

Review Article

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National Knowledge Commission Recommendations: Follow Up Action on NKC Recommendations – A Commentary (Part 1)*

1. Introduction

To compete globally and accelerate her growth trajectory, India has accepted an unprecedented challenge to grow into a world-class knowledge powerhouse. The ‘mantra’ is, “in a global marketplace a knowledge-economy underpinned by a skilled workforce is the key to economic growth and prosperity and minimizing poverty”. In spite of India’s high growth-rate, poverty is pervasive. Sustainable and accelerating growth and prosperity can eradicate poverty and provide greater opportunities for her fast growing workforce – an addition of 71 million young people by 2011 (*The Economist*, 2006: 3 June).

An expanding knowledge-economy hinges on the quantity and quality of scientists producing new knowledge and harnessing science and technology, innovating to achieve economic progress. India’s current high growth-rate is driven by an accelerating technological progress in a variety of technology-intensive industries. If this technological progress is not matched with a parallel increase in quality educational attainment and a skilled workforce, then economic growth will not be sustainable and will further exacerbate the income inequality. India is optimistic that she can be a world-class knowledge powerhouse within the millennium, if her “demographic dividend” is channeled into high quality education and training, particularly in demand-driven science and technology education and R&D in synergy with entrepreneurship and the market. This is supported by the enormous hunger for education, particularly for science education (Saini, 2011) and achievement by Indian students.

India’s goal towards a world-class knowledge powerhouse is a challenge because of its volatile democracy, vast differences between its twenty-eight states and seven union territories and the diversity in religion and languages. This is underpinned by a mean 4.4 years of schooling, an adult literacy rate of 65 per cent and half the children being undernourished. High growth rate currently is fuelled by strong capital inflows and high investor yields. Basic food prices are subjected to double digit inflation. Median household incomes have eroded, resulting in half the households spending more than 50 per

cent of their income on food. Inflation is the most “serious threat” to rapid economic growth.

2. Framework and Methodology

In order to drive India as an economic powerhouse as well as to sustain and power its robust growth rate, the Prime Minister initiated a National Knowledge Commission (NKC) as the key initial catalyst to study, analyze and recommend the strategies the country should pursue to achieve the status of a world class knowledge society. He said (NKC, 2009: 9), “The time has come to create a second wave of institution building and of excellence in the fields of education, research and capacity building”.

Eight high-level experts from varied fields of expertise were commissioned by the NKC to prepare “a blueprint to tap into the enormous reservoir of India’s knowledge base so that the people of India can confidently face the challenge of the 21st century” (NKC, 2009: 7).

Terms of Reference for the NKC (NKC, 2009: 9) were to: build excellence in the educational system to meet the knowledge challenges of the 21st century and increase India’s competitive advantage in fields of knowledge; promote creation of knowledge in science and technology laboratories; improve the management of institutions engaged in intellectual property rights; promote knowledge applications in agriculture and industry; and promote the use of knowledge capabilities in making government an effective, transparent and accountable service provider to the citizens and widespread sharing of knowledge to maximize public benefit.

The study was anchored on issues of access, concepts, creation, applications and services. It was underpinned by in-depth studies undertaken by inclusive working groups “consisting of domain experts from the government, academia, media and others to make the entire process democratic, transparent and participative” (NKC, 2009: 7).

Extensive consultations and working papers facilitated discussions and debates at various levels and ultimately at the NKC to ensure that the recommendations were evidence-based and reflected the concerns and aspirations of the domain experts and the stakeholders. After three and a half years of extensive consultations and deliberations, a comprehensively analyzed report was presented.

3. The Blueprint

(a) Access

Areas that drive knowledge were identified as: right to education; proficiency in languages; access to wider knowledge through translations; proactive libraries; knowledge and health information networks; and portals.

(i) Universal and Inclusive Education

To be viable, a knowledge-society has to be underpinned by an inclusive education and training system. Its execution faces two impediments. First, school education in a socially and economically stratified Indian society is segmented, resulting in a parallel track of “education centres”. Disadvantaged children are ill-prepared to enter the quality schools and when admitted they slip in performance and end up as failures, perpetuating an uneven educational quality. Therefore, the separate school systems must be integrated to create a level-playing field to enable every child to gain access to schools of a uniform and acceptable quality.

