

INDIA'S DECADE OF DEVELOPMENT:

**LOOKING BACK AT THE LAST 10 YEARS AND LOOKING FORWARD TO
THE NEXT 20**

**Nirupam Bajpai and Jeffrey D. Sachs
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Abstract

In 2011, looking back at the first decade of the 21st century – 2000-2010 -we strongly believe that this decade indeed can be called – *India's Decade of Development*. We elaborate why.

Going forward however, India will face enormous challenges in the areas of rural development, urban sustainability, national infrastructure, and human capital and population.

India will add hundreds of millions of people to the urban economy in the years and decades ahead. India's cities need to be safe, efficient, pleasant to live in, supported by infrastructure (water, sewerage, electricity, transport, etc.), able to create jobs which are globally competitive, etc. Briefly put, India needs a revolution in sustainable urban planning. Sustainable cities mean: walk able, mix used areas, public transport, urban planning, public health and other services, and climate resilient especially coastal cities. To be able to create large scale job opportunities will mean solid systems of education-apprenticeship, vocational training, etc., perhaps along the German lines that link schooling with early labor-market entry.

On the national infrastructure front, inter-city rail upgrading, sustainable and secure energy, watershed management (river-linking to the extent that this is a sound and safe concept), dams policy, fiber connectivity nationally, ports and airports, etc. India will also need an integrated, life-cycle, population scale vision of human capital accumulation. This includes: Population stabilization and early childhood development, especially to overcome the scars of under-nutrition, which may be India's greatest plague.

On the education front, education for all with improvements in quality of education (to improve teaching and learning outcomes) and education-to-job linkages will be critical. Manpower for skill and occupational needs in the next twenty years will be high as the economy urbanizes, modernizes, and becomes more service-sector oriented.

India is moving from the phase of market reforms (1990-2010) to the new era of sustainable development. The priority now must be not only on growth, but on the triple bottom line of growth, equity/inclusion, and environmental sustainability.

The sustainability challenge will occupy India and the world for decades, not just for years. All countries face the challenge of adapting to ongoing climate change, managing growing water scarcity, protecting endangered ecosystems and species, etc. As one of the world's most crowded country, India faces this challenge more urgently than others.

India's Decade of Development

Looking Back at the Last 10 Years and Looking Forward to the Next 20

Nirupam Bajpai and Jeffrey D. Sachs¹

Background:

In his Independence Day speech on August 15, 2000, the then Prime Minister of India, the Honorable Atal Bihari Vajpayee in his address to the Nation from the ramparts of the Red Fort said and we quote "..., let us together resolve to make this decade, the **Decade of Development**. To realise this goal, we have decided to achieve the target of **doubling India's per capita income in the next ten years**. The Prime Minister added, "The most valuable investment that we can make in India's future is to ensure that every child gets education. We have decided that **by 2010, every Indian child will get education up to class eight**. We have launched *Sarva Shiksha Abhiyan (SSA) Education for All campaign* - to achieve this goal. Education until graduation has been made free for women."

The Prime Minister announced two broad goals that the government would set for itself²:

First, by the year 2010, the per capita income of India would be doubled. Income doubling within a decade requires annual growth in per capita income of 7 percent per annum.

Second, by the year 2010, there would be universalization of education until Class VIII, with a special effort for girls and disadvantaged groups.

Interestingly, the first decade of the 21st century saw major national schemes/campaigns/missions/ get launched with fairly substantial amounts of public spending to back them. First, in the roads sector, the Golden Quadrilateral project and the Prime

¹ Nirupam Bajpai is Director, Columbia Global Centers | South Asia and Senior Development Advisor, the Earth Institute at Columbia University. Jeffrey Sachs is Director of the Earth Institute and Special Advisor to the United Nations Secretary General, Ban-Ki-Moon. Bajpai presented this paper to the Honorable Prime Minister Dr. Manmohan Singh on November 7 and to the Human Resource Development Minister, Kapil Sibal and Law Minister Salman Khurshid on November 8, 2011.

² Recommended at a meeting on January 13, 2000 by Nirupam Bajpai to the then Prime Minister of India, the Honorable Atal Bihari Vajpayee. For details, see Bajpai and Sachs 2000.

Minister's Village Road Scheme were launched in 2000³; second, in the education sector, Education for All campaign was launched in 2001; third, in the field of drinking water, the Swajaldhara scheme was launched in 2002; fourth, in the health sector, the National Rural Health Mission (NRHM) was launched in 2005; fifth, in the rural electrification sector, the Rajiv Gandhi Grameen Vidyutikaran Yojana⁴; and sixth, in the rural infrastructure sector, Bharat Nirman⁵ was launched in 2005 among others. It is our view that all of these programs coming together as they did over the last decade have the capacity to produce and in some cases have begun producing real results and therefore need to be strengthened with much higher levels of public spending and sectoral reforms so as to improve service delivery. In post-independent India, never has India had a decade long phase when such relevant, much needed, large scale public programs in so many critical sectors have come together for the development of India in general and rural India in particular. In 2011, looking back at the first decade of the 21st century – 2000-2010 - we strongly believe that this decade indeed can be called – *India's Decade of Development*.

