

## Knowledge Production in China and India: A Look at the Higher Education Sectors and Intended Changes for Indian Higher Education System\*

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**ABSTRACT** China and India are two fast-growing economies and both countries have realized the significance of higher education in building the knowledge economy. Although India has been ahead of China in granting a world class education in the past, times are changing and India's attempts to modernize her higher education sector have been feeble. This study compares the two giants and suggests a framework for changes in the higher education sector in India in order that she remains competitive in the world of education.

### INTRODUCTION

India and China are two rapidly growing giant economies of the world. Both countries have hence embarked upon refurbishing and renovating the higher education sectors and are growing at around 8 percent a year or more. Both economies thus need a large trained workforce to sustain the economic growth. For example, India has decided to establish 30 new universities to increase enrolment from less than 15 million in 2007 to 21 million by 2012 (Hollanders and Soete 2010). Similarly, in 1999, the Chinese government enlarged scale of higher education enormously; for example, the number of students admitted to higher education swelled by 70 percent from 1998 to 1999. By 2005, the enrolment to universities quadrupled that of 1998 (Shi and Xing 2010). The government has committed to additional resources to galvanize the sector as set out in both 10th (2001-2005) and 11<sup>th</sup> (2006-2010) Five-Year Plans (FYPs) of China (Li et al. 2008). Although India had a sophisticated higher education system historically, one would be tempted to ask whether this supremacy over

China would be retained in the light of rapid changes being made in the Chinese higher education sector. The massive enhancement of Chinese higher education system has repercussions for India's competitiveness in the knowledge sector and she may need to revise and re-energize its higher education sector to meet this challenge. The major objective of this study is to highlight the policy strategies of two countries and the possible gap that might weaken India's competitiveness in the knowledge sector and required policy challenges that might be needed.

### Objectives

The more specific objectives of the study are as follows:

- ♦ To compare the economies and higher education sectors of both countries in a historical context.
- ♦ To compare and contrast the contemporary policy strategies of both countries in furthering the higher education.
- ♦ To discuss India's performance vis- a-vis China in the foreseeable future and suggest possible areas of improvement in the Indian higher education sector.

The material of this paper is arranged under five sections. Section two peruses the historical analysis of development of higher education in both countries; followed by the discussion on the contemporary policy strategies of India and

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China in section three. A comparative assessment of two countries with respect to education and the performances and efforts of India vis-à-vis China and possible future scenarios are envisaged in section four. Conclusion is discussed in the last section 5.

### A HISTORICAL REVIEW

A brief historical review of higher education sectors of both countries is carried out here. Both countries have come a long way to the present state of economic growth and very rapidly changing higher education sectors.

#### China

Chinese education system is a complex one but not altogether different from India. The education is divided into three sectors: (1) basic education, (2) higher education, and (3) adult education. Adult education runs parallel to both basic (elementary plus secondary) and higher education and the major purpose of this is to educate adults on farms, factories and organizations. This is primarily aimed at reducing illiteracy in provinces where literacy is below national average of 11 percent. The higher education is at the top layer of the education structure. Although development of higher education in China can be traced as far as seventh century B.C, the establishment of modern university dates back to 1895 when Emperor Guangxu approved the Peiyang University in Tianjin (Tianjin University) (Brandenburg and Zhu 2007). Basic education includes compulsory elementary education of 9 years which includes 6 years in elementary school and 3 years in junior middle school (Brandenburg and Zhu 2007). The secondary school education lasts 3 years and students are prepared for the National College Entrance Examination (NCEE) which allows students to enter into higher education (Brandenburg and Zhu 2007). This was also the beginning of western style university (Duan 2003). The proliferation of universities continued during three different political eras or phases; the first phase of empire period (221 BC until 1912); the second phase of the Republic of China (1912-1949), and the third phase under the communist Peoples Republic of China (1949- to now). By 1949, some 205 universities were founded in China (Brandenburg and Zhu 2007).<sup>1</sup>