Second, India’s founding father Mahatma Gandhi dreamt of a “casteless and classless” Indian society. However, social exclusion was deeply embedded in India’s social, economic and political structure which perpetuated unequal opportunity in education, employment and economic opportunities, particularly for the scheduled castes and tribes and other backward classes, though collectively they make up more than 50 per cent of India’s population. In the absence of viable safety-nets, backward groups have faced persistent poverty. An inclusive education can provide a viable safety-net to the disadvantaged as it gives them an opportunity for employment and economic activities.

With democratization, issues like the persistent lack of social and economic opportunities and poverty among the backward groups has exacerbated and contributed to polarized and solidified caste-based “vote banks” as a determining influence in Indian politics (Guha, 2007: 607). The Backward Classes Mandal Commission reported in 1980 that though collectively the backward classes constituted more than 50 per cent of India’s population only a mere slightly over 4 per cent of these groups were represented in the country’s Class One jobs, while overall they filled only 12 per cent of all posts in the Central Government (Guha, 2007: 606).

Merit driven access to quality education does not work for the backward classes. Only a legally binding affirmative action policy does. In South India affirmative action policies in education since pre-independence have enabled many people to earn more, live longer and have fewer children. Amidst controversy and protest by vested interests who claimed that “reservations militates against merit and excellence”, India in 2008 took a politically bold step to further extend the 1989 implementation of the Mandal Commission’s recommendations of legal reservations of posts in Central and State Governments to education as well. Thenceforth, 49.5 per cent of job vacancies in government and enrolment in public tertiary educational institutions are reserved for candidates from the “socially and educationally backward classes” with a merit-based admission proviso built-in. The NKC

says that the Government's special intervention and financial support is vital for a speedy implementation of the legislation.

The Eleventh Five Year Plan, known as the education plan, has incorporated inclusive and quality education to ensure that underprivileged individuals and communities are not left behind. An effective implementation of the policy can enable India to tap the hidden talents of a large pool of students with talent potential, who have thus far been excluded from the formal system of education and training. The inclusive policy can be a boost to the growth of a knowledge-society.

(ii) English Language Proficiency

English being the gateway to modern knowledge and economic progress, the role of English along with the country's first official language Hindi and regional languages are considered vital for India's development. The (NKC, 2009: 23) emphasizes that:

An understanding and command over the English language is a most important determinant of access to higher education, employment possibilities and social opportunities. School-leavers who are not adequately trained in English as a language are always at a handicap in the world of higher education.

Well-paying jobs are tied to people with a command of English. However, the introduction of Hindi as the national language and medium of instruction did not deter India's elite schools and tertiary institutions, including the prestigious Indian Institutes of Technologies (IITs), from continuing to use English as the medium of instruction and research. They recognized the international value of English and its strong, pervasive and growing use both domestically and internationally as the main link language in academia, science and technology and commerce. Therefore, the NKC says it is vital that English should be incorporated into the country's school curriculum as a language from Class I level (primary) and progressively its usage be increased in subjects that are high content-based, such as science and mathematics.

(iii) Flow and Dissemination of Knowledge

Access to quality and comprehensive information at all levels is critical. However, information flow is hampered by an inadequate and incomplete dissemination of good quality translations and its asymmetrical flow. A comprehensive and systematic information flow will provide greater access to knowledge across the country and prevent market failures. This should be in tandem with translation activities and the promotion of English language training across the population and schools. Libraries, knowledge networks,

health information networks and portals are the very bedrock of a knowledge society and they should keep abreast with the growth of knowledge. The acceleration of information services is fundamental to the goals of creating, disseminating, optimally utilizing and preserving knowledge. The sharing of knowledge is fundamental and therefore all knowledge based institutions should be interconnected within a national knowledge network.

(b) Concepts

The revitalization and expansion of education can be the major catalyst to accelerating a knowledge society. Access, quality, quantity, and curriculum reform are critical and all stakeholders, both public and private providers of education namely, school, vocational, higher, medical, legal, management, engineering, open and distance education and lifelong learning must address these issues.

(i) Access, Equity and Quality

To drive quality and access in education it is important to ensure: an open access to resources; a large supply of talented students in science and mathematics; and an increase in the number of quality PhDs in critical subjects. An inclusive early and universal childhood education with gender equity is crucial. In short: “universal access to quality school education is a cornerstone of development and a minimum necessary condition for any progress towards making India a knowledge society” (NKC, 2009: 19).