As we're past the first decade of the 21st century and two decades since the process of India's economic reforms began in 1991, it is a good time, we think, to assess what the above mentioned goals achieved; new goals that need to be set and the challenges that remain to be addressed with suitable strategies. Hence we first look back at the last ten years and then look forward to next twenty. In short, we believe that with a much more focused approach towards the agricultural sector and agro-based industrialization in rural India; the implementation of India's unfinished reform agenda with a key focus towards policy, institutional and governance reforms in general and in particular reforms that would help make India a much more improved platform for labor-intensive manufacturing production; and substantially higher public spending in areas, such as health and education, that over the next twenty years, India can and will continue to grow at high rates of economic growth which can be far more inclusive than what it has been over the last two decades.

³ The Golden Quadrilateral is a highway network connecting India's four largest metropolises: Delhi, Mumbai, Chennai and Kolkata, thus forming a quadrilateral of sorts. Four other top ten metropolises: Bangalore, Pune, Ahmedabad, and Surat, are also served by the network. The primary objective of the Prime Minister Village Road Scheme (PMGSY) is to provide connectivity, by way of an All-weather Road (with necessary culverts and cross-drainage structures, which is operable throughout the year), to the eligible unconnected habitations in the rural areas, in such a way that all unconnected habitations with a population of 1000 persons and above are covered.

⁴ RGGVY aims at electrifying all villages and habitations as per new definition, providing access to electricity to all rural households and providing electricity connection to Below Poverty Line families free of charge. According to data from the Ministry of Power, as of April 30, 2011, under RGGVY, electrification work had been completed in 97,071 unelectrified villages; intensive electrification had been carried out in 1.93 lakh electrified villages and free electricity connections had been given to 161.72 lakh below poverty line households.

⁵ Bharat Nirman is a time-bound plan for rural infrastructure set up by the Government of India in partnership with State Governments and Panchayat Raj Institutions.

While we have noted that large public investment programs in a number of critical sectors have been put in place over the last decade, however, this does not by any means imply that all these programs are delivering what they are supposed to deliver⁶. Some of the key shortcomings in governmental programs especially in the fields of service delivery in health and education for example are: lack of effective management systems for implementing programs leading to very little, if any control and oversight which in turn leads to grossly lacking accountability. The system does not call for an explanation and/or punish non-performers and similarly does not reward those who perform well. We've seen the same weaknesses in the National Rural Health Mission Bajpai et. al. (2010) water-and-irrigation programs, etc. These programs are vital, but their successful implementation requires the building of new systems approaches that transcend the severe limitations of the current bureaucratic arrangements.

The Millennium Village approach, in which targeted interventions are managed through a rigorous systems approach — with dedicated cross-sector teams, new IT tools designed specifically for management, aggressive monitoring, tracking, systems design, etc. -- is to our mind enormously relevant in the case of India.

Achievements since the Prime Minister's Goal Announcement:

In response to the prime minister's goal of doubling India's per capita income by the year 2010, the Planning Commission of India set an eight-percent-per-year growth target for India's Tenth Five-Year Plan (2002-03 to 2006-07) and achieved an average growth rate of 7.8 percent. The Eleventh Plan (2007-08 to 2011-12) aimed at 9 percent growth, but is likely to end with 8.2 percent. Be that as it may, India's growth performance over the Eleventh Plan has been remarkable given that this period witnessed the greatest economic crisis the world has seen since the Great Depression. In response to the goal of attaining universal elementary education by the year 2010, the government launched the SSA and began investing vast sums of money for expanding school coverage, capacity building, mid-day meals and free school books for children of families living below the poverty line.

In real terms, the growth in per capita income has been modest over the past decade, but by no means insignificant. In terms of constant (1999-2000) prices, the per capita income which was Rs. 16,173/- in 2000-01 rose to Rs. 24,295/- by 2007-08 and to 26,618/- in 2009-10. That is a rise of 64 percent over the decade. The per capita income would have been higher but for the global economic crisis which pulled down the country's growth rate during 2008-09 to 6.8 percent from 9.3 percent in the previous year and 9.6 percent in the year before (see Table

⁶ All the six crucially important schemes listed on the previous page are in the State List as well as in the Eleventh Schedule (Panchayat list) of the Indian Constitution, implying thereby that the States are constitutionally required to transfer functions, functionaries and funds relating to these areas to Panchayati Raj Institutions. This has not happened in most States. The States which are doing well in these schemes are also the ones who have empowered the panchayats at village, Block and District levels.

1). Additionally, one would have thought that during the course of the decade, the remaining reforms on India's unfinished reform agenda, particularly those that would be instrumental in making India a bigger platform for manufacturing would be implemented thereby helping raise India's growth rate further, but that unfortunately has not happened yet. Of course, at current prices, India's per capita income had doubled in 2007-08 itself from the level it was at in 1999-00.

TABLE 1: Macroeconomic Indicators

		2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
1	Rate of growth of GDP	9.5	9.6	9.3	6.8	8.0	8.6
2	Rate of inflation % (average over previous year)						
	WPI	4.4	6.5	4.8	8.0	3.6	8.2
	GDP deflator	4.2	6.4	5.8	6.7	7.5	9.6
	CPI (IW)	4.4	6.7	6.2	9.1	12.4	10.0
3	Fiscal Deficit (% GDP)						
	Centre	3.97	3.32	2.55	6.04	6.39	5.1
	State	2.33	1.82	1.49	2.40	3.00	2.62
	Combined	6.30	5.14	4.04	8.44	9.39	7.72
4	Current account deficit (% GDP)	-1.2	-1.0	-1.3	-2.3	-2.8	2.5*
5	Foreign Direct Investment inflows (\$ Billion)	8.96	22.83	34.84	35.18	37.18	24.0
6	Foreign Portfolio Investment inflows (\$ Billion)	12.49	7.00	27.27	-13.86	32.38	35.0*

