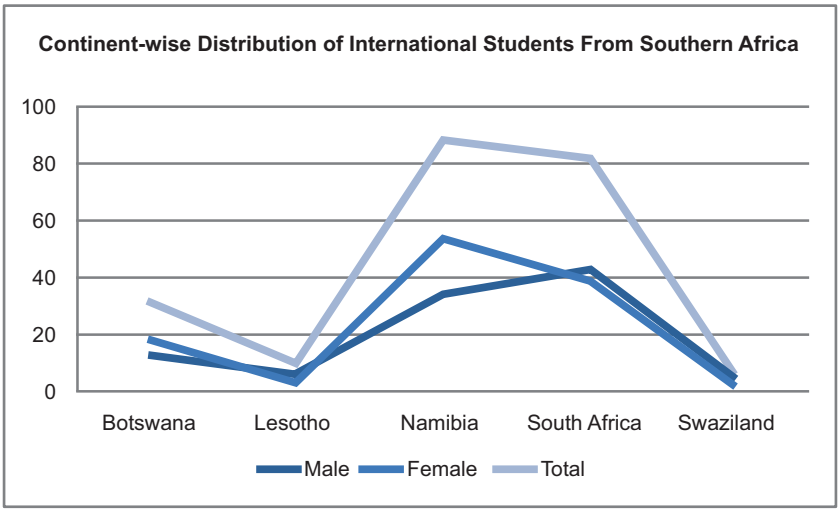
Countries	Male	Female	Total
Burundi	58	61	119
Djibouti	31	28	59
Eritrea	64	7	71
Ethiopia	708	163	871
Kenya	242	109	351
Madagascar	4	2	6
Malawi	8	4	12
Mauritius	84	147	231
Mozambique	62	32	94
Rwanda	172	106	278
Seychelles	0	7	7
Somalia	79	17	96
South Sudan	19	7	26
Tanzania	275	222	497
Uganda	75	56	131
Zambia	121	109	230
Zimbabwe	66	31	97
	2068	**1108**	**3176**

19. International students from the Middle African countries were only 456 with majority being male. Amongst the Middle African Countries, India received highest number of students from Congo (231) followed by the Democratic Republic of Congo (93) and Cameroon (64). In all, students from seven countries of the Middle Africa pursued their higher education in India (Table 11).

Table-11: Country-wise Distribution of International Students from Middle Africa

Countries	Male	Female	Total
Angola	21	2	23
Cameroon	55	9	64
Central African Republic	1	0	1
Chad	27	2	29
Congo	173	58	231
Congo, Dem. Rep.	64	29	93
Gabon	8	7	15
	349	**107**	**456**

20. As regards Southern Africa, 216 students from 5 countries were reported to be pursuing their higher education in India. In marked contrast, more female than male students came to India from Southern Africa. Amongst the Southern African countries, most students came from Namibia (88) followed by the South Africa (82).



International Students from Americas

21. During the year 2013-14, India received only 686 international students from Americas, of which 369 were female. A bulk of the students (633) came from Northern America whereas the number of students from the Central America, Caribbean and South America were even less than 20 (Table 13).

Table-13: Region-wise Distribution of International Students from Americas

Regions	Male	Female	Total
Northern America	290	343	633
Central America	6	12	18
Caribbean	8	9	17
South America	13	5	18
Total Students From Americas	**317**	**369**	**686**

22. Amongst the Northern America, the largest number of students (457) came from the United States of America (USA) followed by Canada (175) (Table 14).

Table-14: Country-wise Distribution of International Students from North America

Countires	Male	Female	Total
Aruba	0	1	1
Canada	79	96	175
United States Of America	211	246	457
	290	**343**	**633**

23. Of the 18 students coming from the Central America, 17 were reported to be from Mexio (Table 15).

Table-15: Country-wise Distribution of International Students from Central America

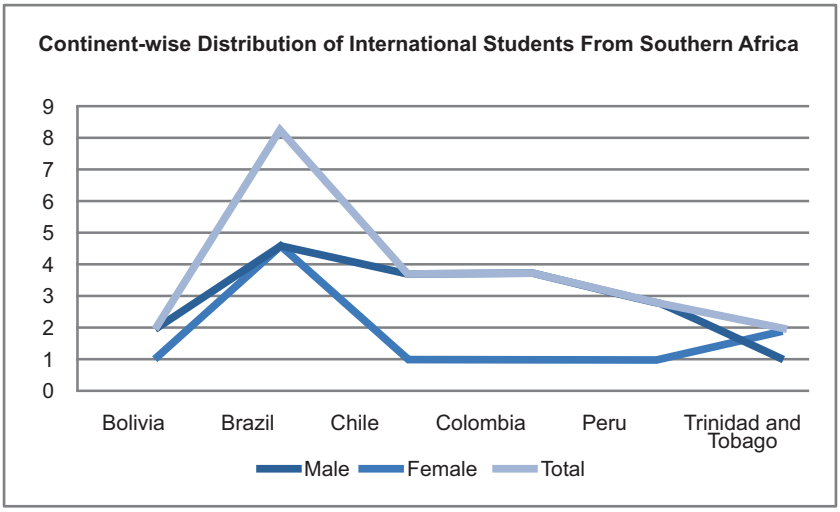
Countries	Male	Female	Total
Belize	0	1	1
Mexico	6	11	17
Total	**6**	**12**	**18**

24. Amongst the Caribbean countries, the largest number of students (13) came from the Guyana whereas there were only 2 students from St. Kitts-Nevis and just one from the Bahama and Haiti each. (Table 16).

Table-16: Country-wise Distribution of International Students from Caribbean

Countries	Male	Female	Total
Bahamas	1	0	1
Guyana	5	8	13
Haiti	1	0	1
St. Kitts-nevis	1	1	2
Total	**8**	**9**	**17**

25. As regards students from South America, the largest number (8) came from Brazil whereas there were 3 students each from Chile (Santiago) and Colombia, 2 students from Peru and one each from Bolivia and Trinidad & Tobago.



International Students from Asia

26. As mentioned earlier, India receives nearly 75 percent of its international students from Asia. Within Asia, the largest contingent (13375) comes from South Asia followed by the Western Asia from where the country received 6347 students during the year 2013-14. The least number of students (236) were reported to be from Central Asia. (Table 18).

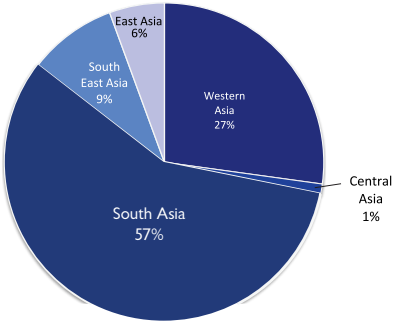
Table-18: Region-wise Distribution of International Students from Asia

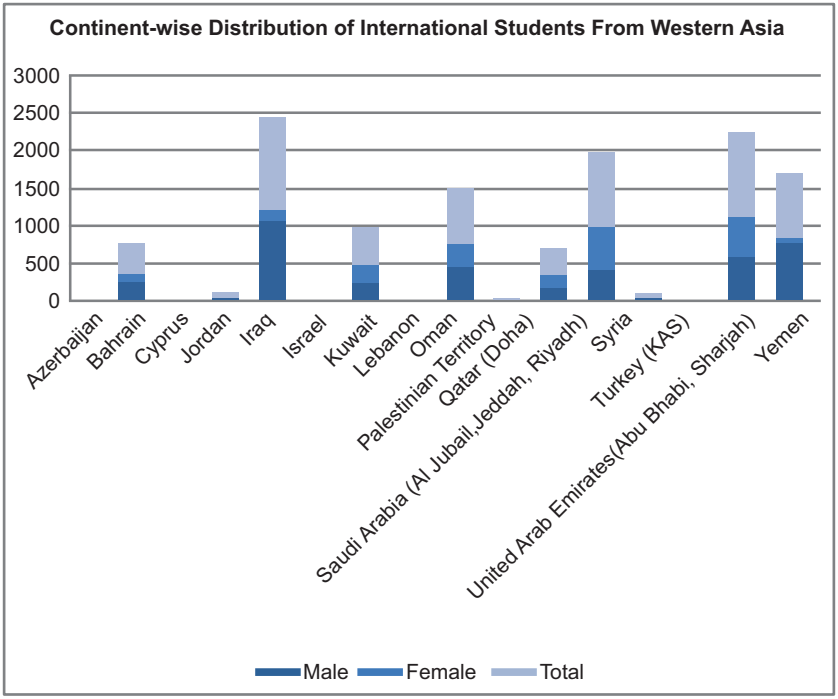
Regions	Male	Female	Total
Western Asia	4177	2170	6347
Central Asia	132	104	236
South Asia	9671	3704	13375
Southeast Asia	995	1092	2087
East Asia	715	590	1305
Total	**15690**	**7660**	**23350**

27. Clearly, 57 percent of the international students from Asia are from the South Asia followed by 27 percent from the West Asia. South East Asia and the East Asia contribute 9 and 6 percent respectively.

28. International students from as many as 16 countries falling under West Asia were reported to be pursuing their higher education in India during the year 2013-14. Top 5 countries of West Asia include Iraq (1225 students), United Arab Emirate (1127), Saudi Arabia (993), Yemen (848) and Oman (755). These are followed by Kuwait (492), Bahrain (386) and Qatar (358) (Table 19).

Chart 6: Region-wise Distribution of International Students from Asia





29. As regards Central Asia, during 2013-14 India received only 236 students of which as many as 143 were from Turkmenistan alone followed by Uzbekistan from where 55 students were reported studying in India (Table 20).

Table-20: Country-wise Distribution of International Students from Central Asia

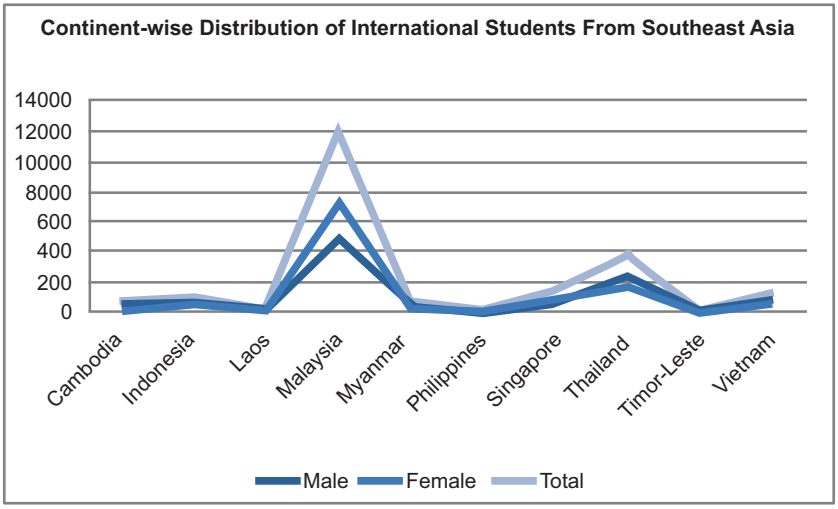
Countries	Male	Female	Total
Kazakhstan	6	13	19
Tajikistan	4	15	19
Turkmenistan	79	64	143
Uzbekistan (Thashkent)	43	12	55
	132	**104**	**236**

30. Amongst the South Asian countries, which constitutes 57 percent of the international students from Asia, Nepal tops the list with 6009 students followed by Afghanistan from where 3855 students were reported studying in India. Bhutan (1201) and Iran (1143) were neck to neck. During the period India received 565 students from Bhutan and 405 students from Bangladesh (Table 21).

Table-21: Country-wise Distribution of International Students from South Asia

Countries	Male	Female	Total
Afghanistan	3576	279	3855
Bangladesh	265	140	405
Bhutan	773	428	1201
Iran	597	546	1143
Maldives	80	109	189
Nepal	4119	1890	6009
Pakistan	5	3	8
Sri Lanka	256	309	565
	9671	**3704**	**13375**

31. During the year 2013-14, international students from Southeast Asia numbered 2087 out of which 1206 came from Malaysia alone, which was followed by Thailand (380), Singapore (133) and Vietnam (109) .