An early introduction to quality education emphasizing reading, writing, numeracy and computer science will lay the foundation for student success in elementary and secondary schools, and later in higher education and work. To achieve this, a re-orientation of school curricula, the examination system and improvement of teacher quality is necessary. Children in schools must move away from a predominately rote-learning and highly stressed testing regime towards a child-centred education that encourages children to understand concepts, solve problems, improve their communication skills and independently access knowledge.

Minimum standards have to be achieved as increasingly fewer jobs and opportunities are open to those who lack basic educational and communication skills. If schools do not maintain quality education, then students who opt for vocational and related education streams may not be able to advance at a later stage into mainstream education.

Science and mathematics education are on the decline, while India’s competitors, China and South Korea, have marched ahead. The decline in science education has created a shortage of manpower in these fields.

Consequently, according to the NKC (2009: 117-20), it is necessary to reform science education in the country, the crucial ingredient for ensuring success in people with vision, ability and commitment to execute, supported by an effective mission-oriented and formalized organizational platform for implementation and to achieve the goals and objectives of science education and popularization. To this end, notes the Commission, a National Science and Mathematics Mission have to be established to consolidate, streamline and coordinate all science related activities. (NKC, 2009: 131)

(ii) Higher Education: Key to Knowledge-Economy and Society

As a public good higher education plays a pivotal role in India's social and economic progress. Universities and research institutions have laid and nurtured the foundation for a modern knowledge society and have contributed significantly to India's economic, social and democratic progress. Access, quality and research in India's universities and research institutes are on the decline. The proportion of the relevant age group of the population that enters higher education is about 7 per cent and this is far from adequate in relation to India's rapidly growing needs. Low quantity output is accompanied by an uneven quality of graduates and research output by the universities and research institutions. The cause, a fundamental academic weakness due to compartmentalization and fragmentation of the knowledge system, absence of innovation in the learning methods, disconnect with society, and excessive emphasis on a multitude of harmful entrance and qualifying tests.

Although engineering education is a key enabler of economic growth, several recent studies have highlighted the unemployability of many engineering graduates because of a lack of synergy between the curriculum and syllabi of engineering education and the requirements of industry (NKC, 2009: 107). The NKC says (i) there needs to be a closer alignment between engineering education and industry and (ii) since science is the heart of engineering, there needs to be a greater integration between these two disciplines.

Medical education and training has moved more to an urban-oriented, doctor-centric and technology-driven system. The urban, doctor and technology skewed system has to be re-oriented to meet the needs of India's majority population. The quality, quantity, distribution and availability of human resources in the health sector have to be improved to shift health provision towards a care-driven, rural-oriented and equitable health service.

The role of higher education has to be expanded. In an expanding Indian economy, there are only 350 universities for a population of 1.2 billion and growing, while China with a population of 1.3 billion has in the last three years established 1,250 universities and 50 per cent of China's students graduate in science and engineering subjects. Realizing this critical shortage,

the NKC recommends the establishment of a staggering 1,500 universities in the coming decades out of which 50 are to be national universities. The goal should be a gross enrolment ratio of least 15 per cent by 2015.

The national universities should be of the highest quality, department-based, exemplars to the rest of the nation and able to provide a variety of disciplines in the humanities, social sciences, commerce, basic sciences and professional subjects at both the undergraduate and postgraduate levels. They should be small, as large universities are prone to low academic standards and poor governance. Small and nimble universities can be flexible, innovative and creative and this will attract the best students and staff. Smallness, flexibility, innovation and creativity can drive them to compete and excel.

Lack of quality universities and technology institutes has encouraged students with means to opt for overseas tertiary education in America, Britain and Australia and many remain overseas after graduation which is a loss of valuable talents. A wave of new high quality institutions could reverse this trend as well as energize the entire academic system to be more conducive and vibrant for a research culture to flourish.

Vital supporting elements are essential to build excellence in an education system that can function effectively and sustain itself to meet the country's challenges. The bedrock for competitive advantage is quality education with supporting elements such as funding, autonomous governance and teaching quality.