Source: Economic Survey, various issues, Ministry of Finance, Government of India

*Advance estimates

In response to the goal of attaining universal elementary education, the government's flagship program SSA began operation in 2001 in a time bound manner, as mandated by 86th amendment to the Constitution of India making free and compulsory Education to the Children of 6-14 age group, a Fundamental Right. SSA is being implemented in partnership with State Governments to cover the entire country and address the needs of 192 million children in 1.1 million habitations. The program helps open new schools in those habitations which do not have schooling facilities and strengthens existing school infrastructure through provision of additional class rooms, toilets, drinking water, maintenance and school improvement grants. Existing schools with inadequate teacher strength are provided with additional teachers, while the capacity of existing teachers is being strengthened by training, grants for developing

teaching-learning materials and strengthening of the academic support structure at a cluster, block and district levels.

SSA began with a modest budget of Rs. 150 crores⁷ which now stands at a staggering Rs. 20,000 crores. SSA has undoubtedly helped the country take impressive strides in the elementary education sector with opening of large number of schools; large-scale hiring of teachers; provision of free school books for students from the BPL families; mid-day meals program and so on. As a result, while in 2001, 28.5 percent of the 205 million children in the 6-14 age group were out of school, by 2006 this proportion had dropped to 6.9 percent and further to 4.3 in 2010. But the flip side is that out of the 205 million children in this age group, 59 million children are not attending school beyond Grade V or VI. For instance, while the total enrollment in Grades I-V was 134.4 million in 2008-09, in Grades VI-VII, the total enrollment had dramatically dropped to 53.4 million. In fact, earlier data from 2006-07 containing class-wise enrolment shows that with each successive class, students quit in large numbers. By Class V, every third child has dropped out and by Class VIII every second student is no longer attending school. The Right to Education Act covers children in the 6 to 14 years age group — precisely for these classes in school. So, the dropouts need to be the biggest focus of the implementation mechanism being set up.

Of the 59 million not attending school, 35 million are girls and 24 million are boys. High drop out rates (see Table 2 below) are largely due to large numbers of parents still wanting their children to either work at home or outside; low levels of learning achievement and low participation of girls coupled with it are various systemic issues like inadequate school infrastructure, (lack of girls toilets in schools) poorly functioning schools, high teacher absenteeism, large number of teacher vacancies and poor quality of education in public schools.

Thanks to SSA, in terms of physical access to schools, more than ninety percent of the Indian population now has a primary school located within one kilometer of their place of residence. However, many schools have only one or two classrooms and most lack running water and toilets. These features are not conducive to a learning environment. The really critical aspect of the Indian public education system is its low quality⁸. Even in educationally advanced states, an unacceptably low proportion of children who complete all grades of primary school have functional literacy. There is a lot of 'waste' in the school system as evidenced by the large percentage of children who drop-out before completing primary schooling. Such inefficiency is compounded by teacher apathy, teacher absenteeism, very high

⁷ 1 crore = 10 million

⁸ Bajpai and Goyal (2004)

pupil-teacher ratios and inadequate teacher training. Another critical issue is the non-teaching work expected to be carried out on priority basis by teachers working in the public schools that ranges from election related work to government survey works and from health related work to supervising civil construction work⁹. Public primary school teachers in rural areas are involved in so many activities other than teaching the students that this has major implications for the amount of time the teachers spend away from school. This happens largely because teachers are the most qualified individuals available in villages to do such government activities.

TABLE 2: State-wise Education Indicators

	STATES	Net Enrolment Ratio in Classes I-V (Primary Education)		Drop Out Rates Classes I-VIII (Elementary)		Literacy Rate Population Age 7 years and above	
		1997-1998*	2007-08*	1997-98*	2007-08*	2001 \$	2011 \$
1	All India	71.1	95.9	56.1	43.0	64.8	74.0
2	Andhra Pradesh	68.6	78.8	73.4	48.7	60.5	67.7
3	Assam	98.4	88.8	69.1	73.5	63.3	73.2
4	Bihar	75.9	99.5	77.1	70.7	47.0	63.8
5	Gujarat	86.4	86.3	60.3	48.2	69.1	79.3
6	Haryana	73.4	65.0	30.8	6.5	67.9	76.6
7	Karnataka	88.6	98.6	56.4	33.9	66.6	75.6
8	Kerala	71.5	68.0	-0.8	0.0	90.9	93.9
9	Madhya Pradesh	88.1	94.2	48.3	46.1	63.7	70.6
10	Maharashtra	84.4	84.9	39.9	30.5	76.9	82.9
11	Orissa	69.7	92.7	66.4	61.3	63.1	73.5
12	Punjab	70.6	53.0	28.4	26.0	69.7	76.7
13	Rajasthan	71.6	85.2	64.4	62.3	60.4	67.1
14	Tamil Nadu	84.6	97.8	30.0	9.1	73.5	80.3
15	Uttar Pradesh	46.8	90.4	52.6	28.6	56.3	69.7
16	West Bengal	55.6	84.1	72.2	63.9	68.6	77.1

Source: *Ministry of Human Resource Development, Government of India; Ahluwalia 2011

⁹ Bajpai and Dholakia (2006)