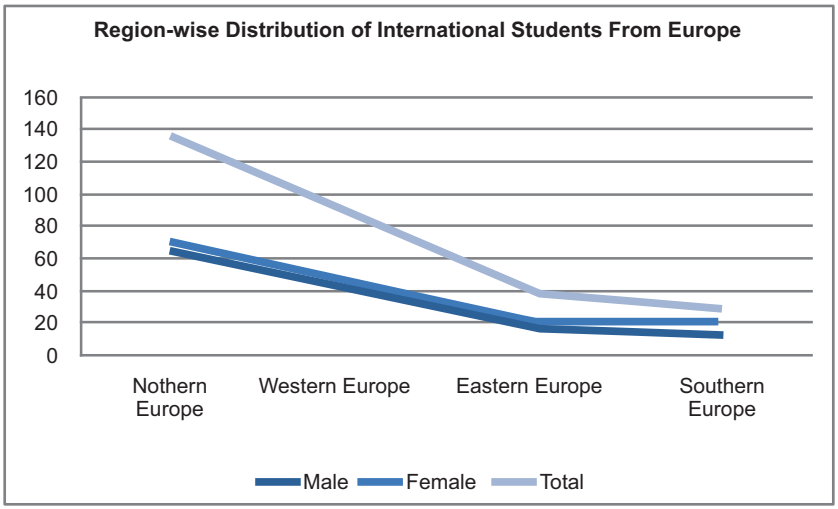
32. As many as 1305 international students from East Asia were reported to be studying in India during the year 2013-14 with Tibet (508), China (358) and South Korea (307) being the top most countries (Table 23).

Table-23: Country-wise Distribution of International Students from East Asia

Countries	Male	Female	Total
China	277	81	358
China, Hong Kong SAR	5	1	6
China, Macao SAR	1	0	1
Japan	26	15	41
Korea, North	1	1	2
Korea, South	156	151	307
Mongolia	22	53	75
Taiwan	3	4	7
Tibet	224	284	508
	715	**590**	**1305**

International Students From Europe

33. During the year 2013-14, India received 293 students from Europe. Of these 135 students came from the Northern Europe followed by Western Europe with 91 students. The number of students coming from the Eastern and Southern Europe were only 38 and 29 respectively.

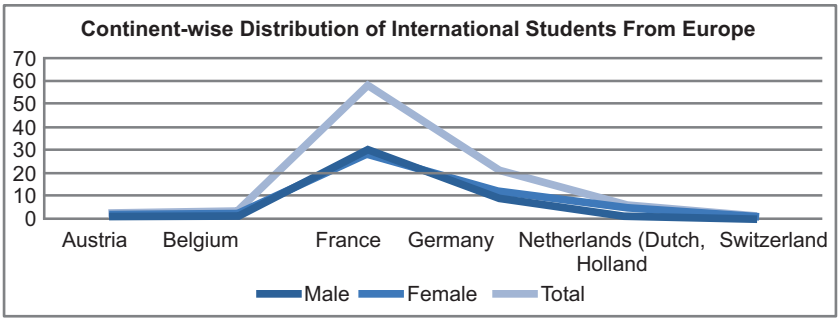


34. Amongst the Northern European countries, from where 135 students from 8 countries were reported to be pursuing their higher education in India, the United Kingdom(UK) tops the list with 108 students. The number of students from the rest of the countries were reported to be in single digit (Table 25).

Table-25: Country-wise Distribution of International Students from Nothern Europe

Countries	Male	Female	Total
Denmark	1	0	1
Finland (suomi)	2	4	6
Iceland	0	1	1
Ireland	3	3	6
Latvia	0	3	3
Norway	2	2	4
Sweden	4	2	6
United Kingdom (britain)	53	55	108
	65	**70**	**135**

35. During the year 2013-14, only 91 students from the Western Europe were reported to be pursuing their higher education in India. Though these students came from 6 different countries, France with 58 students and Germany with 21 students occupy the top two positions. The numbers from the rest of the countries were only in single digit.

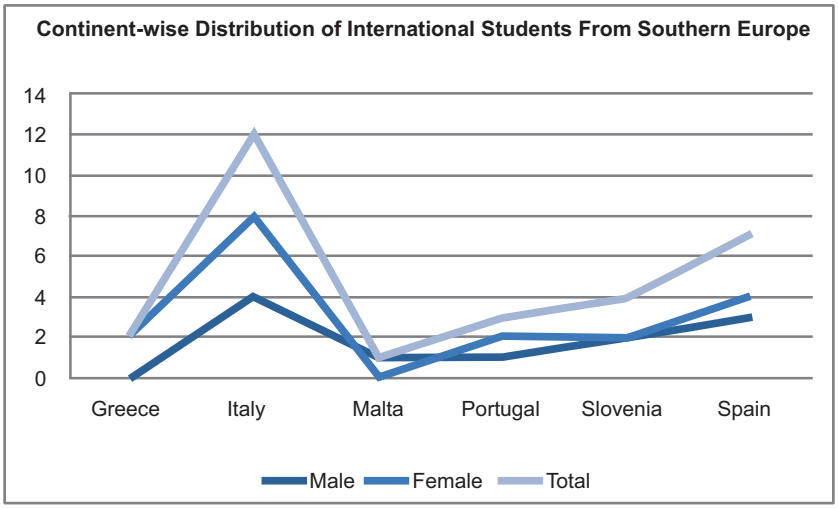


36. As regards Easter Europe, only 38 students were reported to be studying in India during the year 2013-14 with Russia alone sending as many as 23 students (Table 27).

Table-27: Country-wise Distribution of International Students from Eastern Europe

Countries	Male	Female	Total
Bulgaria	1	0	1
Czech Republic	0	1	1
Hungary	1	0	1
Poland	3	1	4
Russia	6	17	23
Ukraine	6	2	8
	17	**21**	**38**

37. India also received, albeit in a very small number, international students from 6 countries representing Southern Europe. Of the 29 students coming from the region, 12 were reported to be from Italy followed by Spain from where 7 students came to India to undertake their higher studies .

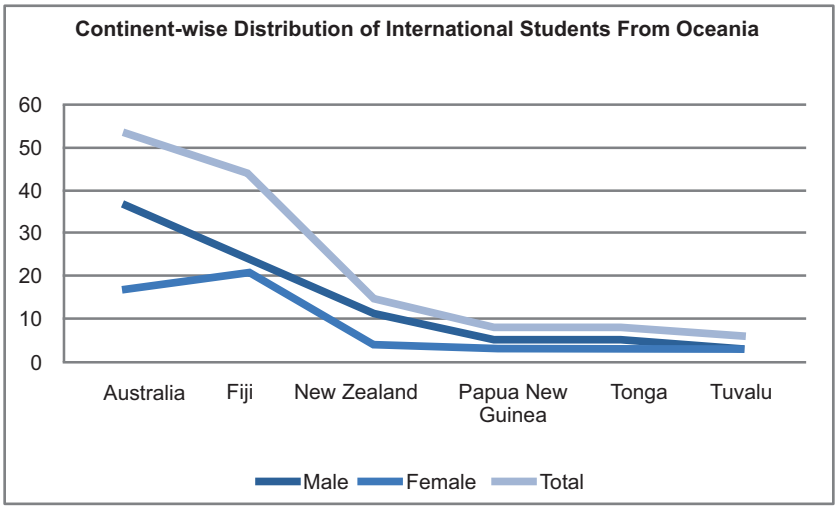


International Students From Oceania & Others

38. During the year 2013-14, India received 134 students from Oceania. Of these, the largest number came from Australia (53), Fiji (44) and New Zealand (15). The other three countries namely Papua New Guinea, Tonga and Tuvalu sent 6 to 8 students each.

Table-29: Region-wise Distribution of International Students from Oceania & Other

Regions	Male	Female	Total
Oceania	83	51	134
Unidentified/NRI/PIO	**552**	**288**	**840**
Other			24
Total	**635**	**339**	**998**



39. In addition, universities reported 864 international students without mentioning their nationalities or indicating that they represented the NRI/PIO catagories.

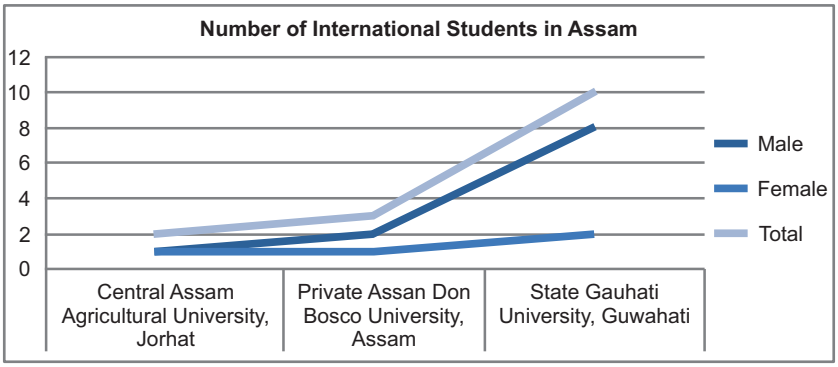
Major Players In Internationalisation of Higher Education

Table-31: Number of International Students States and Type of University						
States	**Central**	**INI**	**State**	**Deemed**	**Private**	**Total**
Andhra Pradesh		429	201		14	644
Assam	2	10			3	15
Bihar			37			37
Chhattisgarh			23		2	25
Delhi	6902	81	115	192		7290
Gujarat	1		422	4	2	429
Haryana		30	489		59	578
Himachal			3			3
Jharkhand	9		1	53		63
Karnataka		1126	1284	32	877	3319
Kerala			2			2
Maharashtra	10	15	4842	2892		7759
Meghalaya	12					12
Mizoram					1	1
Madhya Pradesh		280	16			296
Orissa		93	2		258	353
Puducherry	79					79
Punjab			559	53	1351	1963
Rajasthan			5	51	275	331
Telangana	31	21	1645			1697
Tamil Nadu			455	321	21	797

States	Central	INI	State	Deemed	Private	Total
Uttarakhand		26	9			35
Uttar Pradesh	1042	371	7	634	1494	3548
West Bengal	81	11	208			300
Total	8169	2483	10335	4232	4357	29576

Table-32: Number of International Universities in Andhra Pradesh

University	Type	Male	Female	Total
Andhra University	State	108	10	118
Jawaharlal Nehru Technological University Anantapur	State	62	3	65
Jawaharlal Nehru Technological University, Kakinada	State	7	0	7
K L University, Guntur (KLEF)	Private	9	5	14
Kakatiya University, Vidyaranyapuri, Warangal	State	8	3	11
National Institute of Technology, Warangal	INI	355	74	429
Total				**644**



Appendix I: International Students in Indian Universities

Country-wise Distribution 2013-14

Regions	Male	Female	Total
Africa			
Nothern Africa	765	79	844
Western Africa	823	284	1107
Eastern Africa	2068	1108	3176
Middle Africa	349	107	456
Southern Africa	100	116	216
			5799
Americas			
Nothern America	290	343	633
Central America	6	12	18
Caribbean	8	9	17
South America	13	5	18
			686
Asia			
Western Asia	4177	2170	6347
Central Asia	132	104	236
South Asia	9671	3704	13375
Southeast Asia	995	1092	2087
East Asia	715	590	1305
			23350
Europe			
Nothern Europe	65	70	135
Western Europe	43	48	91
Eastern Europe	17	21	38
Southern Europe	11	18	29
Oceania	83	51	134
			427
	20331	**9931**	**30262**

Regions	Male	Female	Total
*Miscellaneous (NRI)	**552**	**288**	**840**
			24
Grand Total			**31126**
Nothern Africa			
Africa	2	0	2
Egypt	27	3	30
Libya	155	34	189
Morocco	4	4	8
Sudan	575	36	611
Tunisia	2	2	4
	765	**79**	**844**
Western Africa			
Abidjan	4	1	5
Benin	2	1	3
Burkina Faso	0	1	1
Cape Verde	1	0	1
Côte d'Ivoire	53	16	69
Gambia	17	7	24
Ghana	67	17	84
Guinea	5	0	5
Guinea-Bissau	2	2	4
Liberia	9	1	10
Mali	3	2	5
Mauritania	4	0	4
Niger	5	0	5
Nigeria	647	236	883
Senegal	1	0	1
Sierra Leone	2	0	2
Togo	1	0	1
	823	**284**	**1107**

Regions	Male	Female	Total
Eastern Africa			
Burundi	58	61	119
Djibouti	31	28	59
Eritrea	64	7	71
Ethiopia	708	163	871
Kenya	242	109	351
Madagascar	4	2	6
Malawi	8	4	12
Mauritius	84	147	231
Mozambique	62	32	94
Rwanda	172	106	278
Seychelles	0	7	7
Somalia	79	17	96
South Sudan	19	7	26
Tanzania	275	222	497
Uganda	75	56	131
Zambia	121	109	230
Zimbabwe	66	31	97
	2068	**1108**	**3176**
Middle Africa			
Angola	21	2	23
Cameroon	55	9	64
Central African Republic	1	0	1
Chad	27	2	29
Congo	173	58	231
Congo, Dem. Rep.	64	29	93
Gabon	8	7	15
	349	**107**	**456**
Southern Africa			
Botswana	13	18	31