The second phase of higher education in China began with Mao's ideology in 1949 and ended in 1976. In 1949, the re-organization of higher education sector was done as per the ideology of the new communist government. This resulted into reduction of comprehensive universities with severe reduction in the fields of humanities and social sciences (Ouyang 2004: 14 cited in Brandenburg and Zhu 2007). As a result, for example, the number of comprehensive universities declined from 49 in 1949 to 13 in 1953 (Brandenburg and Zhu 2007: 13). Much of the help during this period came from the then Soviet Union. From 1957 onwards, it began changing again with the abolishment of Ministry of Higher Education and further devolution of management to local provincial level. The numbers of higher educational institutions (HEIs) then increased from 229 in 1957 to 1289 in 1960 (Hayhoe 1989: 72 cited in Brandenburg and Zhu 2007). Chinese government contained this growth and reduced it to 434 in 1965 (Table 1). During this period, a mixed Confucian-Western style higher education was followed (Finnish National Board of Education 2007). However, the 1966 brought an abrupt change in the policy due to Cultural Revolution which led the eradication of all formal education. It certainly had disastrous repercussions and system was remodelled in 1976 onward when Deng Xiaoping became the President of the country.

The Third phase began from 1976 onward. This restored the National College Entrance examination (NCEE) or *gaokao*. (Mullins 2005). The academic degree system was reintroduced. Development of higher education was considered by then political leaders of China a very important ingredient for the economic progress. By 1998, some 1022 universities and colleges were established, educating about 3.4 million students (Table 1). The Chinese Higher Education (CHE) system more or less followed the American system. There has been also a wave of mergers across the country. Higher education was not compulsory and fees have been instituted since 1989 onward. There has been a steady increase in tuition fees from 200 RMB (18 Euro) per annum in 1989 to some 5000 RMB (450 Euro) in post-2005 period (Tang 2001; Guo 2007).

#### India

Indian history speaks volumes on higher education in ancient times. The two great uni-

**Table 1: Historical development of Chinese higher education institutions, selected years**

Year	Number of HEIs	Number of students enrolled
1949	49	-
1953	13	-
1957	229	-
1960	1289	-
1962	610	-
1965	434	-
1966	-	-
1977	-	270,000
1978	598	400,000
1985	1016	-
1988	1022	-
1997	-	1.0m
2000	-	2.2m
2004	1187	4.5m
2006	1867	5.5m
2008	2263	-
2009	-	-
2010	4964	30.6m

Source: China Statistical Yearbook 2008; Jiang Kai 2011; and Litao and Sixin 2008

universities of Takshila and Nalanda are often cited. The modern higher education began however with the colonization of India by British. The western higher education began in 1817 when the Hindu College was founded in Calcutta by Raja Ram Mohan Roy and David Hare (Kuppusamy 2009). By 1853 there were some 25 colleges established in India. In 1857, three universities were set up in Bombay, Calcutta and Madras. Two more universities were founded later; the Punjab University at Lahore in 1882 (Now in Pakistan) and University of Allahabad in 1887. By 1902, there were 5 universities and 191 affiliated colleges with a total enrolment of 17650 students (Kuppusamy 2009: 52). In 1953, after the establishment of Republic in 1950, the Government of India founded the University Grants Commission to shape the landscape of higher education in India.

More specific changes were introduced with the passing of National Policy on Education of 1986 and its Program Action of 1992 (Working Group on HE 2007). The two reports, Radhakrishnan and Kothari Commissions, formed the basis of National Policy of Education in 1986. The National Policy on Higher Education (1986) aimed at achieving five major goals: greater access to people, equal access to meet social jus-

tice, provision of quality and excellence, relevant education to meet the needs of the country, and inculcating basic moral values among the youth through value based education (Working Group on HE 2007). The Action Plan of 1992 generated a number of schemes to intensify the objectives of the policy and pass on benefits to less privileged people of the society including women. The 11<sup>th</sup> Five Year Plan (FYP) of India (2007-2012) suggested an overhaul of the higher education system through a number of new measures such as linking of research and teaching, development of faculty members, development of physical infrastructures of the universities and colleges, revamping of curricula, application of technologies in education.