The quality of 'literate' of the rural school system is very low. The actual quantity of schooling that children experience and the quality of teaching they receive are extremely insufficient to any mastery of basic literacy and numeric skills. Surprisingly, this seems to be true in the educationally advanced states as well. In Maharashtra, for instance, community based surveys of twenty eight cities and eight rural districts found that only 30 percent of boys and girls in the age group 6-14 could read basic text fluently or do simple arithmetic (Banerji, 2003). Grover and Singh (2002) too found in their study of two districts of Tamil Nadu that most students lacked functional literacy and numeric skills. Similar results were also reported by the PROBE team (1999) in their surveys of four North Indian states. Leclercq (2002) in his study of two districts of Madhya Pradesh (MP) found that in most schools visited, few children could read basic texts fluently. We too found similar results during our field investigations in rural MP and Uttar Pradesh (UP) in 2004 and 2005. The emphasis currently is on rote learning and there is little attempt in teaching activities to impart understanding or comprehension of the text.

Going forward SSA needs to focus its attention and resources on up gradation of quality in public primary schools so as to achieve much better teaching and learning outcomes with improved teacher training; relevant and useful curriculum development; and better control and oversight of the teachers among others. Additionally, it is our view that like the mid-day meals program, public primary schools should also put together a schools breakfast program as most children who attend these schools come from poor families and are most often than not, not adequately fed before coming to school. The idea is not to provide an elaborate breakfast, but say a glass of milk, a couple cookies and a fruit, say a banana. A child who is hungry in the morning can hardly be expected to learn and retain what he/she is being taught and therefore a breakfast can go a long way in improving the learning outcomes. Also, since dropout rates seem to surge post Grade V, specific interventions (could be in the form of conditional financial aid to the BPL families, especially focusing on girls) need to be put in place so that dropout rates could be checked.

Looking forward to the next 20 Years and beyond:

In the Indian context, we believe a four pillar approach, which includes: rural development, urban sustainability, national infrastructure, and human capital and population is needed so as to sustain high rates of economic growth and make it much more inclusive than has been the case so far. The sustainable development challenge in India is a triple bottom line: rapid economic growth, social equity and inclusion, and environmental sustainability. The four pillars are to implement the sustainable development agenda.

Rural Development:

There is an urgent need for a second green revolution since the first green revolution has run out of steam, and has been eaten up by population increases, and significantly enough has caused massive environmental side effects, including water and pollution. The second green revolution should in our view include: agriculture R&D, shift to central and eastern U.P./Orissa/Bihar, more efficient pricing and use of water, fertilizer, and electricity and up scaling rural agroindustry, including supply chain management, etc. We discuss this in greater detail in sections below on agriculture led growth and agro based industry. Furthermore, India needs to take urgent account of climate change and its likely adverse effects on Indian agriculture and food security unless compensating (adjustment) measures are taken.

Urban Sustainability:

India will add hundreds of millions of people to the urban economy in the years and decades ahead. India's cities need to be safe, efficient, pleasant to live in, supported by infrastructure (water, sewerage, electricity, transport, etc.), able to create jobs which are globally competitive. Briefly put, India needs a revolution in sustainable urban planning. Sustainable cities mean: walk able, mix used areas, public transport, urban planning, public health and other services and climate resilient cities especially those on the coast. Cities must be able to create jobs. This means solid systems of education-apprenticeship, vocational training, etc., perhaps along the German lines that link schooling with early labor-market entry.

National Infrastructure:

This includes inter-city rail upgrading, sustainable and secure energy, watershed management (river-linking to the extent that this is a sound and safe concept), dams policy, fiber connectivity nationally, ports and airports, etc. This should also include connectivity with neighboring countries (Bangladesh, Bhutan, Nepal, etc.)

Human Capital and Population:

India needs an integrated, life-cycle, population scale vision of human capital accumulation in the country. This includes: Population stabilization (demographic trends projected by UN - India reaching 1.7 billion) Early childhood development, especially to overcome the scars of under-nutrition, which may be India's greatest plague. The education for all scheme should urgently call for improvements in quality of education and education-to-job linkages. Manpower needs for skill and occupational needs in the next twenty years are going to be high as the economy urbanizes, modernizes, and becomes more service-sector oriented.

Time scale

India is moving from the phase of market reforms (1990-2010) to the new era of sustainable development. The priority now must be not only on growth, but on the triple bottom line of growth, equity/inclusion, and environmental sustainability.

The sustainability challenge will occupy India and the world for decades, not just for years. All countries face the challenge of adapting to ongoing climate change, managing growing water scarcity, protecting endangered ecosystems and species, etc. As one of the world's most crowded country, India faces this challenge more urgently than others.

India's growth and development strategy needs to focus on one key requirement – *to create tens of millions of jobs year-on-year*. To be precise, India needs to create 16 million new jobs every year, a herculean task by any standards. 50 percent of India's population is below the age of 25 and more than 65 percent is estimated to be below the age of 35¹⁰. It is expected that, in 2020, the average age of an Indian will be 29 years, compared to 37 for China and 48 for Japan.

In a broad sense, we believe, growth strategies for large landlocked and laggard states, such as Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Assam and the other north-eastern states, (Group I states) an agriculture-led growth strategy is called for (with an urgent need to bring about a Second Green Revolution in these states) along with a major push to help set up agro-based industries. For coastal states, such as Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh and Karnataka, (Group II states) a strategy that focuses on vigorously promoting labor-intensive manufacturing, both for the domestic market as well as exports is called for to create large scale employment opportunities.