State financing is the key for the expansion of quality higher education, yet the proposed massive expansion cannot be undertaken and sustained solely through public financing. Alternative avenues of financing have to be tapped and greater cost-effective management must be instituted. Better management of assets, fees rationalization, greater philanthropic support and private participation has to be actively promoted and pursued. Fees rationalization has to be tied to need-based student financing, so that underprivileged students who have the ability to benefit from higher education are not deprived of the opportunity due to affordability. A string of proactive quality-driven mechanisms have been recommended to foster excellence at all levels, ranging from accountability to the wider world, greater competition between institutions, internal and external accreditation, transparency through greater information in the public domain, incentives for performance and explicit differentiation of the system.

The current uneven, varied, fragmented and uncoordinated provision of higher education is far from conducive to promoting a world class knowledge society. To mitigate this weakness, the higher education system has to be coherently coordinated and orchestrated by an Independent Regulatory Authority for Higher Education (IRAHE) so as to evolve uniform norms and standards for various aspects of higher education including (i) assessment and

accreditation (ii) restoration to the universities of their autonomy and (iii) the devolution to them of the responsibility to implement norms and standards (NKC, 2009: 77-8).

The erosion of autonomy and quality in the structure, organization and operation of universities and research institutes is attributed to the intervention of politicians and bureaucrats. Quality academic-administrators have to be appointed as Vice-Chancellors of universities and Directors of research institutions. A laudable recommendation is for the creation of a Standing Committee of Councils to be vested with the responsibility to identify academic-administrators of national standing for appointments as Vice-Chancellors of universities and heads of central educational and research institutions. (NKC, 1984-5). With this system in place, India hopes to develop a merit-based culture system which will give rise to quality education and research.

(c) Creation

To translate the recommendations into concrete action, enabling institutions for the creation, protection, dissemination and use of knowledge have to be established, namely: a National Science and Social Science Foundation; a Legal Framework for Public Funded Research; and an Intellectual Property Rights (IPR) Regime. Once established, they would provide an umbrella to drive and protect innovation and entrepreneurship. Knowledge is seen as one seamless entity and there should be no artificial boundaries between various disciplines.

(i) Role of Science and Technology

Significant contributions were made by Indian scientists to the advancement of science and technology in the 1950s and 1960s. Since then, the quality and quantity of their contribution has been on the decline. The major cause for this decline is attributed to a rigid compartmentalization between natural and social sciences and a lack of interaction between researchers compounded by the absence of a long-term vision in research undertaking, differential rewards between performance and output, and weak scientific methods. Such factors have contributed to the stifling of the development of a scientific temper within all levels of the system. To arrest this decline, strong measures are necessary to boost both the quantity and quality of scientific research. A comprehensive and coherent policy thrust is necessary to make India a leader in the creation and use of new knowledge in all areas of natural, physical, agricultural, health and social sciences with an emphasis that these areas cut across traditional disciplines. Any new knowledge created has to be used to improve the livelihood of the people and strengthen India's public and private

sector undertaking. This will boost the country's competitive advantage both in the domestic and global marketplace.

(ii) *Intellectual Property Rights (IPR)*

Knowledge creation and application should be for national benefit. It is imperative to put in place a world-class IPR legal framework to protect and provide incentives to diverse stakeholders to accelerate innovation, collaboration, licensing and commercialization as well as to protect the rapidly expanding enterprises and brands. (The Commission's, 2009: 161) contention is that "a nation's future and its ability to compete in the global market depend greatly on how it generates new ideas and innovates in science and technology. Intellectual Property creation and protection are critical issues in global knowledge-based competition".

(iii) *Innovation and Entrepreneurship Drives Growth and Prosperity*

Innovation is the cornerstone of economic and social progress. A viable innovation has to be in synergy with a proactive entrepreneurship which has the capacity to translate innovative ideas into value added products and connect them with their markets. The connecting link is the key to India's economic growth. The universally held view that innovation alone is primarily driven by high-end technology and R&D is a misnomer. Several other sources of innovations and related activities do enhance the value chain: various services and processes, marketing, branding, trade, entrepreneurship, market research, customer surveys, etc. The NKC (2009: 172) defines innovation as "a process by which varying degrees of measurable value enhancement is planned and achieved, in any commercial activity by the introduction of new or imported goods, services and processes".