The higher education sector in India has registered a tremendous growth in the post-independence era (Table 2). For example, by the end of 1947 when India became independent there were some 20 universities, 500 colleges, enrolling about 2.30 lakhs (1 lakh equals 100,000) of students (Kuppusamy 2009). For example, the number of university level organizations increased from 25 in 1950 to 534 in 2010- a 20-fold increase from 1950. Similarly, the numbers of colleges were increased by 37 times from 1950 base. The student enrolment increased from 0.1 million in 1950 to 13.6 million in 2009- an increase of 13500 percent.

**Table 2: Growth of higher education institutions in India, selected years**

Particulars	1950	1991	2004	2005	2009
No. of university level institutions	25	177	320	367	467
No. of colleges	700	7346	16885	18065	29951
No. of teachers (000)	15	272	457	488	588
No. of students enrolled (millions)	0.1	4.9	9.95	11.2	13.6

Source: University Grants Commission 2011

In June, 2005, the National Knowledge Commission (NKC) was set up to prepare a blue print for the reform of higher educational institutions which specialize in knowledge production with five key objectives: building excellence in educational system of the country, promotion of creation of knowledge in science and technology laboratories, improving the management

of institutions engaged in Intellectual Property Rights (IPRs), promote knowledge applications in agriculture and industry, promote the use of knowledge applications to make government an efficient transparent and accountable service provider (NKC 2009). The Commission submitted some 300 recommendations to the Government of India on 27 focus areas during three year term (NKC 2009). The NKC suggested the creation of some 1500 universities by 2015 and an independent regulatory authority to control quality of education, in addition to many other recommendations which postulates resource commitments.

### CONTEMPORARY POLICY STRATEGIES

Both India and China have followed a different set of policies to achieve the same objective; that is, supplying skilled manpower to help the rapidly growing economies. Chinese strategy in recent years has been directed to mass higher education in a big way to meet the manpower needs of the rapidly growing economy. Although China opted for market reform in 1978, the higher education reform actually began in 1985. Almost, at the same time, India adopted the National Policy on Education in 1986, although economic reforms in India only started from 1991 onward.

Chinese education system underwent a sea change between 1985 and 1999. The four major policy documents that instituted these changes were: (1) Decision on Reforming the Education System (Central Committee of CPC 1985), (2) Guides for China's Education Reform and Development (The State Council 1993); (3) On Deepening the Reform of the Higher Education System (The Ministry of Education 1995), (4) Higher Education Law of People's Republic of China, 1999 (Li and Xing 2010: 4). China's educational reforms can be broadly clarified into five categories (1) education provision, (2) management system changes, (3) investment and finance related changes, (4) recruitment and job placement, (5) changes related to inner institute management (Embassy of the PRC 2011).

The reforms related to education provision allowed government, society, and individuals to participate in running HEIs unlike in the past when government alone was taking total respon-

sibility. That means the costs were to be shared among stake holders of the education system. The management system reform involved overhauling of management systems of HEIs through merger, cooperation, and joint establishment between various stakeholders in the university education. The management responsibility was shared between central and local governments. HEIs were given more powers and greater autonomy. For example, some 251 HEIs were merged into 135 institutions since 1992. Some 177 HEIs participated in joint establishment, among which 43 were affiliated with Ministry of Education, 44 to other central departments, and 90 to local governments (Embassy of the PRC 2011). With regard to investment and finance reforms, the new systems promoted pooling of resources from various sources, although government still remained the major funding agency to the higher education sector. The investment in the higher education has been decentralized to include principal governments and other individual institutions. Regarding the recruitment and job placement and other such activities, the market has been allowed to perform due role. Students are to pay tuition fees and the scholarship and student loaning systems have been incorporated. The Ministry of Education has also initiated a reform of examinations. The internal administration reform was aimed at improving the personnel management in the organizations and individual performance was emphasized and rewarded.