Goals for the 2nd Decade – 2010 to 2020

- 1) Achieve a doubling of per capita income in real terms between 2010/11 and 2019/20;
- 2) To create 5 million new job opportunities in the agro industry sector per annum;
- 3) To create 7 million new job opportunities in the manufacturing sector per annum;
- 4) Achieve a doubling of India's merchandise exports to \$500 billion by 2016;
- 5) Increase public spending on health to 3% of GDP by 2015 and to 5% by 2020;
- 6) In public schools, dropout rates to be brought down to no more than 3% by 2020;
- 7) Centralization of power in the hands of the federal and state officials to be effectively replaced by empowering PRIs, both with decision-making and financial authority, and

¹⁰ To develop qualities of character, discipline and leadership amongst the youth of the country, it may be useful to give serious thought to Goal number 8 listed below.

- 8) To create a human resource of organized, trained and motivated youth for providing leadership in all walks of life, consider joining the National Cadet Corps¹¹ (NCC) for all high school students mandatory.

An Integrated Approach to Rural Poverty Reduction

Table 3 provides state-wise data on poverty. We believe that an integrated approach to rural poverty embraces five interconnected initiatives:

- Sustainable agriculture (including programs for water management and climate-change)
- Sustainable public health (including preventative medicine, nutrition, and clinical-based services)
- Sustainable education (quality education in rural primary and secondary schools, built on advanced ICT and other technologies, and strategies for high enrolment and community participation)
- Sustainable infrastructure (utilization of advanced ICT to bring metered electricity, metered water, graded roads, and other infrastructure services to under-served regions)
- Sustainable business development (design of farmer-based strategies, training programs, and microfinance, to upgrade rural livelihoods)

TABLE 3: State-wise Percentage of Population Below Poverty Line

	STATES	Lakdawala Methodology		Tendulkar Methodology		Tentative Estimates ¹
		1993-94	2004-05	1993-94	2004-05	2009-10
1	Andhra Pradesh	22.2	15.8	44.6	29.9	20.0
2	Assam	40.9	19.7	51.8	34.4	39.2
3	Bihar	55.0	41.4	60.5	54.4	54.8
4	Gujarat	24.2	16.8	37.8	31.8	26.6
5	Haryana	25.1	14.0	35.9	24.1	23.8
6	Himachal Pradesh	28.4	10.0	34.6	22.9	11.7
7	Jammu & Kashmir	25.2	5.4	26.3	13.2	12.8
8	Karnataka	33.2	25.0	49.5	33.4	26.5
9	Kerala	25.4	15.0	31.3	19.7	11.3
10	Madhya	42.5	38.3	44.6	48.6	40.5

¹¹ Currently, NCC is open to school and college students on a voluntary basis - <http://nccindia.nic.in/>

	Pradesh					
11	Maharashtra	36.9	30.7	47.9	38.1	26.4
12	Orissa	48.6	46.4	59.1	57.2	46.4
13	Punjab	11.8	8.4	22.4	20.9	19.3
14	Rajasthan	27.4	22.1	38.3	34.4	29.4
15	Tamil Nadu	35.0	22.5	44.6	28.9	18.3
16	Uttar Pradesh	40.9	32.8	48.4	40.9	40.5
17	West Bengal	35.7	24.7	39.4	34.3	32.5
18	All India	36.0	27.5	45.3	37.2	32.2

1-Estimates for 2009-10 have been made by C Ravi of the Center for Economic and Social Studies, Hyderabad based on the group of data from the 2009-10 NSSO Survey and using the Tendulkar Committee poverty line for 2004-05 adjusting for using the COIAL for rural areas and the CPIIW for urban areas. Source: Ahluwalia (2011).

The basic strategy is to implement integrated public investments effectively, at low cost and high reliability, in these five areas. The Earth Institute at Columbia University has been pursuing this strategy successfully in more than 10 countries in rural Africa since 2005 (Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, Tanzania, Uganda, with others newly joined). It will expand the range of such activities to include Guinea, Haiti, Honduras, Jordan, Timor-Leste, Zambia, and other countries that have requested the Earth Institute's cooperation and advice.

In each of the five main areas of intervention, the Earth Institute has identified or created well-advanced technologies, practical interventions, monitoring and evaluation systems, and other implementation tools. These include: water-saving technologies for agriculture, village-based solar-power systems, highly effective community-based public health delivery, ICT applications in primary and secondary education, and more. Describing four critical challenges facing the Indian economy in the Twelfth Plan (Ahluwalia 2011) suggests them to be a) managing the energy situation; b) managing the water economy; c) addressing the problems posed by urban transformation and d) ensuring protection of the environment in a manner that can facilitate rapid growth.

For a country as large as India, for effective and efficient service delivery, it is imperative to empower, both with authority and funds the third tier of local self-government if things have to really improve on the ground. The big challenge is not only to fight this within the bureaucracy, but to also to put together training programs that are comprehensive and on-going for the Panchayati Raj Institution (PRI) members to better understand their roles; responsibilities; and how they should work the system. Since PRIs are elected representatives, the training

processes have to be, by definition, on-going as trained members might lose an election and the new entrants might not have been trained at all.