Regions	Male	Female	Total
Lesotho	6	3	9
Namibia	34	54	88
South Africa	43	39	82
Swaziland	4	2	6
	100	**116**	**216**
Americas			
Nothern America			
Aruba	0	1	1
Canada	79	96	175
United State (Texas, America)	211	246	457
	290	**343**	**633**
Central America			
Belize	0	1	1
Mexico	6	11	17
	6	**12**	**18**
Caribbean			
Bahamas	1	0	1
Guyana	5	8	13
Haiti	1	0	1
St. Kitts-Nevis	1	1	2
	8	**9**	**17**
South America			
Bolivia	1	0	1
Brazil	4	4	8
Chile (santiago)	3	0	3
Colombia	3	0	3
Peru	2	0	2
Trinidad and Tobago	0	1	1
	13	**5**	**18**
Asia			
Western Asia			

Regions	Male	Female	Total
Azerbaijan	1	1	2
Bahrain	265	121	386
Cyprus	1	0	1
Jordan	54	2	56
Iraq (Kurdistan)	1068	157	1225
Israel	1	1	2
Kuwait	252	240	492
Lebanon	1	0	1
Oman (Muscat)	456	299	755
Palestinian Territory	25	1	26
Qatar (Doha)	179	179	358
Saudi Arabia (Al Jubail, Jeddah, Riyadh)	432	561	993
Syria	44	11	55
Turkey (KAS)	16	4	20
United Arab Emirates (Abu Dhabi, Dubai, Sharjah)	601	526	1127
Yemen	781	67	848
	4177	**2170**	**6347**
South Central Asia			
Central Asia			
Kazakhstan	6	13	19
Tajikistan	4	15	19
Turkmenistan	79	64	143
Uzbekistan (Thashkent)	43	12	55
	132	**104**	**236**
South Asia			
Afghanistan	3576	279	3855
Bangladesh	265	140	405
Bhutan	773	428	1201
Iran	597	546	1143
Maldives	80	109	189
Nepal	4119	1890	6009

Regions	Male	Female	Total
Pakistan	5	3	8
Sri Lanka	256	309	565
	9671	**3704**	**13375**
Southeast Asia			
Cambodia	53	3	56
Indonesia	44	49	93
Laos	17	9	26
Malaysia	479	727	1206
Myanmar	52	19	71
Philippines	6	4	10
Singapore	51	82	133
Thailand	225	155	380
Timor-Leste	3	0	3
Vietnam	65	44	109
	995	**1092**	**2087**
East Asia			
China	277	81	358
China, Hong Kong SAR	5	1	6
China, Macao SAR	1	0	1
Japan	26	15	41
Korea, North	1	1	2
Korea, South	156	151	307
Mongolia	22	53	75
Taiwan	3	4	7
Tibet	224	284	508
	715	**590**	**1305**
Europe			
European Union			
Nothern Europe			
Denmark	1	0	1
Finland (Suomi)	2	4	6

Regions	Male	Female	Total
Iceland	0	1	1
Ireland	3	3	6
Latvia	0	3	3
Norway	2	2	4
Sweden	4	2	6
United Kingdom (Britain)	53	55	108
	65	**70**	**135**
Western Europe			
Austria	1	1	2
Belgium	1	2	3
France	30	28	58
Germany	9	12	21
Netherlands (Dutch, Holland)	1	5	6
Switzerland	1	0	1
	43	**48**	**91**
Eastern Europe			
Bulgaria	1	0	1
Czech Republic	0	1	1
Hungary	1	0	1
Poland	3	1	4
Russia	6	17	23
Ukraine	6	2	8
	17	**21**	**38**
Southern Europe			
Greece	0	2	2
Italy	4	8	12
Malta	1	0	1
Portugal	1	2	3
Slovenia	2	2	4
Spain	3	4	7
	11	**18**	**29**

Regions	Male	Female	Total
Oceania			
Australia	36	17	53
Fiji	23	21	44
New Zealand	11	4	15
Papua New Guinea	5	3	8
Tonga	5	3	8
Tuvalu	3	3	6
	83	**51**	**134**
*Miscellaneous (NRI)	552	288	**840**
Grand Total			**31102**

*840 International Students not identified country wise

Appendix II: International Students in Indian Universities

Region-wise Distribution 2013-14

Sl. No.	University Name	State	Type	Male	Female	Total
01	Ahmedabad University	Gujarat	State	3	4	7
02	Alagappa University, Karaikudi	AP	State	3	3	6
03	Aliah University, Kolkata	WB	State	2	1	3
04	Aligarh Muslim University, Aligarh	UP	Central	203	98	301
05	Anand Agricultural University	Gujarat	State	3	2	5
06	Andhra University	AP	State	108	10	118
07	Anna University, Guindy, Chennai	TN	State	7	14	21
08	Assam Agricultural University, Jorhat	Assam	Central	1	1	2
09	Assam Don Bosco University, Assam	Assam	Private	2	1	3
10	Avinashilingam University for Women, Coimbatore	TN	Deemed	0	2	2
11	B N Mandal University, Laloo Nagar, Madhepura	Bihar	State	1	1	2
12	B S Abdur Rahman University	TN	Private	0	2	2
13	Baba Farid University of Health Science, Faridkot	Punjab	State	37	34	71
14	Babasaheb Bhimrao Ambedkar University, Lucknow	UP	Central	2	0	2
15	Banaras Hindu University, Varanasi	UP	Central	416	168	584
16	Banasthali Vidyapeeth University, Rajasthan	Rajasthan	Deemed	8	16	24
17	Bhagwant University, Ajmer	Rajasthan	Private	93	20	113
18	Bharat Ratna B R Ambedkar University, Delhi	Delhi	State	3	7	10
19	Bharathiar University, Coimbatore	TN	State	183	54	237
20	Bharati Vidyapeeth University, Pune	Maha	Deemed	258	192	450
21	Bidhan Chandra Krishi Vishwavidyalaya, District Nadia	WB	State	0	9	9
22	Birla Institute of Technology & Science, Pilani	Rajasthan	Deemed	10	2	12
23	Birla Institute of Technology, Mesra, Ranchi	Jharkhand	Deemed	2	1	3
24	Birsa Agricultural University, Kanke, Ranchi	Jharkhand	State	1	0	1
25	Central Institute of Fisheries Education, Mumbai	Maha	Deemed	3	0	3
26	Central University of Gujarat	Gujarat	Central	1	0	1
27	Central University of Jharkhand	Jharkhand	Central	9	0	9

Sl. No.	University Name	State	Type	Male	Female	Total
28	Ch. Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur	HP	State	3	0	3
29	Chhatisgarh Swami Vivekanand Technical University, Bhilai	CG	State	22	0	22
30	Chhattisgarh Kamdhenu Vishwavidyalaya, Durg	CG	State	1	0	1
31	Christ University, Bangalore	Karnataka	Private	278	210	488
32	Cochin University of Science & Technology, Kochi	Kerala	State	2	0	2
33	D. Y. Patil University, Kolhapur	Maha	Deemed	1	0	1
34	Datta Meghe Institute of Medical Sciences University, Nagpur	Maha	Deemed	11	27	38
35	Davangere University, Shivagangotri, Davangere		State	8	2	10
36	Deccan College Post Graduate and Research Institute, Pune	Maha	Deemed	14	14	28
37	Deendayal Upadhyay Gorakhpur University, Gorakhpur	UP	State	7	0	7
38	Delhi Technological University, Delhi	Delhi	State	5	1	6
39	Dev Sanskriti Vishwavidyalaya, Haridwar	UK	Deemed	4	4	8
40	Devi Ahilya Vishwavidyalaya, R N Tagore Marg, Indore	MP	State	0	1	1
41	Dhirubhai Ambani Institute of Information and Communication Technology, Gandhinagar	Gujarat	Private	2	0	2
42	Doon University, Dehradun	UK	Private	0	1	1
43	Dr Babasaheb Ambedkar Marathwada University, Aurangabad	Maha	State	133	16	149
44	Dr C V Raman University, Bilaspur	CG	Private	2	0	2
45	Dr D Y Patil University, Pune	Maha	Deemed	18	25	43
46	Dr K N Modi University	Rajasthan	Private	135	3	138
47	Dr MGR Educational and Research Institute University, Chennai	TN	Deemed	8	5	13
48	Gauhati University, Guwahati	Assam	State	8	2	10
49	Gujarat Technological University	Gujarat	State	101	35	136
50	Gujarat University, Navrangpura, Ahmedabad	Gujarat	State	131	49	180
51	Gujarat Vidyapith, Ahmedabad	Gujarat	Deemed	1	3	4
52	Guru Govind Singh Indraprastha University, New Delhi	Delhi	State	55	20	75
53	Guru Jambheshwar University of Science & Technology, Hisar	Haryana	State	5	0	5

Sl. No.	University Name	State	Type	Male	Female	Total
54	Guru Nanak Dev University, Amritsar	Punjab	State	2	2	4
55	ICFAI University, Mizoram	Mizora	Private	1	0	1
56	Indian Institute of Enninering Science and Technology, Shibpur	WB	INI	6	1	7
57	Indian Institute of Information Technology, Allahabad	UP	INI	45	9	54
58	Indian Institute of Science, Bangalore	Karnataka	Deemed	21	11	32
59	Indian Institute of Technology Delhi, New Delhi	Delhi	INI	74	7	81
60	Indian Institute of Technology Kanpur, Kanpur	UP	INI	15	0	15
61	Indian Institute of Technology Kharagpur	WB	INI	3	1	4
62	Indian Institute of Technology Roorkee, Roorkee	UK	INI	26	0	26
63	Indian School of Mines University, Dhanbad	Jharkhand	Deemed	50	0	50
64	Indira Gandhi National Open University, New Delhi	Delhi	Central	3206	2459	5665
65	International Institute for Population Sciences, Govandi	Maha	Deemed	0	1	1
66	International Institute of Information Technology, Hyderabad	Telangana	INI	11	10	21
67	Invertis University, Bareilly	UP	Private	5	0	5
68	Jadavpur University, Kolkata	WB	State	12	3	15
69	Jain University, Bangalore	Karnataka	Private	126	81	207
70	Jamia Hamdard, New Delhi	Delhi	Deemed	119	45	164
71	Jamia Millia Islamia, Delhi	Delhi	Central	136	90	226
72	Janardan Rai Nagar Rajasthan Vidyapeeth University, Udaipur	Rajasthan	Deemed	11	4	15
73	Jawaharlal Nehru Technological University, Anantapur	AP	State	62	3	65
74	Jawaharlal Nehru Technological University, Hyderabad	Telangana	State	71	8	79
75	Jawaharlal Nehru Technological University, Kakinada	AP	State	7	0	7
76	Jaypee Institute of Information Technology, Noida	UP	Deemed	3	0	3
77	JSS University, Mysore	Karnataka	Private	66	72	138
78	Junagadh Agricultural University, Junagadh	Gujarat	State	8	0	8
79	K L E University, Belgaum	Karnataka	Private	18	26	44
80	K L University, Guntur (KLEF)	AP	Private	9	5	14

Sl. No.	University Name	State	Type	Male	Female	Total
81	Kakatiya University, Vidyaranyapuri, Warangal	AP	State	8	3	11
82	Kalinga Institute of Industrial Technology, Bhubaneswar	Orissa	Deemed	241	17	258
83	Kameshwara Singh Darbhanga Sanskrit University, Darbhanga	Bihar	State	22	12	34
84	Karnatak University, Dharwad	Karnataka	State	16	6	22
85	Karnataka State Law University, Navanagar, Hubli	Karnataka	State	62	44	106
86	Kurukshetra University, Kurukshetra	Haryana	State	301	32	333
87	Lakshmibai National University of Physical Education, Gwalior	MP	State	9	4	13
88	Lovely Professional University, Jalandhar	Punjab	Private	932	419	1351
89	Madurai Kamaraj University, Palkalai Nagar, Madurai	TN	State	1	0	1
90	Maharashtra Animal & Fishery Sciences University, Nagpur	Maha	State	2	1	3
91	Maharshi Dayanand University, Rohtak	Haryana	State	111	27	138
92	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha	Maha	Central	5	2	7
93	Makhanlal Chaturvedi National University of Journalism and Communication, Bhopal	MP	State	2	0	2
94	Manav Rachna International University, Faridabad	Haryana	Private	24	12	36
95	Mangalayatan University, Aligarh	UP	Private	11	1	12
96	Manipal University, Manipal		Private	655	894	1549
97	Maulana Azad National Institute of Technology, Bhopal	MP	INI	257	23	280
98	Meenakshi Academy of Higher Education and Research, Chennai	TN	Private	3	10	13
99	Mohanlal Sukhadia University, Udaipur	Rajasthan	State	1	0	1
100	Monad University, Hapur	UP	Private	1	0	1
101	Motilal Nehru National Institute of Technology, Allahabad	UP	INI	274	28	302
102	NALSAR University of Law, Hyderabad	Telangana	State	2	8	10
103	Narsee Monjee institute of Management Studies, Mumbai	Maha	Private	0	0	23
104	National Dairy Research Institute, Karnal	Haryana	State	13	0	13
105	National Institute of Technology, Kurukshetra	Haryana	INI	27	3	30
106	National Institute of Technology, Rourkela	Orissa	INI	81	12	93
107	National Institute of Technology, Warangal	AP	INI	355	74	429