In addition to above reforms, a teaching reform plan was also initiated and operated throughout China. Further, two other significant projects, Project 211 and Project 985, were also initiated. Project 211 was an endeavour to build about 100 institutions of higher education of excellence in the 21<sup>st</sup> century. The Project 985 was started in 1998 and aimed at establishing about 40 world class universities (<http://www.china-education.com/en/cedu/ceduproject211.php>). This manifests China's steadfastness to the purpose of modernising the higher education sector and moves it to world class level.

In the Indian Context, the major reforms in higher education sector were geared in the ninth FYP (1997-2002). These included primarily two things. Firstly, the higher education quality improvement was assured through a system of accreditation and periodic review of institutions. This was done by setting up of the National

Assessment and Accreditation Council (NAAC) in 1994—an autonomous institution of the university Grants Commission with main aim to accredit institution of higher education in India. For example, only 140 out of 164 universities were accredited by NAAC (UGC 2011). The quality was adjusted as per six assessment criteria: curriculum teaching, teaching evaluation, research, infrastructure and learning resources, student support and progression. Secondly, various other measures were stated during the plan which began to change the path of the higher education in the country. These changes included in brief: additional resources commitments, conferment of greater autonomy to deserving HEIs, consolidation and optimal utilization of infrastructure through institutional networking, restructuring and expansion.

#### A COMPARATIVE ASSESSMENT OF TWO COUNTRIES

A brief comparison of higher education sectors in both countries is done in Table 3. In terms of number of university level institutions, China has some 2263 as against 467 in India; that is, China has roughly 5 times more number of universities than India has. A comparison in terms of other institution is not done as definitions of institutions are altogether different in both countries in this category. The other stark difference is seen in terms of student enrolment. In the context of China, the enrolments in higher education swelled from 270,000 in 1977 to 1 million in 1997, 2.2 m in 2000, 4.5 m in 2004, 5.5 m in 2006, and finally soaring to 30.6 m in 2010 (Table 1).

**Table 3: A comparison of current status of higher education in India and China**

<i>Particulars</i>	<i>India</i>	<i>China</i>
Population (Millions)	1180	1340
Per capita GDP/annum (US\$)	3032	6195
Number of HEIs:		
University-level	467	2263
Others (Colleges)	29951	2701
Total HEIs	30418	4964
No. of lecturers/teachers	588000	-
Number of students enrolled (Millions)	13.6	30.6
Student enrolled as percent of total population (percent)	1.15	2.28

*Source:* Constructed from data obtained from Tables 1 and 2.

Student enrolments in India registered a faster rate of growth after 1991 to 9.95m in 2004 and 11.2 m in 2005 and 13.6 m in 2008 (Table 2). Chinese higher education system is now the largest in the world, taking over the US in 2005; India is the third largest in the world. The phenomenal steep growth in Chinese enrolments is attributed to the aggressive development policy followed by the Chinese Central Government.

The researchers begin with examination of broad indicators of economic and social health of both countries (Table 4). Two important facts are worth noting. Firstly, although India's population is only 1.18 billion as opposed to Chinese population of 1.34 billion, very soon Indian population will surpass China; India will be then the most populous country in the world. However, this is not to be seen as a negative factor in India's global competitiveness. What the researchers see as a concern is relatively large population, about 76 percent in India as opposed to 36 percent in China, below poverty line (as per \$2 per day standard). In other words, poverty abounds in India and most likely it is hidden in rural areas as 70 percent people still live in rural areas. The second important fact is that India's social indicators do not auger well for a developed country. They show classic characteristics of a developing country such as high fertility rate, high infant mortality rate, large size of population below the poverty line and others. This must be seen as a constraint to increase enrolment.