TABLE 4: State-wise Health Indicators

	STATES	Maternal Mortality Rate		Infant Mortality Rate		Full vaccination		Safe Delivery		Child Malnutrition Underweight	
		1999-2001*	2004-06*	2001*	2009*	2005@	2009@	2005@	2009@	1992-93\$	2005-06\$
1	All India	327	254	66	50	54.5	61.0	58.9	76.2	47.9	40.4
2	Andhra Pradesh	220	154	66	49	72.3	68.0	77.8	95.6	42.9	29.8
3	Assam	398	480	74	61	25.8	59.1	40.3	65.5	44.1	35.8
4	Bihar	400	312	62	52	19.0	49.0	25.5	53.2	58.7	55.0
5	Gujarat	202	160	60	48	63.1	56.6	74.8	85.2	42.7	41.3
6	Haryana	176	186	66	51	57.2	71.1	53.1	69.3	31.0	38.2
7	Karnataka	266	213	58	41	86.9	78.0	74.6	88.4	46.4	33.2
8	Kerala	149	95	11	12	82.1	81.5	99.4	99.9	22.1	21.2
9	Madhya Pradesh	407	335	86	67	38.9	42.9	42.7	82.9	57.4	57.9
10	Maharashtra	169	130	45	31	58.9	78.6	75.5	85.5	47.3	32.5
11	Orissa	424	303	91	65	53.2	59.5	52.7	79.1	50.0	39.4
12	Punjab	177	192	52	38	83.5	83.6	71.6	66.7	39.9	23.6
13	Rajasthan	501	388	80	59	49.9	53.8	45.4	75.8	41.8	36.9
14	Tamil Nadu	167	111	49	28	79.6	77.3	92.7	98.6	40.7	25.9
15	Uttar Pradesh	539	440	83	63	33.8	40.9	34.4	64.2	52.7	41.5
16	West Bengal	218	141	51	33	54.4	64.9	54.6	72.6	53.2	37.6

@ Coverage Evaluation Survey, UNICEF. \$ National Family Health Survey (NFHS)

Source: * Various SRS Bulletins, Office of the Registrar General, GOI (MHA); Ahluwalia (2011)

Centralization of power in the hands of bureaucracy at the federal and state levels with extremely inadequate channels of transmission of local knowledge and needs to the decision makers prevents effective utilization of funds earmarked for governmental schemes and more

importantly leads to large scale corruption and misutilization of the tax payers' money. Channels of political intermediation envisaged in the PRI system of local governance could have worked as the channels for transmission of local needs, but they have not been allowed to take root or empowered sufficiently, particularly in the north Indian states, but in others as well. Empowerment of local governance institutions also enhances direct accountability to the population and is therefore likely to help rectify a number of gaps and bottlenecks in the current system.

Efficiency and dynamism will require the transfer of more power to states and local governments, and more democratization at the local level. Dynamic metropolitan areas (built around major cities) will constitute the main engines of growth for India in the coming decades. These urban areas will need taxation and regulatory powers to be effective in supporting the business and social environment.

A) Agriculture-led Growth:

We are of the view that Group I states would essentially require an agriculture-led growth strategy. In short, the development strategy should focus along the following lines:

- 1) Agriculture-led growth as the main area of focus; under which, some of the key objectives may be:
 - a) Productivity improvements, including agricultural extension, research and development, and crop diversification. Higher agricultural productivity is a key factor in rural poverty reduction & to set up agro-based industries.
 - b) Bringing in larger areas under irrigation so as to reduce monsoon dependence
 - c) Enhanced focus on agricultural exports
- 2) Much greater focus on building up rural infrastructure, with specific focus on power, roads, and availability of safe drinking water.
- 3) Rural industrialization wherein agro-based industries (like the Chinese Township and Village enterprises) should be the first order of business.
- 4) Improving primary health care facilities and primary schools in rural areas. Higher public spending along with sectoral reforms can bring large gains, and
- 5) Strengthening wide scale usage of information and communications technology (ICT).

In India, agricultural-productivity-led growth occurred in one major historical period, the Green Revolution, dating from 1965-66 to the early 1980s. The Green Revolution was centered

on short-stemmed, high-yield wheat, and to a lesser extent paddy rice, with both crops depending on irrigation and intensive application of fertilizer. The epicenter of the Green Revolution was Punjab and Haryana, and to a lesser extent other states of the North Indian Plains (as far east as Bihar) and southward to Rajasthan, Gujarat, and Maharashtra. High-yielding rice varieties made their impact most powerfully in West Bengal and Tamil Nadu. The introduction of Mexican wheat and Philippine rice hybrids, together with higher usage of agricultural inputs and mechanization, resulted in India becoming a surplus producer in food grains production. However, the Green Revolution initiated high rates of growth (pre-1980) in crop production could not be sustained in the last two decades of the 20th century. Growth rates fell from 3.2 percent during the Green Revolution period to 1.7 percent during the 1980s and the 90s. For the most part, this decline is attributed to the sharp fall in yield growth from 2.6 percent in the 1980s to 1.0 percent in the 1990s.

In short, not only is a second Green Revolution needed, but it is needed in the hugely populated states of Uttar Pradesh, Bihar, Madhya Pradesh, and Orissa. With the right policy framework and incentives in place, we believe, individual states can take the lead and set an example by using the right mix of modern agricultural techniques along with efficient water resource management and region specific agricultural R&D. Eastern Uttar Pradesh failed to take advantage of the Green Revolution despite its ample potential for agricultural growth. This failure and the persistence of poverty in this region is largely attributed to human failure, and not to natural factors, such as soil quality.