In-depth qualitative and quantitative interconnectivity studies were undertaken to demonstrate the virtue and benefits that can accrue from a close and sustained synergy between education, innovation and entrepreneurship. The NKC views and defines innovation comprehensively as the paramount economic value enhancer in the country's products and services. This can lead to the generation of economic value, new jobs and a culture of entrepreneurship. Therefore, the role of entrepreneurship is critical in wealth-creation and employment generation and this can only nurture and flourish in a favourable business environment.

The NKC (2009: 211) defines entrepreneurship as "... the professional application of knowledge, skills, and competencies and/or of monetizing a new idea by an individual or a set of people by launching an enterprise *de novo* or diversifying from an existing one, thus to pursue growth while generating wealth, employment and social good".

Firms have recognized the importance of innovation as critical to growth and competitiveness. Innovation can grow and gain momentum cost-effectively with a high quality knowledge and skill-based workforce. A low-cost innovation regime that can produce high value products and services will enhance India's competitiveness. Firms, both large and SMEs that collaborate in R&D have a higher rate of innovation intensity. A lack of cooperation between universities and R&D laboratories is a barrier to the acceleration of innovation activity and its intensity. Thus collaboration has to be intensified.

The NKC (2009: 174) emphasizes that:

In this increasingly skill-driven knowledge economy, necessary investment in education, including enterprise-based vocational and education and training and market-based knowledge and skills in higher education, are going to be crucial to maintain India's innovation-driven growth and its cutting-edge in knowledge-based industries.

(d) Applications

The NKC has narrowed the scope of applications, focusing on the traditional health system and agriculture, enhancing the quality of life and, as the fifth issue anchoring the Commission's study – enhancing the provision of services through E-governance.

(i) Re-orientation of Health and Agriculture

There is an increasing global recognition of medical pluralism due to a shift from singularity to plurality in medical treatment. The immensely rich indigenous Indian traditional medical system can be a niche player as it has a comparative advantage. A National Mission on Traditional Health Knowledge is critical to spearheading an evidence-based, well-validated and uniquely Indian holistic health care system that could be marketed extensively and globally.

The deep crisis in agriculture is a serious concern. The sector, the mainstay of the economy, is under-performing, resulting in a negative impact on growth. It is attributed to several factors. Agriculture employs 52 per cent of the workforce. Yet it contributes to just 18.5 per cent of the national GDP because yields of staple crops are stagnant, unable to meet the rising population's rising food demands. This shows why the per capita income and living standards of people in agriculture are significantly lower than in the non-agriculture sector. Therefore, a modernization and transformation of the sector through an appropriate application of knowledge is vital. Public research institutes and universities should be in the forefront of this positive

public good undertaking, thus acting as a major boost to India's agrarian economy. This could provide the farmer a competitive edge in both the domestic and global markets.

(ii) Enhancing the Quality of Life

Knowledge should be applied for the well-being of the common people especially in the rural sector. Through extensive consultations with expert working groups involved with grass root organizations, *panchayats* (village councils) have been identified as focal points to identify evidence-based workable ideas and scale up existing and new projects that have the potential to benefit the people. The strategy will promote *panchayat* level capacity building, ensure participatory decision-making and a healthy democracy and spin-off the utilization and development of locally available knowledge resources to meet a variety of needs in diverse areas such as health, education, agriculture, forestry, water, etc. This will help to create a more participatory, transparent and accountable *panchayat* administration as well as identify, harness and replicate the tremendous human resource and knowledge pool that is inherently manifest in the people. Ultimately it could enhance the quality of life of the rural people.

(e) Services

E-governance is important and the NKC questions the notion that E-governance is merely about electronics and information technology and infrastructure. E-governance is critical to administrative reforms and there is a unique opportunity to use E-governance to re-engineer and modernize government processes to build a new India of the 21st century. This will usher in an administration that will be citizens-centred and develop greater participatory democracy. It will drastically reduce the numbers and duration of successive steps required to obtain services and provide traceable records, enable enforcement of individual performance, accountability, efficiency and productivity, as well as transparency of policies and processes. Some Indian states are already experiencing the benefits of E-governance.

In Part II, the review juxtaposes India's optimism of being an economic powerhouse within this millennium with the daunting obstacles it faces and the lessons other countries including Malaysia can learn from the report.

Note

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