A comparison of gross and net enrolment ratios (GER, NER) and public expenditure on education between two countries reveals some stark difference in terms of output. For example, Chinese public expenditure on education as percent of gross domestic product was about 1.9 percent in 1999 but sharply rose to 5.29 percent in 2002 as per UNESCO data. However, as per the Guidelines for *Mid and Long Term Development of Education in China (2010-2020)* the expenditure on education is set to increase to 4 percent of GDP. Although in percentage term the share of education in GDP was as smaller than 4 percent in the past years, the government spending in actual term has increased from 400b RMB in 2004 to 970b RMB in 2008, which is about 14.9 and 16.3 percent of total government spending - higher than the world average and education is the top item in the government spending (CCTV March 1 2010). The rapid in-

**Table 4: Overall comparison of China and India (2010)**

<i>Particulars</i>	<i>India</i>	<i>China</i>
<i>Total Population (Billion)</i>	1.17	1.33
<i>Annual Population Growth Rate</i>	1.38	0.49
<i>Age Structure (Percent)</i>		
0-14years	30.5	19.8
15-64 years	64.3	72.0
Greater than 65 years	5.2	8.1
<i>Rural Population (Percent)</i>	70	53
<i>Fertility Rate (Birth/Woman)</i>	2.65	1.54
<i>Infant Mortality Rate (Number of Deaths Year/1000 People)</i>	51	18
<i>Life Expectancy at Birth (Years)</i>	66.5	74.5
<i>Poverty (Percent of Population on Less Than 2 Dollar/Day)</i>	76	36
<i>HIV Rate in Adults(15-49 Years)(Percent) (2007)</i>	0.3	0.1
<i>GDP/ Capita (PPP) US \$</i>	3400	7400
<i>GDP at Official Exchange Rate(US \$)</i>	1.43 tr	5.745 tr
GDP n	\$3.478 trillion (2008)	\$8.204 (2008)
(PPP)	\$3.736 trillion(2009)	\$8.95(2009)
US\$	\$4.046 trillion(2010 est)	\$9.872 trillion(2010)
<i>GDP Growth Rate</i>	8.3	10.3
<i>GDP Composition (Percent)AgricultureIndustrySeries</i>	16.126.655.3	9.646.843.6
<i>Labor Force</i>	478.3m	819.5m
<i>Unemployment Rate (Percent)</i>	10.8	4.3
<i>Infant (Percent)</i>	11.7	5
<i>Gross Fixed Investment(Percent)GDP</i>	32	47.8
<i>Total Debt Service as Percent of GNI</i>	2.6	0.8
<i>Consumption of Electricity</i>	568 b kwh (2007 est)	3.438 tr kwh
<i>Oil Consumption</i>	2.98 m bbl/day(2009 est)	8.2 m bbl/day (2009 est)
<i>Natural Gas Consumption</i>	51.27 b (2009 est)	87.08 b (2007 est)
<i>Foreign Exchange Reserve</i>	\$284.1 b (Dec2010 est)	\$2.622 tr (31 Dec 2010)
<i>FDI-in the Country</i>	\$191.1 b (31 Dec 2010)	\$574.3 b (2010est 31 Dec,2010)
<i>FDI - Abroad</i>	\$89.04 b (31 Dec 2010)	\$278.9 b(31 Dec 2010 est)

Source: Data compiled from CIA Fact book 2010

crease in China is driven by the government which has driven the process of emboldening of higher education in the country.

The gross and net enrolment ratios for pre-primary and primary levels are more or less comparable. The large difference creeps in secondary and tertiary enrolments. For example, the gross enrolments in secondary education amounted to 60 percent in India as opposed to 77 percent in China (Table 5). Likewise, GER in tertiary enrolment for India is far lower than for China. This means that a lot of students at secondary and tertiary levels remain uneducated in India. In 1995, the gross tertiary enrolment ratio in China was as low as 5 percent as opposed to 7 percent in India; in 2002, China touched the benchmark of 15 percent GER for the age group of 18-22 years (attaining mass higher education) and 23 percent in 2007 (Litao and Sixin 2008). India thus lagged behind by a big margin; the GER in India was 12 percent in 2002/3 (Agarwal 2006: 158). Currently it is estimated to be around

12.4 percent and government target is to achieve 30 percent by 2020 (Press Trust of India July 11, 2010).