The spectacular growth in agricultural production during the Green Revolution is attributed to several natural and man-made factors. Among the natural factors Roul (2001) suggests the following: 1) nature's bounty in fertile alluvial soil of the Indo-Gangetic river systems of northern India; 2) geographical and geo-morphological advantage of perennial Himalayan rivers amenable for multipurpose dams supplying cheap power and water to the canal systems; and 3) topographical advantage to lay canal systems and road networks at considerably lower costs as against those in peninsular India.

The man-made factors, on the other hand included: 1) consolidation of holdings¹²; 2) assured irrigation¹³; 3) rural electrification and supply of cheap power to agriculture¹⁴; 4) agricultural research and extension network¹⁵; and 5) less exploitative agrarian structure.

¹² With this, private investment for digging tube wells was made viable. With cheap electricity from hydroelectric projects, Punjab could irrigate 60 percent of its net cropped area using tube wells.

¹³ In the mid-1960s, Punjab had already achieved 64.3 percent of irrigation of gross cropped area as against 19.9 percent for all India. By 1983/84, Punjab had 90 percent of gross cropped area under assured irrigation Chadha (1986).

¹⁴ In the mid-1960s, the per capita power consumption in Punjab was 98.3 kWh as against the all India consumption of 61.4 kWh. By 1975, all villages in Punjab were electrified.

While western Uttar Pradesh did benefit from the Green Revolution technologies, central and eastern U.P. did not, at least to that extent. Whether it is food grains (wheat more so than rice) potatoes, oilseeds, sugarcane or pulses, eastern U.P. produces much less (Kg/ha) relative to western U.P. This presents a challenge as well as an opportunity for eastern U.P. to catch up and take the lead on this challenge. In central and eastern U.P. for instance producing wheat and rice for small landholder farmers is no longer remunerative¹⁶. Here are some numbers to illustrate the point:

If a farmer had, say an acre of land and was producing wheat, his total cost of production (seeds, fertilizers, irrigation, pesticides, and labor) would be roughly Rs. 8,070/- and he would, on average in this area of U.P. produce roughly 15 quintals of wheat in an acre of land. This would sell for Rs. 12,750/- (15 times Rs. 850/- which is the minimum support price of the government per quintal). With this he ends up with a mere Rs. 4,680/- after a season of wheat production, less than Rs 400/- per month!

Similarly, with rice he makes a mere Rs. 4,030/- per season.

It is only in case of cash crops, such as sugarcane, he would make roughly Rs 20,430/- per season. Studies have shown that there is scope to increase the yield by more than 25% in Wheat and 46% in Rice. Besides, there is tremendous opportunity for enhancing the productivity of Sugarcane in eastern U.P. The State needs to address this problem in a holistic manner and on an urgent basis.

As early as 1996, M.S. Swaminathan, the architect of India's green revolution had observed that India with its 110 million farming families with small farms of an average of approximately 1.5 ha must produce more if they are to have marketable surplus (Swaminathan 1996). With the costs of agriculture inputs escalating, many farmers are not finding agriculture a viable profession (Rao and Malhan 2008).

Since we're discussing specifics about U.P., it is important to mention here that if India has to see an end to poverty in the country and witness substantial improvements in the health and education indicators, the State of U.P. has to perform vastly better than has been the case so far. U.P. is the most populous state of India and is among the most backward states, with high levels of poverty and low levels of social and economic development.

¹⁵ The Punjab Agricultural University (PAU) played a critical role in this area. Researchers at the University modified and further developed the Mexican dwarf wheat varieties and the Philippine high yielding rice varieties to suit local conditions and requirements. Since 1962, PAU has released 38 high yielding varieties of wheat and 19 varieties of rice.

¹⁶ Data collected from field work undertaken in August/September of 07.

TABLE 5: Growth Rate of Major Indian States

	STATES	Growth in GDP (% Per Annum)		
		1981-82 to 1990-91	1991-92 to 2000- 01	2001-02 to 2009- 10
1	Andhra Pradesh	6.4	5.6	7.6
2	Assam	4.2	2.5	5.2
3	Bihar	4.9	3.9	7.0
4	Chhattisgarh	na	na	na
5	Haryana	6.6	5.1	9.0
6	Gujarat	5.9	6.3	10.2
7	Jharkhand	na	na	na
8	Karnataka	5.2	6.9	7.0
9	Kerala	3.7	5.6	8.0
10	Madhya Pradesh	5.2	4.2	5.9
11	Maharashtra	6.1	6.1	9.3
12	Orissa	3.3	4.2	9.0
13	Punjab	5.3	4.7	6.1
14	Rajasthan	8.1	4.9	6.9
15	Tamil Nadu	5.7	6.3	7.4
16	Uttar Pradesh	5.1	3.6	5.8
17	West Bengal	4.4	6.5	6.7
18	All India (national accounts)	5.4	5.6	7.6

Growth rates are averages for the periods indicated. The growth rate for 1981-82 is the growth rate over 1980-81 Source: Central Statistical Organization, Ministry of Statistics + Programme Implementation; Ahluwalia (2011)

According to the 2011 census, U.P.'s population was placed at 199 million accounting for 19 percent of the country's population, although the state accounts for only 7.5 percent of the country's geographical area. Hence, U.P. has a very high population density - 828 persons per square kilometer - which is more than twice the national average, of 382. U.P.'s population has increased almost three times since 1947, the year of India's independence. It is increasing

currently at the rate of 2.1 percent per year, down marginally from 2.2 percent during 1990-00. That is, U.P. is now adding about 3.3 million people per year. If the population growth rate in the state continues at the current rate, per the 10th State Development Plan, by mid-century, U.P.'s population would have reached 306 million, merely 34 million short of the entire country's population after partition in 1947. Interestingly, if UP were to be a separate country, it would be the sixth most populous country in the world after China (1.3Bn), India (1.1Bn), United States (313 Mn), Indonesia (245 Mn) and Brazil (203 Mn) as per the 2011 population data.