Sl. No.	University Name	State	Type	Male	Female	Total
108	National Law School of India University, Bangalore	Karnataka	State	12	17	29
109	National Law University, Delhi	Delhi	State	1	5	6
110	North Eastern Hill University, Shillong	Meghalaya	Central	10	2	12
111	North Maharashtra University	Maha	State	28	1	29
112	O P Jindal Global University, Sonipat	Haryana	Private	14	9	23
113	Osmania University, Hyderabad	Telangana	State	1236	320	1556
114	Panjab University, Chandigarh	Punjab	State	259	132	391
115	Patna University, Patna	Bihar	State	0	1	1
116	Pondicherry University, Pondicherry	Puducherry	Central	56	23	79
117	Punjab Agricultural University, Ludhiana	Punjab	State	27	1	28
118	Punjabi University, Patiala	Punjab	State	58	7	65
119	Rabindra Bharati University, Kolkata	WB	State	37	37	74
120	Rashtrasant Tukadoji Maharaj Nagpur University	Maha	State	12	0	12
121	Rashtriya Sanskrit Sansthan, Janakpuri, New Delhi	Delhi	State	10	5	15
122	Ravenshaw University, College Square, Cuttack, Orissa	Orissa	State	2	0	2
123	Sam Higginbottom Institute of Agriculture, Technology & Sciences, Allahabad	UP	Deemed	539	95	634
124	Sardar Patel University, Vallabh Vidyanagar	Gujarat	State	33	14	47
125	Saurashtra University, Rajkot	Gujarat	State	6	15	21
126	Saveetha University, Chennai	TN	Private	2	4	6
127	School of Planning and Architecture, New Delhi	Delhi	Deemed	7	7	14
128	Sharda University, Greater Noida	UP	Private	1022	294	1316
129	Shivaji University, Vidyanagar, Kolhapur	Maha	State	9	8	17
130	Shobhit University, Meerut	UP	Private	20	8	28
131	Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha	Delhi	State	3	0	3
132	Sir Padampat Singhania University, Udaipur	Rajasthan	Private	4	3	7
133	Sri Ramachandra University, Chennai	TN	Deemed	14	30	44
134	Swami Keshwanand Rajasthan Agricultural University, Bikaner	Rajasthan	State	3	0	3
135	Swami Vivekanand Subharti University, Meerut	UP	Private	61	35	96
136	Symbiosis International University, Pune	Maha	Deemed	1358	752	2110

Sl. No.	University Name	State	Type	Male	Female	Total
137	Tamil Nadu Dr M G R Medical University, Chennai	TN	State	58	22	80
138	Tamil Nadu Veterinary and Animal Sciences University, Chennai	TN	State	10	7	17
139	Tata Institute of Social Sciences, Mumbai	Maha	Deemed	5	13	18
140	TERI University	Delhi	Deemed	7	7	14
142	Teerthanker Mahaveer University	UP	Private	24	9	33
143	Thapar University, Patiala	Punjab	Deemed	44	9	53
144	The English & Foreign Languages University, Hyderabad	Telangana	Central	10	8	18
145	The IIS University, Jaipur	Rajasthan	Private	0	17	17
146	Tilak Maharashtra Vidyapeeth, Pune	Maha	Deemed	150	59	209
147	Tumkur University, Tumkur	Karnataka	State	2	1	3
148	University of Kalyani, Kalyani	WB	State	0	3	3
149	University of Agricultural Sciences, Dharwad	Karnataka	State	15	2	17
150	University of Allahabad, Allahabad	UP	Central	135	20	155
151	University of Burdwan, Burdwan	WB	State	16	14	30
152	University of Calcutta, Kolkata	WB	State	52	22	74
153	University of Delhi, Delhi	Delhi	Central	521	490	1011
154	University of Hyderabad	Telangana	Central	11	2	13
155	University of Madras, Chennai	TN	State	35	45	80
156	University of Mumbai, Mumbai	Maha	State	81	63	144
157	University of Mysore, Mysore	Karnataka	State	663	444	1107
158	University of Pune, Pune	Maha	State	3524	926	4450
159	University of Rajasthan, Jaipur	Rajasthan	State	0	1	1
160	Veer Narmad South Gujarat University, Surat	Gujarat	State	11	7	18
161	VELS Institute of Science, Technology & Advanced Studies (VISTAS) Chennai	TN	Deemed	61	16	77
162	Visvesvaraya Technological University, Belgaum	Karnataka	INI	564	562	1126
163	Visvesvaraya National Institute of Technology, Nagpur	Maha	INI	11	4	15
164	Visva Bharti,	WB	Central	39	42	81
165	VIT University, Vellore	TN	Deemed	148	50	198
166	**Grand Total**					

Figure 3: International Students in India Universities 2013-14 (Top 5 Universities)

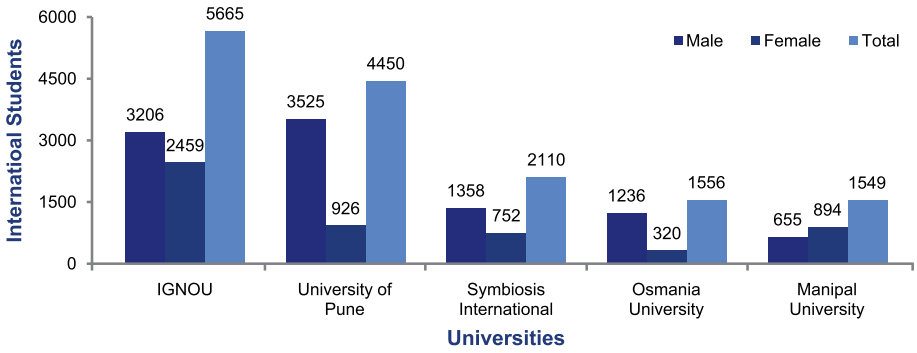
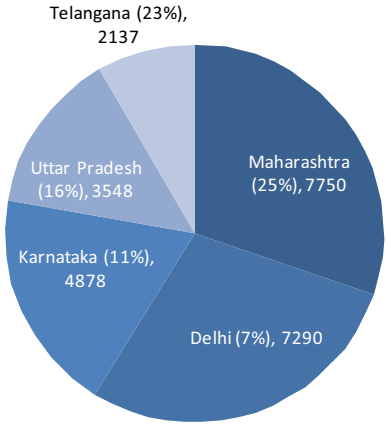


Figure 4: International Students in India Universities (Top 5 States)



Faculty Internships:

Kerala has a Flair for it

Dr. K.P. Jaikiran
Programme Director (Flair)
Government of Kerala

The state of Kerala has an enviable record on literacy as well as on the human development index front but "God's own country" is not too popular a destination with international students. What it does have, however, is an active internationalization programme which is driven by the state's department of higher education, in partnership with the British Council.

Under the "Fostering Linkages in Academic Innovation and Research (Flair)" programme launched in 2014, a total of 47 faculty members have been sent to UK universities for month-week long training in teaching and research. Among the host universities in the UK have been the University of Durham, Derby, Anglia Ruskin, Roehampton, Sheffield Hallam, Hull, Southampton and Arts University Bournemouth.

Flair Internships

Year	Number of Faculty Members	Disciplines of Faculty Members	Host UK Universities for Internships
2013-14	10	Botany, English, Chemistry, Home Science, Biochemistry, Sociology, Commerce, History, Zoology, Architecture	Arts University Bournemouth; Nottingham Trent University; University of Hull; University of Roehampton; University of Southampton
2014-15	19	Botany, Chemistry, Physics, Geology, Zoology, Environmental Science, Electronics, Political Science, Economics, History, English, Sociology	Anglia Ruskin University; University of Roehampton; University of Southampton; University of Durham; Sheffield Hallam University
2015-16	18	Chemistry, Environmental Science, Micro biology, Biotechnology, Physics, Zoology, Commerce, Economics, Arabic	University of Derby; Nottingham Trent University; University of Roehampton; University of Southampton

Faculty members with a Flair for teaching-learning/research are selected through a two-stage process for internships. Each intern gets attached to an experienced professor of the host university in the UK and gets a chance to observe the teaching-learning/research activities of the mentor. A key component of the four-week internship is documentation of a best practice which can be adapted in the home context.

Presentations in host universities towards the close of the internship on the implementation plan of the documented best practice and post-internship experience-sharing in home institutions are the key activities which are aimed at maximizing the benefits and also to ensure returns to the system.

Flair internships have led to significant changes in faculty perception towards academic engagement in institutions and also resulted in tangible outcomes in colleges and university departments of the state. Post-internship feedback from interns suggests that there is a paradigm shift from teacher-entered to learner-centered approach in teaching-earning, research and student support activities.

Dr. Sithara Balan of Government Women's College, Thiruvananthapuram, after her internship in the University of Southampton, has established a new laboratory in her home institute for lifelong learning sourcing government funds. A 25-hour curriculum for developing research skills among post-graduate students is being offered through the laboratory with the support of three other Flair interns of the institution.

Five interns of the first year (2013-14) have been groomed to become trainers, and the induction training programmes of 2016 are being offered with their support. Peer feedback validates the effectiveness of their training sessions.

Besides these, the other direct outcomes include a collaborative research project on 'Return Migration in Kerala' between two colleges in Kerala and the University of Southampton, and successful implementation of learner-friendly assessment practices in the department of biochemistry, University of Kerala. An MoU between the University of Kerala and the Nottingham Trent University for academic development of faculty and students is also under process.

Dr. Sreejith P., an intern of 2014 batch, has got a memorandum signed between his home institution, University of Kerala and the host institution of his internship, University of Roehampton, in virtual internationalization of higher education.

International Offices:

Drivers of Change

Shalini S. Sharma
Senior Consultant & Head – Higher Education
Confederation of Indian Industry

It may seem like an obvious and the easiest thing to do but most institutes still don't have them – offices of international relations – while they are the ones which are driving change on most campuses by exhorting institutes to create short-duration, experience-sharing, familiarization programmes for students coming from international universities. These offices take care of food, housing, local transport, local hospitality, site visits, security, adaptation to local social norms, visas, local currency requirements – virtually every need of those coming from overseas so that they are able to take back positive memories as well as think of converting their short stint into a longer duration stay and enrolment in a programme in India. Here's a look at the way Office of International Relations at IIT. Madras and MS Ramaiah Institute are helping them in attracting international students.

Indian Institute of Technology Madras

Where Research Leads Globalization

At IIT Madras, memorandums with foreign universities are signed only on the basis of faculty-driven collaboration and initiatives, with a faculty member as a champion. The institute has a successfully functioning model and philosophy for research collaboration that works its way up organically through four levels. Level I begins with faculty interactions, serving as a foundation for all agreements signed with partner universities. Level II progresses on to research scholar exchange. The increase in mobility paves way for Level III - joint supervision of PhD students. At Level IV, the institute enters into joint doctorate degree programmes with key partners (14 as of now).

The Office of International Relations serves as a hub for communication and facilitation for internationalization and is responsible for handling incoming and outgoing students. Information sessions on agreements and foreign university programs are organized for students every semester. The office has been successful in attracting several international students who have spent a semester or two on the campus, acclimatizing themselves to the life at IIT Madras.

The ministry of human resource development's "Global Initiative for Academic Networks" (GIAN) has led to flexibility in curriculum for students to register for GIAN courses offered at IIT Madras or at any other institute and earn credits. A one-week course carries 1 credit and a two-week course carries 2 credits as per the old curriculum.

And the efforts are fairly visible on campus, where international students and faculty are regularly seen exchanging ideas while getting a sneak preview of Indian culture.

With inputs from IIT Madras

MS Ramaiah Group of Institutions

A focused international relations office at MS Ramaiah caters to the needs of international students and regularly invites them for exposure programmes in India. Travel and lodging logistics for summer schools, short-term fellowships and exchange programs are handled entirely by the division.