A comparison of higher education systems of both countries is done in Table 6. India in the past had spent heavily on primary and secondary education although higher education remained a highly subsidized state venture. Limited role of market is and was accepted by the state. On the other hand, China after 1999 geared to transform the higher education sector. These changes have been inducted by the Central Government of China with a vision to galvanize the higher education sector to meet the country's manpower needs and also to launch China as a developed country in 21<sup>st</sup> century. Changes have been made not only in re-organizing the sector efficiently but also to make up the quality of HEI's through Project 211 and 985. No such schemes exist in India. As per Shanghai Jiaotong University of Top 500 universities of the world ranking (SJTU), India has 2 or 3 HEIs as

**Table 5: A comparison of gross enrolment ratios and public expenditure on education: India vs. China, Selected years**

<i>Particulars</i>	<i>India</i>	<i>China</i>
Public expenditure on education as percent of GDP (percent)	3.1 (2006)	1.9 (1999) 5.29 (2002)
Total (government plus private) expenditure on higher education as percent of GDP	4.9 (2008)	0.6(1997b) 1.5 (2005b)
Government expenditure on higher education as percent of GDP	0.03-0.5(a)	0.5 (1997b) 0.6 (2005b)
Public expenditure on education as percent of total government expenditure	10.7 (2003)	13.0 (1999)
Total spending on higher education as percent of expenditure on all levels of education		17.2 (1997) 31.6 (2005)
Distribution of public expenditure per level of education (percent) (2006):		
Pre-primary	1	1
Primary	36	34
Secondary	43	38
Tertiary	20	21
Literary rates (percent)		
Adult (more than 15yrs)	61.9 (2008)	93.7 (2008)
Youth (15-24 yrs)	79.3 (2008)	98.3 (2008)
Percentage of gross domestic expenditure (GDE) spent on research and development	29.5	-
Gross Enrolment Ratio (GER) in Pre-primarily schools (percent)	54	49
GER (2008) in primary enrolment (percent)	117	110
NER (2008) in primary enrolment (percent)	91	-
GER in secondary enrolment (percent)	60	77
GER in tertiary enrolment (percent)	9 (2005 for female) 13 (2005 for male)	20.9 (2005 for female) 21 (2005 for male) 23 (overall)
Public expenditure on higher education per student	US\$ 406 (2002/3)a	US\$ 2728 (2002/3)a

Source: Data compiled from (1) UNESCO Institute for Statistics, UIS Statistics in Brief, 2008; China Statistical Yearbook, 2007

(2) b. Litao and Sixin (2008)

(3) a. Agarwal (2008: 161)

opposed to 22 universities/HEIs in China (<http://www.arwu.org>). China has thus gone way over India's standing in the higher education sector in terms of establishing quality at the upper edge of higher education. A comparison of knowledge indexes and research output is done in Table 7. It reveals that China's growth towards achieving a knowledge economy is rapid compared to that of India. As per Thompson Reuters, India accounted for just 3.5 percent of global research output only in 2010 and contribution in various disciplines was not as high as the Chinese counterpart (Sinha 2010). This clearly suggests that China is ahead of India in this game.

## AN EDUCATION POLICY FRAMEWORK FOR INDIA

India needs to plan a broader framework and a plan of measurable actions to achieve the desired changes in its higher education sector. The researchers suggest a five point plan of action which would involve the following:

**(1) Develop a Few World Class Institutions:** India needs to build a few world class universities or HEIs which stand at the top of their research innovation. The research output of most universities is low and whatever is produced is not in the top journals. The country hence needs