Efforts are made to ensure that early communication channels are set with the local coordinators and sufficient information is provided on all fronts to the visiting participants to make their stay as well as experience meaningful. Apart from the academic offerings, glimpses of the local culture, tradition and habits are provided through pairing with local student "buddies". Some of the popular programs offered by the institution include short-term exposure to rural nuances of Indian life, winter schools in ayurveda, preventive and social medicine, public health and infectious diseases.

The institution entered into a collaboration with the Coventry University of the UK in 2010 to offer joint programs in physiotherapy and engineering sciences. The M S Ramaiah University of Applied Sciences entered into a collaboration with Management & Science University of Malaysia in 2010 and since then has been offering the MBBS program of this Malaysian University in Bangalore. Every year, nearly 150 students from Malaysia come to the Bangalore campus to pursue the five-year MBBS course.

The institute regularly sends high powered delegations to universities across Europe and the US and has forged working relationships to facilitate student/faculty exchange as well as joint research activities. Faculty from here have been teaching at international campuses while faculty members from foreign universities are visiting professors at MS Ramaiah Medical college.

One of the challenges faced in some of the exchange programs is the non-acceptance of exchange credits by the local university as per the Bologna convention. As a consequence, the credit equivalence to complete the degree or formal academic program cannot be accepted or conferred by affiliated institutions in India. Rationalization of the higher education system as per international standards would offer better acceptance of India as a destination for higher education.

Students from Curtin University, Perth at M S Ramaiah Institute, Bangalore

With inputs from M S Ramaiah

India-UK

Excellence Awards for Collaborations in Higher Education

Shalini S. Sharma
Senior Consultant & Head – Higher Education
Confederation of Indian Industry

Shalini heads the higher education vertical in Confederation of Indian Industry (CII). She is a post-graduate in English Literature from Lady Shriram College and was a full-time journalist for more than 20 years before joining CII in 2010. At CII her work includes policy advocacy with the government and working with industry on increasing private investment in higher education. The focus of CII's activities in higher education is on increasing industry-institute linkages and Shalini has been instrumental in successful implementation of several initiatives in this direction. She works closely with the government on Prime Minister's Fellowship Scheme for Doctoral Research which is a public-private partnership between Department of Science and Technology and CII as well as on AICTE-CII Survey of Industry-Linked Technical Institutes which maps industry linkages of technical institutes across the country.

In 2015, Shalini was selected by the United States Department of Space to be a part of the maiden batch of EducationUSA Leadership Institute. On behalf of CII, Shalini also works extensively in forging international collaborations and strategises in creating platforms for interaction between visiting higher education delegations and Indian academia, government and industry.

Before joining CII she was Senior Editor in Businessworld between 2008 and 2010 and wrote on a range of subjects including higher education, business of food, retail, luxury and politics. Her previous stints in media include three years at India Today and 16 years at The Financial Express as News Editor.

Internationalisation of higher education has been a late bloomer in India. While the rest of the world, mainly the US and the UK, has been busy for the past several decades in enriching its higher education system, and its economy, through international students, Indian institutions have woken up to that reality and potential only now. But this is only so far as the enrolment of international students in Indian institutions is concerned.

Other forms of collaborations between Indian and international institutions have existed, starting with the setting up of Indian institutes of technology in the 50s. At that time, as many as nine premier institutes of the US had come together to help set up IIT Kanpur's research laboratories and academic programmes under the Kanpur Indo-American Programme, as mentioned by the first director of the institute, Prof P K Kelkar in his book "IIT Kanpur – History".

But after the initial post-Independence euphoria of doing things the new way, collaborations with foreign institutions dried up due to regulatory issues.

With the advent of economic liberalisation in the early nineties, free exchange of knowledge and partnerships with international institutions started once again. In the absence of a structured mechanism to forge collaborations, there has been no authentic estimate of the numbers at any given point of time since then but what is known and established is that the collaborations are flourishing in several ways, such as:-

- Dual degree programmes
- Certificate programmes
- Twinning programmes
- Research partnerships
- Faculty exchange
- Students' exchange

India-UK Partnerships

This year, in keeping with the spirit of UK-India Year of Education, Research and Innovation and coinciding with the India-UK TECH Summit, the Confederation of Indian Industry (CII) and the British Council instituted joint awards for best collaborations between higher education institutes of the two countries. Institutes were invited to jointly submit 1000-word case studies in prescribed format outlining an activity which had resulted in building or strengthening partnerships between the two countries. Faculty from both sides who had taken part in a) student and faculty mobility, b) collaborative research and c) strategic and innovative tie-ups since 2006 were eligible to participate.

Categories in which entries were invited

Sl.No.	Category	Areas
01.	Impact through Mobility	Mobility of faculty and students under short-term and long-term study, work and cultural immersion programmes.
02.	Excellence in Research	Collaborative research, joint publications, organisation of seminars / workshops on innovative themes.
03.	Innovative Partnerships	Partnerships that generated new knowledge, research and innovation collaboration through short-term and long-term placements, joint course design, training in advanced research techniques, partnership that resulted in transfer of technology, sharing of best practices, joint degrees, twinning programmes, leadership development programmes, community engagement, skill development programmes, use of information and communications technology.

The contest started on October 1 and ended on 21st. Total 76 entries were received, maximum (37) in research, followed by innovation (25) and mobility (14). They were judged on the basis of four parameters: how the partnership strengthened the relations between institutions of the two countries; what was the level of its impact; its scalability and sustainability. External jury members comprised Dr. Adarsh Kumar, Commonwealth Fellow and Professor, Forensic Medicine & Toxicology, All India Institute of Medical Sciences, New Delhi and Prof. Saumen Chattopadhyay, Chairperson and Professor, Zakir Husain Centre for Educational Studies, School of Social Sciences, Jawaharlal Nehru University.

We bring you select case studies from this competition (in no particular order or preference and with no connection or co-relation with the winning entries in the competition).

CASE STUDY 1

Name of the project
"Spatial imaging of interfacial dynamics in blends of molecular semiconductor-based devices by pump-probe spectroscopy"

Category
Research

Partner Institute from India
Indian Institute of Technology Bombay

Partner Institute from UK
University of Cambridge

Summary of the project
The aim of the project was to develop a highly customized dual pump-probe spectroscopy tool to understand the photo-physics and device operation of organic light-emitting diodes

(OLEDs) by doing spectroscopy on functional single-carrier and bi-polar devices. The tool was successfully developed and tested on some of most high efficiency fluorescent OLEDs to understand underlying complex device physics. The work was published in Advanced Optical Materials (10.1002/adom.201600678) journal and this piece of work was used as cover image for the journal. An IP has also been filed using this work, where all organic semiconductors are being supplied by a UK company (Cambridge Display Technology Pvt Ltd) in material transfer agreement with IITB.

CASE STUDY 2

Name of the project
"Stability and performance of photovoltaics"

Category
Research

Partner Institute from India
Indian Institute of Technology Bombay

Partner Institute from UK
Loughborough University,Centre for Renewable Energy Systems Technology, Wolfson School

Summary of the project
The project was selected after rigorous peer review under India-UK Collaborative Research Initiative in Solar Energy. Being led by IIT Bombay, it has 10 other scientists working on it on the Indian side – from IIT Kanpur, IIT Kharagpur and National Institute of Solar Energy (NISE). From the UK side the lead institution is Loughborough University plus 11 other scientists from Nottingham University, Northumbria University, Imperial College London and Strathclyde University. The emphasis of the project is on stability and performance of photovoltaic modules and system as solar energy has been identified by both India and the UK as an area of significance in providing solutions to the problem of meeting future energy needs. It is in keeping with this requirement that the Department of Science and Technology (DST) and Research Councils UK (RCUK) have decided to strengthen collaboration between UK and Indian research institutions in this area. Major facilities of outdoor and indoor performance measurement, testing, characterization and reliability of PV modules have been established as part of this project and several students have had exchange visits.

CASE STUDY 3

Name of the project
"Metal-organic redox frameworks for photochemical textile processes"

Category
Research

Partner Institute from India
CSIR-Central Electrochemical Research Institute

Partner Institute from UK
University of Bath

Summary of the project
The project is focused on exchange of researchers with the aim of developing textile-based sensors or technologies starting with textile modification, metallisation, and going to electrochemical devices for applications in water treatment or sensing or energy harvesting. New materials such as metal-organic frameworks offer benign microporous components to introduce functionality.Collaborative work on textiles has progressed and the team is now looking at (a) sensors embedded in textiles based on colour of electrical signals, (b) wound dressing designs with improved functionality, (c) arsenate removal and sensing in fresh water, and (d) sunlight powered water desalination.

CASE STUDY 4

Name of the project
"Automatic detection of verbal threat in aggressive speech in Hindi and English"

Category
Research

Partner Institute from India
Dr. Bhim Rao Ambedkar University, Agra

Partner Institute from UK
University of Huddersfield, Huddersfield

Summary of the project
The aim of the project is to develop a computational system which could automatically detect aggressive speech from non-aggressive speech, and real aggression (which is equivalent to threat) from pseudo-aggression. Language aggression and conflict can escalate in many forms, ranging from a minor scuffle to a major crime like murder or even a terrorist attack. The system is intended to help humans in identifying potentially threatening aggression through the language used by the interlocutors. It could be deployed at several places including public places such as shopping malls, railway stations, subways, tunnels, bus stations, metro stations, cinema halls, etc, as well as secured but volatile places such as prison and political meetings and rallies.

CASE STUDY 5

Name of the project
"Interfacing ad-hoc mobile networks with IP mobile systems"

Category
Research

Partner Institute from India
ABV Indian Institute of Information Technology and Management (IIITM) at Gwalior

Partner Institute from UK
Anglia Ruskin University, Chelmsford

Summary of the project
The project designed a platform framework capable of aggregating and networking wireless communication devices. It developed a mobile ad-hoc resource sharing network protocol for integrated, hybrid, shared network resources. Application domains include GPS, indoor wireless applications, wireless sensor applications and vehicular networks. Data, voice and multimedia services were applied through the interface.This project has developed novel methods, mechanisms and technologies to enable the transparent and efficient use of resources (i.e., sensor data, network access) between mobile and fixed devices within a MANET. This was done through an intelligent middleware that enables the coordinated sharing of resources offered by multiple co-located devices.

CASE STUDY 6

Name of the project
"Research and mobility enhancement on hybrid photonic device low-cost technology development"

Category
Research

Partner Institute from India
Indian Institute of Technology Delhi

Partner Institute from UK
University of Cambridge, Cavendish Laboratory

Summary of the project
The aim of the project is todevelop low-cost electrically-injected light emitting devices from inorganic-organic (IO) low-dimensional hybrid hetero-structures. Among the significant outputs of the project has been the fact that more than 50 research articles have been published in high-impact international research journals. Four PhD and six post-/under-graduates have had training in Indian and UK labs, plus faculty and students from other institutes. Several students from IITD as well as outside students have benefited from the facilities of IITD labs, established from project funds.Several new collaborations have been seeded and developed by both partners during the tenure of the project.New varieties of IO-hybrid devices have been explored using rapid fabrication.

CASE STUDY 7

Name of the project
"Understanding chromatographic performance loss during biotherapeutics manufacture to improve affordability of biotherapeutics to all"

Category
Research

Partner Institute from India
Indian Institute of Technology Delhi

Partner Institute from UK
University College London

Summary of the project
Biotherapeutic affordability and hence availability to those in need of such medicines cannot realistically be achieved before production becomes more cost-effective. A key area to address is to prolong the effective lifetime of the chromatographic media used to purify the mAb product.A major deliverable was the creation of device to monitor on-line the progression of the column status. A patent has been filed in India for this fluorescence device, which holds the potential to be directly implemented into an industrial context to facilitate optimizing when and how a column should be cleaned, in order to maximise productivity. Advances in understanding fouling of the chromatographic resin have been published in quality research journals.

CASE STUDY 8

Name of the project
"Seismic requalification of geotechnical structures"

Category
Research

Partner Institute from India
Indian Institute of Technology Guwahati

Partner Institute from UK
University of Surrey

Summary of the project
: Earthquakes in the recent past have demonstrated the need for seismic requalification of important structures (nuclear power plants, hospitals, bridges) built earlier in the light of new, revised and better understanding of seismic effects on the built environment. The projectdeveloped a methodology to evaluate the performance of important pile-supported structures. The main objectives of the partnership were to consolidate knowledge in the field of seismic requalification gained through the research carried out in the UK, USA and Japan. Subsequently, development of the methodology for seismic requalification. Another objective was to back-analyze or reverse-engineer the performance of geotechnical structures (pile-supported bridges) and revisit failure/ collapse of structures from past earthquakes.Soil samples were collected from Saraighat Bridge (Assam) and tested and used as a case study.

CASE STUDY 9

Name of the project
"Low complexity energy efficient transceivers for cognitive radio system"

Category
Research

Partner Institute from India
National Institute of Technology-Tiruchirappalli

Partner Institute from UK
Heriot-Watt University, Edinburgh

Summary of the project
The main objective was to develop and implement OFDM based cognitive radio transceiver consisting of spectrum sensing module, reconfigurable transceiver module, and cognitive engine to perform dynamic spectrum management. Testbeds such as WARP boards were used to develop prototype of cognitive radio system and later replaced with dedicated SoC. Novel algorithms were developed and published in international SCI journals as part of the project.Novel hardware architectures and prototypes were developed and demonstrated by conducting workshops and disseminated to tier-2 and tier-3 institutions to enable them to work in this platform.

CASE STUDY 10

Name of the project
"Plasmonics incorporated copper zinc tin sulphide (CZTS) based solar cells"

Category
Research

Partner Institute from India
Institute for Plasma Research, Gandhinagar

Partner Institute from UK
Loughborough University, Centre for Renewable Energy Systems and Technology

Summary of the project
CZTS-based plasmonic solar cells have thepotential to revolutionise energy production since their efficiency can beincreased while the film thickness is kept to a minimum. The aim of the project was to develop a CZTS-based solar cell and incorporate the plasmoniclayers for higher efficiency. For this a bottom-upprocess was developed to produce ordered silver nanoparticles arrays over large areafor enhanced light trapping. The growth mechanism of thenanoparticles was studied using MD simulations.Under this project highly dense nanoparticle arrays were developed usinglow energy Ar ions, their typical periodicity pattern being of the order of 30 nm. The processwas crucial as silver atoms have shown different sticking behaviour on flat and on patternedsubstrate, which is responsible for their self-assembly. The project has been cited in several reputed international journals and has won three awards.

CASE STUDY 11

Name of the project
"Research and development on application-specific photonic crystal micro-structured optical fibres"

Category
Research

Partner Institute from India
Mahindra Ecole Centrale College of Engineering

Partner Institute from UK
University of London

Summary of the project
CZTS-based plasmonic solar cells have thepotential to revolutionise energy production since their efficiency can beincreased while the film thickness is kept to a minimum. The aim of the project was to develop a CZTS-based solar cell and incorporate the plasmoniclayers for higher efficiency. For this a bottom-upprocess was developed to produce ordered silver nanoparticle arrays over large areafor enhanced light trapping. The growth mechanism of thenanoparticles was studied using MD simulations. Under this project highly dense nanoparticle arrays were developed usinglow energy Ar ions, their typical periodicity pattern being of the order of 30 nm. The processwas crucial as silver atoms have shown different sticking behaviour on flat and on patternedsubstrate, which is responsible for their self-assembly. The project has been cited in several reputed international journals and has won three awards.

CASE STUDY 12

Name of the project
"Stabilization of pickering emulsions/foams with oppositely charged colloidal nanoparticles"

Category
Research

Partner Institute from India
Indian Institute of Technology Madras

Partner Institute from UK
University of Hull

Summary of the project
The aim of the project was to develop technology that reduces or eliminates the need for surfactants in industry. Pickering emulsions and foams are a promising alternative technology, which provides this possibility.Emulsions/foams play a vital role in a variety of day-to-day applications ranging from food, cosmetics, personal care, paints and coatings to industrial scale processes such as crude oil extraction, drilling fluids, oil spill remediation etc. Conventionally surfactants are used to stabilize emulsions/foams. However, in recent years due to environmental concerns on excessive use of surfactants, nanoparticle-stabilized emulsions/foams have received increasing attention. Owing to their high stability, ease of processability and versatile applicability to various industries, so-called pickering emulsions/foams have received much attention among industrial research and academia.

CASE STUDY 13

Name of the project
"Demonstration of a flexible off-grid electrification system based on the integration of anaerobic digestion and photovoltaics for autonomous power supply to a rural community"

Category
Research

Partner Institute from India
Visva Bharati and Indian Institute of Technology Madras

Partner Institute from UK
University of Sheffield and University of Exeter

Summary of the project
A prototype off-grid integrated energy system was installed in rural West Bengal including anaerobic digestion and photovoltaics, making use of locally available renewable resources. The system provides electricity to 45 village households, a school and health centre thus improving the health, wealth and lifestyle of local people and reducing poverty. As part of the project, a prototype system was installed in a village near Visva Bharati campus in Santiniketan. A 5 kWe anaerobic digester (AD), 5 kWe solar photovoltaics (PV) and 18 kWhe battery storage were installed and integrated to satisfy the electrical demands of the households. The technologies were integrated in a way that reliable electricity was supplied to the village to meet the demand for lighting and fans in 45 households as well as powering a local school and medical centre. In March 2016 the responsibility of the system's operation was handed over to villagers who now arrange the biomass collection and perform basic maintenance for continued power supply.

CASE STUDY 14

Name of the project
"Trusted electronic circuit system design with untrusted integrated circuits: theory and implementation"

Category
Research

Partner Institute from India
Indian Institute of Technology Kharagpur

Partner Institute from UK
University of Bristol

Summary of the project
Electronic (especially silicon integrated circuit) design and manufacturing is plagued by widespread counterfeiting and malicious infections ("hardware Trojan horses") to disrupt functionality. The research project was aimed at developing theoretical models of maliciously infected integrated circuits, and low-overhead circuit design techniques for their mitigation, to design "trusted integrated circuits". The primary goal of the joint research was: (a) analytical modelling of system failure in the presence of undetected hardware Trojans; (b) sensitive testing techniques aimed at detecting hardware Trojans; (c) novel fault-tolerant circuit design techniques to enhance circuit robustness in the presence of undetected hardware Trojans, and, (d) novel circuits (e.g. physically unconable functions) to generate fingerprints of integrated circuits) and circuit design techniques to detect /prevent IC counterfeiting.

CASE STUDY 15

Name of the project
"Stoichiometric and polymorphic variations in cocrystal synthesis"

Category
Research

Partner Institute from India
CSIR – National Chemical Laboratory, Pune

Partner Institute from UK
University of Bradford

Summary of the project
Stochiometric and polymorphic control is a major challenge in development of cocrystal based products. Mechanistic understanding developed through this collaboration helped in development of products and technologies. As part of the project, knowledge transfer partnerships established three companies including twosmall and medium enterprises. Thirteen small projects (£20k - £35K) on green processing and mainly crystal engineering solution were implemented with UK SMEs. The project has led to exchange of 17 teachers and students, workshops have been organized by both institutionswith industry participation.

CASE STUDY 16

Name of the project
"Virtual collaborative design studio"

Category
Innovative partnership

Partner Institute from India
College of Engineering Trivandrum

Partner Institute from UK
Arts University Bournemouth (AUB)

Summary of the project
The project aimed at developing a small refreshment kiosk, located in UK/India. Students introduced via skype class led by the faculty, signed up with partner by email and work was undertaken online. Research, design, development was carried out online with input from each institute. No budget was given, all communicate was to be online, with work shared online and produced as digital files for upload to an online gallery. Any models were to be constructed from recycled or found objects. Staged deadlines were given for research, precedent studies, ideas, development, drawings, models, presentation sheet, and submission to online gallery.The project was completed in May 2015 with both UK and Indian students presenting their projects to their classmates and then a digital online gallery was created to share and all design solutions.

CASE STUDY 17

Name of the project
"Intangible histories: A split-site interdisciplinary PhD programme"

Category
Innovative partnership

Partner Institute from India
National Institute of Advanced Studies, Bangalore

Partner Institute from UK
University of Exeter

Summary of the project
This is a unique and innovative split-site doctoral programme in archaeology and drama, jointly supervised across faculty both the institutes, and is producing new forms of interdisciplinary research across the two countries.Students have a supervisor and a research base in each country, which offers great possibilities for innovative doctoral research projects.The two areas of archaeology and drama were chosen due to existing collaborations, as well as to enhance disciplinary expertise and create new approaches in both subjects.

CASE STUDY 18

Name of the project
: "Design thinking for prison industries: Exchanging design tools, methods and processes with prisons in London and Ahmedabad to build inmate resilience"

Category
Innovative partnership

Partner Institute from India
National Institute of Design, Ahmedabad

Partner Institute from UK
University of the Arts London

Summary of the project
: The aim was to develop creative strategies for prison industries; to generate a product range of anti theft bags made by inmates showing, via prisoners' designing for others to avoid crime, a form of 'restorative justice'; to introduce empathic creative learning processes to develop inmate design-thinking skills to build resilience outside prison.The ambition of the project was to introduce creativity into UK prison industries by the use of design thinking and making as tools for restorative justice, as well as to test the teaching materials in an entirely different prison and cultural context by piloting them in Sabarmati Central Prison, Ahmedabad. The programme succeeded in creating educational materials that worked in London and delivered impact for inmates by creating new resources includinginternal HMP Thameside certification for the course. In India, in Spring 2016 Makeright educational materials were adapted and adjusted by designers from NID to create "Innovate Inside: Towards Creative Prison Industries",a pilot project at Sabarmati Central Prison, Ahmedabad, with a group of 20-30 inmates and staff from NID.

CASE STUDY 19

Name of the project
"Climate change issues and environmental performance of small and medium-sized enterprises (SMEs) in India and the UK"

Category
Innovative partnership

Partner Institute from India
Jadavpur University

Partner Institute from UK
Aston University

Summary of the project
This project contributes a supply chain sustainability performance measurement model for SMEs that combines data envelopment analysis, structure equation modelling and multiple criteria decision-making techniques and applies in more than 50 SMEs in both the countries. The model is being used by numerous SMEs for improving their sustainability and competitiveness. SMEs make up around 90 per cent of the world's businesses and they employ 50-60 per cent of the world's population. Employing close to 40 per cent of India's workforce and contributing 45 per cent to India's manufacturing output, SMEs play a critical role in generating millions of jobs in India. However, SMEs collectively exert considerable pressure on the environment. Recent research data suggests that SMEs are responsible for more than 50 per cent of the industrial pollution in the Asia-Pacific region. The main aim of the project is to enhance sustainability performance of SMEs in India and the UK.

CASE STUDY 20

Name of the project
"Joint University of Birmingham-University of Delhi-University of Melbourne module on international security"

Category
Innovative partnership

Partner Institute from India
University of Delhi

Partner Institute from UK
University of Birmingham

Summary of the project
The University of Birmingham and University of Delhi (in collaboration with the University of Melbourne) run an annual masters-level module on international security in Delhi for students of the three institutions, seeking to share expertise and provide international opportunities to cohorts of students who will find these limited.The objectives of the partnership are to promote and deliver high-quality and innovative research-led teaching on security to students from three leading academic institutions. The module brings together scholars and students from Europe, India and Australia in a unique, intensive Masters-level module held at Delhi annually for two weeks. Access to international mobility opportunities is limited for both Delhi and Birmingham students. Reasons for this include both expense and course structure (one-year Masters students rarely have time to incorporate international study into their programmes). This module addresses these issues by providing Delhi, Birmingham and Melbourne students access to an international learning space and networking opportunities, without additional cost, in India as part of their programme.