**Table 6: A comparison of higher education systems in India and China**

<i>Particulars</i>	<i>India</i>	<i>China</i>
1. <i>Public vs. Private institution</i>	Higher education is primarily public and privatization is restricted.	Public or Government supported but privatization is encouraged
2. <i>Tuition fees</i>	Very low or almost free or highly subsidized	High tuition fees
3. <i>Choice of incentives</i>	Government manages the system and some market role is permitted	Free operation of market forces is allowed, although watched by the government continuously.
4. <i>Mode of governance</i>	Decentralized system with adherence to social justice	Decentralization promoted yet constantly co-ordinated by the central government
5. <i>Driving force</i>	Individual needs	State needs
6. <i>Resource commitment</i>		Resources are committed as set out in 10 <sup>th</sup> (2001-2005) and 11 <sup>th</sup> (2006-2010) FYPs. Central government is heavily committed to the higher education funding.
7. <i>Transformation strategy</i>	Major focus is on primary and secondary education but now turning to higher education	Major focus is on higher education to produce manpower for the growing economy
8. <i>Institutes/Universities of excellence</i>	More or less non-existent as per the accepted criteria	Projects 211 and 985 are launched to elevate some universities to world-class status. Some 40 universities are targeted to come up to world class status and other 100 HEIs of excellence.
9. <i>Funding formulae</i>	It is mainly geared by teaching output and research is now being emphasized. Funding is not linked to research outputs of the institutions.	Higher education is linked to research and publications, especially in the international journal.
10. <i>Status of Non-formal or Vocational Education</i>	It was stated in 1979 and is not well established	It is well established and is highly important to the society's needs.

*Source:* Author's survey of literature

**Table 7: A comparison of knowledge economy of India and China, 2008**

<i>Particulars</i>	<i>India</i>	<i>China</i>
1. Knowledge economy index (KEI)	3.04	4.36
2. KEI Ranking	100	77
3. Education Index	2.11	4.6
4. Innovation Index	3.95	5.10
5. Percent share of world research output in 2010:		17
Mathematics	2	17
Computer Science	2.4	15

*Source:* Based on data from the World Bank (2008) and Sinha (2010)

to build this capacity by producing good quality world class international journals and highly research productive individuals or scientists.

**(2) Invite Private Investment:** The public investment is not enough to meet the needs of

the higher education sector. The education sector should be expanded so as to meet the target of 30 percent tertiary gross enrolment and this can be done by attracting the private investment from abroad and domestic origin. For example, to achieve a target of 30 percent tertiary GER, India needs to add 500 universities, 15000 colleges and 10000 technical institutions, 75000 engineering colleges and budget of Rs 80 trillion (US\$1600 billion), excluding running expenses (Ministry of Human Resources and Development 2010).

**(3) Develop a Performance Driven Higher Education System:** An internal funding of higher education system should be created which rewards quality and quantity of research output, new patents and innovations, and throughput rate of students. The higher weight can be assigned to research and innovation for the world class institutions in the country. Some



countries such as South Africa has switched to this kind of system and have seen good response in terms of raising productivity of the higher education sector.

**(4) Develop a Rapid Accreditation System:** India has already started this process by appointing NAAC as the apex body to accredit the higher education institutions. The success of this depends to a great extent the quality of data maintained by these institutions and their periodic auditing. A national higher education data recording system should be created. A good set of reliable data is a must to ensure the efficacy of the system.

**(5) Create a Nationalistic Basic Education System:** A good nationalistic basic education system which is congruent to the needs of the higher education is a pre-requisite for an efficient highly productive higher education. A poor schooling system which is not linked with the needs of the nation just renders all the investment in higher education unproductive if we cannot recruit good seed students into it.

### CONCLUSION

Although India has the advantage of long and well-established system of higher education unlike China where state interference in the past had been very heavy and not so conducive, India now lags behind China for certain in some respects. The Knowledge Commission of India although has suggested drastic changes in the higher education sector, the resource commitments are a major bottleneck in meeting these objectives. For example, to achieve a target of 30 percent tertiary GER. Lack of resources forces government to rely on partnership with private businesses.

India needs a new policy framework to achieve the objectives set by the NKC. The five basic principles of this framework should be: 1. Create a few (at least 10) high quality HEIs; 2. Expand the education sector to meet the target of 30 percent tertiary gross enrolment ratio through partnership with private investment (domestic and foreign); 3. Develop a performance driven funding system of education which depends upon the quality research output and innovation created and throughput of students. 4. Develop a rapid assessment and accrediting system of HEIs. 5. Invest in creating a good

basic patriotic education system which produces students for HEIs with good analytical and language skills.

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1. The historical discussion of China is based on Brandenburg and Zhu (2007).

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