S No.	Indian Applicant	UK Applicant	Project Title	Category
1	ABV Indian Institute of Information Technology and Management Gwalior	Anglia Ruskin University Bishop's Hall Lane, Chelmsford	Interfacing ad-hoc mobile networks with IP mobile systems	Research
2	All Saints' College Thiruvananthapuram	Nottingham Trent University	Role of student portfolios as an innovative strategy and good practice in higher education – A project to enhance student employability focussed active learning	Innovation
3	Bharathiar University, Coimbatore	University of London	A plant-based vaccine for chikungunya viral infection	Innovation
4	Birla Institute of Technology, Mesra, Ranchi	De Montfort University	Design and synthesis of potent dual inhibitors of Cdk4 and tubulin as anticancer agents	Research
5	Centre for Management Education, All India Management Association	NOCN, UK	Creation of management and general skills SSC	Research
6	Chitkara University	NA	Summer schools; semester exchange	Mobility
7	Christian Medical College, Vellore,	University of Aberdeen	Vellore Aberdeen Nutrition Exchange (Vane)	Innovation
8	College of Engineering Trivandrum	Arts University Bournemouth	Virtual collaborative design studio	Innovation
9	CSIR- National Chemical Laboratory, Pune University of Minnesota	University of Bradford	Stoichiometric and polymorphic variations in cocrystal synthesis	Research
10	CSIR-Central Electro chemical Research Institute	University of Bath	Metal-organic redox frameworks for photochemical textile processes	Research
11	CSIR-Central Institute Research of Mining and Fuel	University of Greenwich	Indo-UK Centre for Environment Research and Innovation	Innovation
12	CSIR-Central Mechanical Engineering Research Institute Durgapur	Loughborough University	Biomethanation of food & market waste – optimization of different parameters for enhanced production of biogas and conversion to organic manure for a zero waste system	Research
13	CSIR-Structural Engineering Research Centre	Cardiff University of reinforced	Retrofitting and rehabilitation concrete beams using ultra high performance concrete and basalt reinforced concrete (BRC) overlay	Innovation
14	Dr. Bhim Rao Ambedkar University, Agra	University of Huddersfield,	Automatic detection of verbal threat in Hindi and English aggressive speech	Research
15	Gargi College, New Delhi	University College London	Tailoring and optimization of structural and electrical properties of semi-conducting oxides based nanostructured materials suitable for novel gas sensing applications	Research

S No.	Indian Applicant	UK Applicant	Project Title	Category
16	Government Women's Polytechnic College, Bhopal	Edinburgh College, Granton Campus	STITCH - Scottish textiles, Indian textiles - Collaborative hub	Innovation
17	Himachal Pradesh University	Bath Spa University	International varsity partnership in the Indian Himalaya (Himachal Pradesh)	Innovation
18	Hindustan Aeronautics Ltd Management Academy	Cranfield University	Postgraduate programme for HAL "high flyers" in aerospace propulsion and aircraft design	Innovation
19	Indian Institute of Science Bangalore	University of Cambridge, Cambridge	Flexible electronic wearable systems with high reliability for health diagnostic applications	Research
20	Indian Institute of Technology Bombay	University of Edinburgh	Tidal energy resource assessment for potential Indian sites and impact of energy extraction on environment	Research
21	Indian Institute of Technology Bhubaneswar	University of Southampton	Quantifying the impact of urbanisation and climate change on the microclimate of Bhubaneswar	Innovation
22	Indian Institute of Technology Bombay	University of Nottingham	Intelligent microGrids with appropriate storage for energy	Research
23	Indian Institute of Technology Bombay	Heriot Watt University	Removing barriers to tidal energy development in India's Gulfs	Mobility
24	Indian Institute of Technology Bombay	University of Edinburgh	Knowledge transfer on the impact of climate change on offshore wind, marine energy and coastal defence systems	Mobility
25	Indian Institute of Technology Bombay + 10 other investigators / scientists from IIT Bombay, IIT Kanpur, IIT Kharagpur, and NISE	Loughborough University	Stability and performance of photovoltaics	Research
26	Indian Institute of Technology Bombay	Cranfield University	High deposition rate additive manufacture of complex metal parts	Research
27	Indian Institute of Technology Bombay	University of Cambridge	Spatial imaging of the interfacial dynamics in blends of molecular semiconductor-based devices by pump-probe spectroscopy	Research
28	Indian Institute of Technology Delhi	University of Bath	Eco-innovative, safe and energy efficient wall panels and materials for a healthier indoor environment	Research
29	Indian Institute of Technology Delhi	University of Birmingham	Receptor modelling of particulate air pollutants	Mobility
30	Indian Institute of Technology Delhi	University College London	Creation of a process understanding of chromatographic performance loss during biotherapeutics manufacture	Research

S No.	Indian Applicant	UK Applicant	Project Title	Category
31	Indian Institute of Technology Delhi	University of Cambridge	Research and mobility enhancement on hybrid photonic device low- cost technology development	Research
32	Indian Institute of Technology Delhi	Loughborough University	UK-India sustainable research & innovation partnership for sustainable logistics and supply chain management	Research
33	Indian Institute of Technology Delhi	Loughborough University	UK-India sustainable & innovation partnership for sustainable pogistics and supply chain management	Innovation
34	Indian Institute of Technology Delhi	Newcastle University	Evaluation of quantitative dispersion models for urban air quality assessment	Innovation
35	Indian Institute of Technology Guwahati	University of Surrey	Seismic requalification of geotechnical structures	Research
36	Indian Institute of Technology Hyderabad	University of Southampton	Power-efficient, reliable, many-core embedded systems	Mobility
37	Indian institute of Technology Kharagpur	University of Bristol	Trusted electronic circuit s ystem design with untrusted integrated circuits: Theory and implementation	Research
38	Indian Institute of Technology Kharagpur	University of Southampton	Building a collaborative platform for improved healthcare for UK and Indian patients	Research
39	Indian Institute of Technology Madras	University of Hull	Stabilization of pickering emulsions / foams with oppositely charged colloidal nanoparticles	Research
40	Indian Institute of Technology Madras	University of Southampton	Peer-led network for social enterprise in higher education	Innovation
41	Indian Institute of Technology Mandi	Loughborough University	Smart multi-terminal DC grids for autonomous zero-net-energy buildings	Research
42	Indian School of Management & Entrepreneurship	University of East London	Summer / winter school exchange programs; global immersion field trips; articulation for transfer and graduate programs; student & faculty exchange; faculty burst model	Mobility
43	Institute for Plasma Research, Gandhinagar, Gujarat	Loughborough University	Plasmonics incorporated CZTS based solar cells	Research
44	Inter-University Centre for Astronomy & Astrophysics	University of Southampton	New frontiers in multiwavelength black hole astronomy	Research
45	Jadavpur University	University of Ulster	Development of advanced glazing system for application in tropical humid weather conditions for energy efficient windows with low process temperature	Research

S No.	Indian Applicant	UK Applicant	Project Title	Category
46	Jadavpur University	Aston University	Municipal solid waste to energy: Decision support system for supply chain design, planning and operations	Research
47	Jadavpur University	Aston University	Climate change issues and environmental performance of small and medium-sized enterprises in India and the UK	Innovation
48	Jadavpur University	University of Liverpool	Envisioning the Indian city: Spaces of encounter	Research
49	Jawaharlal Nehru University	University of Warwick	Gendered citizenship: Manifestations and performance	Innovation
50	Karnatak University, Dharwad	University of Liverpool	Tumour suppressing activity of Sclerotium rolfsii lectin on colon cancer: development of oncofetal carbohydrate antigen-targeted anti-cancer agents	Research
51	KIIT University, Bhubaneswar	Brunel University and Reading University	Smart village living laboratory	Innovation
52	Lovely Professional University	University of Wolverhampton	Study India program	Mobility
53	Maharaja Sayajirao U niversity of Baroda	Durham University	Benchmarking the social and economic impact of cultural heritage: A comparative pilot study	Innovation
54	Mahindra Ecole Centrale College of Engineering, School of Natural Sciences, Hyderabad	University of London	Research and development on application-specific photonic crystal microstructured optical fibres	Research
55	Mehr Chand Polytechnic College, Jalandhar	Hackney Community College, London	Community college for skill development in Punjab	Mobility
56	MIT Institute of Design	University of Arts, London	Social enterprise education programme	Innovation
57	National Institute of Advanced Studies, Bangalore	University of Exeter	Intangible histories: A split-site interdisciplinary PhD programme	Innovation
58	National Institute of Design Paldi	University of the Arts London	Design thinking for prison industries: Exchanging design tools, methods and processes with prisons in London and Ahmedabad to build inmate resilience	Innovation
59	National Institute of Food Technology, Entrepreneurship and Management	Manchester Metropolitan University	Our future food – A UK and India collaboration	Innovation
60	National Institute of Technology, Rourkela	University of Leeds	Flow modeling for compound channels with non-prismatic floodplains	Research

S No.	Indian Applicant	UK Applicant	Project Title	Category
61	National Institute of Technology, Durgapur	The Open University, Milton Keynes	Graphene assisted low-cost energy-efficient solar cell	Mobility
62	National Institute of Technology, Tiruchirappalli	Edinburgh Napier University, Scotland	Strategic positioning of university business incubators: Collaborative learning from Indian and UK universities	Innovation
63	National Institute of Technology, Tiruchirappalli	Heriot-Watt University, Edinburgh	Low complexity energy efficient transceivers for cognitive radio system	Research
64	Ramaiah Institute of Nursing Education & Research	University of Salford	Nursing preceptorship programme	Mobility
65	Regional Cancer Centre	University of Glasgow	Porous polysaccharide based scaffolds as three-dimensional candidates for in vitro mesenchymal stem cell differentiation.	Mobility
66	Sri Venkateswara University, Tirupati, Andhra Pradesh	Northumbria University	Development of novel polycrystalline semiconductor thin films for the fabrication of economic, efficient and environmentally benign photovoltaic solar cells.	Research
67	Symbiosis International University and University of Madras, Chennai	Bournemouth University	Connect India: Linking minds, linking communities	Innovation
68	Thiagarajar College of Engineering, Madurai	Leeds Beckett University (earlier known as Leeds Metropolitan University)	Requirement management of ERP projects for SMEs	Research
69	University of Calcutta	Newcastle University	Newcastle-Kolkata neuroscience research programme	Research
70	University of Delhi	University of Birmingham	Joint University of Birmingham-University of Delhi-University of Melbourne module on international security.	Mobility
71	University of Science and Technology, Cochin	University of Kent	Integrated smart antennas for next generation millimetre wave wireless communications and integrated smart antennas for 60 GHz wi-fi.	Mobility
72	Visva Bharati & Indian Institute of Technology Madras	University of Sheffield / University of Exeter	Demonstration of a flexible off-grid electrification system based on the integration of anaerobic digestion and photovoltaics for autonomous power supply to a rural community	Research
73	VIT University	Plymouth University	Enhancing student experience through partnerships	Innovation
74	VIT University, Chennai	Queen Mary University	Development of marine energy system for Indian remote islands	Research

S No.	Indian Applicant	UK Applicant	Project Title	Category
75	VIT University, Chennai	Cambridge University	Development of social business incubator	Innovation
76	VIT University, Vellore	Leeds Beckett University	An adaptive context aware decision support system for remote monitoring and delivery of qualitative healthcare services to heart failure patients	Innovation

India-UK

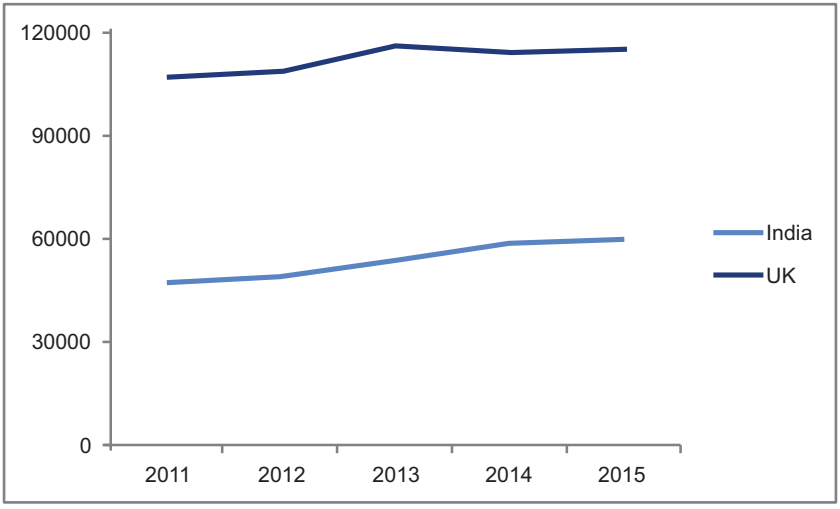
Research Collaboration

Clarivate Analytics | Formerly the IP & Science business of Thomson Reuters

There has been an increasing awareness, focus and efforts on the research front in India. The traction is highlighted by various observations including an increase in the research-focused initiatives by the government (e.g. IMPRINT), increasing relevance of research to academic standing in India (e.g. National Institutional Ranking Framework) and a consistent increase in the research output (e.g. research publications).

The number of research articles published in India has shown a consistent increase in the last five years highlighting the rising research efforts in the country. A similar trend is observed for United Kingdom (UK). (Figure 1)

Figure 1: Number of Articles By Publication Year



Source: Web of Science, InCites

International collaborations are considered a way to develop and disseminate scientific knowledge and drive scientific impact in a broader arena leveraging a broader community and resources.

The '% International Collaborations' indicator shows the share of total publications that have been found with at least two different countries among the affiliations of the co-authors.

Figure 2: Select Indicators for India and UK (2013-15)

	Web of Science Articles	% Docs Cited	Citation Impact	% International Collaborations
India	171461	65.5	3.36	23%
UK	343770	69.6	5.33	54%

Source: Web of Science, InCites

UK has a much higher percentage of international collaboration (54%) compared to India (23%) over a comparison period of 3 years (2013-15).

Several stakeholders in India and UK have been playing an active role in promoting higher education and research collaboration between the two countries. These include the Ministry of Human Resource Development, Department of Science and Technology, Ministry of Skill Development and Entrepreneurship from India and British Council, Department for Business, Innovation and Skills from UK in addition to several others. The efforts are reflected in the results. UK is the second most collaborative nation on international research collaboration for India, next only to the USA. India and USA have 12528 research articles in collaboration during 2013-15 whereas India and UK have 4844 articles published in collaboration.

Internationally co-authored documents gain more visibility in the global scientific community and tend to receive more citations. When looked at the research output of India and UK individually (Figure 2), for India 65% of the total articles have received at least one citation and the average citation per article is 3.36. These numbers for UK are 69.6% (% Documents cited) and 5.33 (Citation Impact).

However, when similar numbers are calculated for the dataset of research publication done collaboratively by India and UK (Figure 3), the statistics are much better compared to those for India or UK individually.

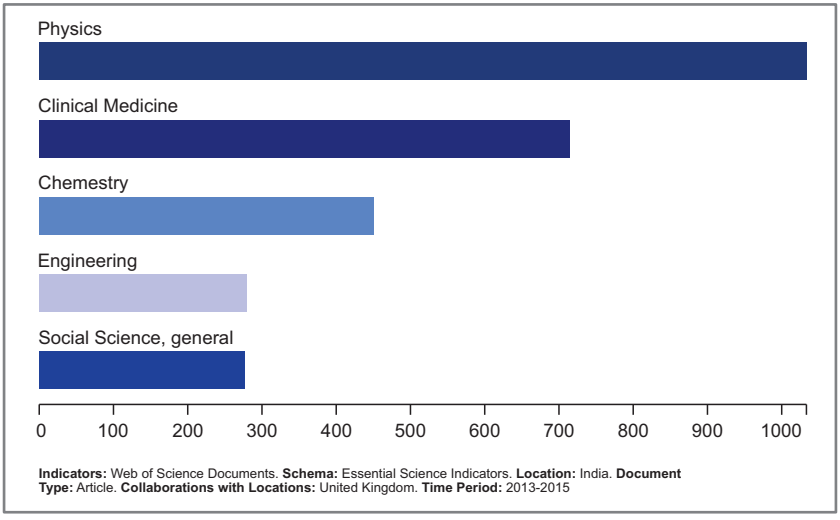
Figure 3: Select indicators of collaborative research done by India and UK (2013-15)

	Web of Science Articles	% Docs Cited	Citation Impact
India-UK Collaborative Research	**4844**	**79.77**	**11.59**

The top areas of research collaboration between India and the UK are Physics, Clinical Medicine, Chemistry, Engineering and General social Sciences.

The volume of research in each of these five Essential Science Category is reflected in Figure 4.

Figure 4: Top Subject categories of collaborative research done by India and UK (2013-2015)



Source: Web of Science, InCites

A closer look at the collaborating institutions in India (Figure 5), shows that the Indian Institute of Technology collectively are the front runners in collaboration with UK with 605 articles. However, at an institute level, Panjab University tops the list with 434 articles, Tata Institute of Fundamental Research takes the second spot with 427 articles followed by the Bhabha Atomic Research Center and the Saha Institute of Nuclear Physics with 333 articles each. Council of Scientific & Industrial Research (CSIR) takes the fifth place on this list.

Category Normalized Citation Impact – Indicator of quality – is the citation impact that has been normalized by discipline, year and document type. It is calculated by dividing the actual count of citing items by the expected citation rate (baseline) for publications with the same document type, year of publication and subject area.

Bhabha Atomic Research Center and Saha Institute of Nuclear Physics are not the topmost collaborating institutes based on the volume of articles however, they rate the highest on the Citation Impact and the Category Normalized Citation Impact, demonstrating a high quality of research work.

Figure 5: Top Five Collaborating Institutions from India on India UK Collaborative Research (2013-15)

Institute Name	Web of Science Articles	% Docs Cited	Citation Impact	Category Normalized Citation Impact
Panjab University	434	95.16	18.56	3.22
Tata Institute of Fundamental Research	427	90.87	15.09	2.79
Bhabha Atomic Research Center	333	93.39	20.86	5.6
Saha Institute of Nuclear Physics	333	95.2	20.91	3.59
Council of Scientific & Industrial Research (CSIR)	207	87.92	7.78	1.62

Source: Web of Science, InCites

Few other notable institutes based on the volume of collaborative research with the UK are Indian Institute of Science (168 articles), Indian Institute of Technology, Bombay (165 articles) and the Inter-University Centre for Astronomy and Astrophysics (107 articles).

In UK (Figure 6), University of London tops the list of institutions collaborating with India with 983 articles, Imperial College London takes the second spot with 673 articles, followed by University of Manchester, University of Oxford and the STFC Rutherford Appleton Laboratory.

However, considering the quality parameters, University of Oxford is ahead of the other institutes with an average citation impact of 34.77 per article and a Category Normalized Citation Impact of 7.79.

Figure 6: Top Five Collaborating Institutions from UK on India UK Collaborative Research (2013-15)

Institute Name	Web of Science Articles	% Docs Cited	Citation Impact	Category Normalized Citation Impact
University of London	983	82.6	20.83	4.33
Imperial College London	673	92.27	28.69	5.65
University of Manchester	551	91.11	27.1	4.48

Institute Name	Web of Science Articles	% Docs Cited	Citation Impact	Category Normalized Citation Impact
University of Oxford	528	87.88	34.77	7.79
STFC Rutherford Appleton Laboratory	522	93.87	17.2	3.09

Source: Web of Science, InCites

Highly Cited Papers are considered indicators of scientific excellence and top performance. The Highly Cited Papers indicator shows the volume of papers that are classified as highly cited in the InCites platform service known as Essential Science IndicatorsSM (ESI). Highly Cited Papers in ESI are the top one percent in each of the 22 subject areas represented in the Web of Science, per year. They are based on the most recent 10 years of publications.

It is interesting to note that Panjab University from India and the University of London from the United Kingdom are not only the front runners in the volume of collaboration but they are also the front runners in research excellence based on the numbers of Highly Cited Papers during the analysis period with 41 and 97 highly cited papers respectively.

India-UK

The Unbeatable Combination for Successful Academic Partnerships and Mobility

Manjula Rao
Assistant Director – Internationalising Higher Education
British Council, India

Manjula Rao leads on Internationalising Higher Education programme for the British Council in India, and is responsible for strategic planning and delivery of mobility and partnerships programmes. She advices the UK sector on market trends and insights. She comes with long experience of working on development projects in education, health, environment and science and technology funded by DFID, World Bank and the European Union.

She is a physicist by training who started her academic career as a lecturer at St Xavier's College, Mumbai, post which she took up research in Neural Networks at NORDITA in Copenhagen before joining the British Council in 1989.

Over the last decade internationalisation of higher education has increased in importance, impact and complexity. It has gone up on most national government agenda's, more so in India since the Modi government took over in 2014, and forms part of the 20 priority themes of the New Education Policy. We are aware of the many motivations for Internationalisation – commercial advantage, knowledge and language acquisition, enhancing curriculum with international content, not to mention the International University Rankings. Underlying these is the strongest motivation of all, and that is to prepare young people to be global citizens who contribute positively to society at large, address global societal challenges and enhance their employability prospects. Global citizens are people with inter-cultural skills, who can live and work in different cultures, speak in languages not their own with the ability to recognise and celebrate similarities and differences between people of different religions and nations.

Governments and institutions that wish to internationalise, and succeed, need to take a strategic approach, be clear about the motivations, allocate human and financial resources and support champions that drive the agenda.

UK has a global reputation for excellence in the field of education and skills. It is the second most desired destination for HE. It has some of the best universities in the world, with four of the world's top ten universities (Cambridge, UCL, Imperial College London and Oxford) and 30 of the world's top 200 universities (QS World Ranking 2015-16). Studying in the UK is a truly enriching international experience. UK university research is recognised world-wide. The UK produces 15.9% of the most highly cited papers with only 1% of the world's population.

2016 is the **UK-India year of Education, Research and Innovation,** a campaign that celebrates the bilateral relationship which has grown substantially over the last decade. The campaign highlights the strength of UK and India cooperation and collaboration and aims to refresh the bilateral relationship creating a new 21st century framework as partners in education, research and innovation partners, in the global context for the next 10 years.

During the year, we saw the launch or expansion of several bilateral programmes supporting new partnerships and to encourage more academic mobility:

The Newton Bhabha Fund: 2016 saw the expansion of this programme which was launched in 2014 to promote economic development through science, research and innovation partnerships in 2014. Under this initiative, UK has allocated £50m over five years for jointly funded collaborations with India, with match funding from Indian partners. The ambition is to create an equal partnership with equivalent resources from India. This fund will address big societal challenges, like sustainable cities, health, food, energy and water. The three strands of this Fund are 'people', 'programme' and 'translation'. These include PhD exchanges, post-doctoral fellowships; Joint collaborations to address important challenges around AMR, care for the elderly, mental well-being, the effects of atmospheric pollutants on human health, and maternal and child health; Joint Centres on Renewable Energy Research in the areas of Solar, Storage and Networks and the Sustaining Water Resources for Food, Energy and Ecosystem Services will improve scientific understanding of eco-hydrological system at the level of river catchment and changing water demand; and Business academia collaborations and business business links between entrepreneurs and SMEs through a joint industrial R&D project focusing on cleantech energy, affordable healthcare and Advanced Manufacturing. The 'people' strand supports capacity building in science and innovation through PhD partnerships, Researcher Mobility schemes, Fellowships for post doctoral researchers and Technical Training.

Newton-Bhabha Programme is strengthening existing research partnerships and building new relationships with policy makers in government, government agencies, research organisations, higher education institutions, companies and enterprises of UK and India.

UKIERI: The launch of third phase of the UK-India Education and Research Initiative to 2021, covering areas of HE and FE Leadership development, e-partnerships, skills development and mobility to

enhance the quality of education and research links across the two countries. In its first two phase, UKIERI supported over 1,000 new education and research partnerships that aim to deliver long term prosperity benefits for both the UK and India. The programme facilitated 25,000 exchanges of academicians, researchers, staff and students, creating lifelong links between the UK and India and over 35 million young people have benefitted through train the trainer programmes.

Generation UK India: A programme that supports mobility of UK students to India and over 1,000 UK students have been to India on the programme since its launch, including this year the first cohort of TCS sponsored interns.

Scholarships: UK remains the second most popular destination for international higher education students with its excellent quality education. There are several hundred full and part scholarships on offer for the best and brightest Indian students, for example:

The British Council is offering 198 new **GREAT Education scholarships in 2017** worth over £1m will be offered in partnership with 40 universities, for a range of subjects ranging from engineering and law to art and design and information technology across England, Scotland, Wales and Northern Ireland.

Chevening is the British Government's flagship global scholarship programme, funded by the Foreign & Commonwealth Office and partner organisations. The Chevening India programme is the world's largest with: £2.6 million budget for 2016-17 (including partner funding), Around 65 fully-funded, scholarships for one-year Master's programmes in any subject at a recognised UK university for graduates, and around 65 short-term, thematic bespoke programmes at designated UK universities for mid-to-senior level professionals in the fields of journalism, cyber-security, leadership and management and science and innovation.

Commonwealth Scholarships for students from developing Commonwealth countries are offered for Master's, PhD, and split-site (PhD) study in the UK. These scholarships are funded by the UK's Department for International Development (DFID). On average 60 Indian students are supported by the Commonwealth programme each year.

Transnational Education – The British offer is strong. Over 500,000 students study on UK courses delivered outside the UK, via distance learning, overseas campuses or joint programmes. Some 90 UK degrees are already delivered in India in joint ventures (eg dual degrees).

GIAN: The launch of Global Initiative of Academic Networks in which 25 eminent UK academics have already taught in India

In conclusion, 2016 UK India Year of Education is just the new beginning of a growing partnership between UK and India in creating a new partnership in the global knowledge economy.

Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, playing a proactive role in India's development process. Founded in 1895, India's premier business association has over 8000 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 200,000 enterprises from around 240 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

The CII theme for 2016-17, **Building National Competitiveness**, emphasizes Industry's role in partnering Government to accelerate competitiveness across sectors, with sustained global competitiveness as the goal. The focus is on six key enablers: Human Development; Corporate Integrity and Good Citizenship; Ease of Doing Business; Innovation and Technical Capability; Sustainability; and Integration with the World.

With 66 offices, including 9 Centres of Excellence, in India, and 9 overseas offices in Australia, Bahrain, China, Egypt, France, Germany, Singapore, UK, and USA, as well as institutional partnerships with 320 counterpart organizations in 106 countries, CII serves as a reference point for Indian industry and the international business community.

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