U.P. is a landlocked state, mainly rural (with an urbanization rate of merely 21 percent) with an economy that is primarily agrarian. The industrialization pattern in the state is highly skewed with the western region of the state accounting for most of the industries of the state. The main agricultural crops in the state are wheat, rice, sugarcane, pulses and vegetables. The main industries in the state are cement, vegetable oils, textiles, cotton yarn, sugar, jute, and carpet. The sectoral break-up of the state's GSDP is roughly 32 percent from agriculture, 22 percent from industry, of which a mere 11 percent came from manufacturing, and 41 percent from services.

The gross cropped area in the state is expected to increase to 31 million ha from the currently placed area of 25.4 million ha. Of the 31 million ha, 27 million ha would be the gross irrigated area and the remaining 4 million ha would be rain fed agriculture area. For a projected population of 240 million by the year 2020 and 306 million by 2050, the food grain requirement has been assessed as 63 and 94 million tons respectively. At a very minimum just to meet food requirements alone, more than doubling of the current productivity of 2.0 t/ha to 4.5 t/ha for irrigated and 0.6 t/ha to 1.5 t/ha for rain fed areas would be necessary if one would think along the simplistic lines of state-level food self-sufficiency (Chaturvedi et. al. 2011). It is more probable that a scenario for growth include substantially increased production of higher value cash crops as well as significantly more post-processing that would lead to value-addition and off-farm employment. These options are likely to require much greater precision in thinking about managing the biophysical conditions, government programs (e.g. price-support that impact crop choices, credit etc.) and the local infrastructure and its evolution through public and private institutions.

It has been widely observed that available water supplies are often used inefficiently, resulting in soil erosion, nutrient depletion, land degradation, and depletion of water tables. This creates a vicious circle of poverty, land degradation and low productivity. Increased availability of small-scale water management technologies will significantly help small-scale farmers. Community-based watershed development projects have demonstrated excellent results, but need to be scaled up.

Increased and sustained investment is needed in agricultural research and development, to develop new technologies, management systems, and seed varieties designed for higher yields or resistance to disease, drought, and pests. The quality of research being undertaken at agricultural universities and research organizations has been declining over time (Pal et. al. 2005). Research can also develop new uses for products (such as dry land crops) to help stimulate demand. On an all India level, current public spending on agricultural Research & Development (R&D) is only 0.46 percent of India's agricultural GDP. This is way below the average of about 1.5 percent for developing countries as a whole and about 3 percent in a developed country, such as the U.S. Stepping up the public expenditure significantly on R&D for agriculture is therefore critical. Additionally, the agricultural research organizations and universities in India need to develop suitable and pragmatic research agendas; especially keeping the north Indian states in view (Challa et. al. 2011). What is likely to be very beneficial for the agricultural sector is to engage some of India's leading agricultural scientists to help develop HYV seeds given the soil quality, rainfall levels and temperature of specific laggard regions is concerned. Improved and expanded agricultural extension programs would be needed to speed up the adoption of new technologies.

Farmers should also be provided with soil health cards¹⁷. Based on in-depth soil studies, the soil health cards list the vital components of a particular plot of land. They provide detailed information on various minerals present on the land, suitable crops, fertilizers to be used, and also whether the land is acidic or alkaline. The cards provide permanent identification and status of the land to farmers. They are made out after detailed analysis of samples of soil collected from land held by farmers. Generally, farmers use fertilizers without knowing the quality of their land and therefore end up overusing fertilizers, especially urea thereby damaging the land's fertility and wasting fertilizer. With the help of the soil health card, farmers will know if they can grow a new crop. Cards will help increase agricultural productivity and crop quality in all focus regions.

Agro-based industrialization:

In terms of industrialization, the first order of business should be to promote, on a large scale, agro based industries in the rural areas. Creating jobs off the farm is the key. These can be described as industries that add value to agricultural raw materials, both food and non-food, through their processing into marketable, usable or edible products, while enhancing the income and profitability of the producers. Agro-industries are usually grouped according to the

¹⁷ Scientists study the samples for their water content, presence of elements such as potassium, nitrogen, phosphorous, copper, iron and zinc, as well as pH and salinity levels, clay content and water retention capacity. These details and advice on handling particular kinds of soil can then be handed over to the farmers to serve as a guiding tool during sowing.

main raw material being processed. Typical groupings are the food-processing industry, livestock industry, fisheries industry and forestry industry. As raw materials are often processed into products which in turn serve as raw materials for yet other products, sometimes these second-stage raw materials similarly serve as the basis for classification. Typical examples are the textile industry, leather industry, and dairy industry, among other.

Agro based industries may be any set of production activities that involve all post-harvest operations of crops from farm to the market, such as, cleaning, grading, packaging, storage, transportation, marketing. It may also include processing of agricultural/horticultural/forestry products including fruits and vegetables, flowers and aromatic/medicinal plants/herbs.

The development of agro based industries can help to realize the various linkages or inter-relationships between industry and agriculture. If the agro based industries are promoted widely, it will help reduce regional imbalances, and also generate employment opportunities on a large scale for the rural masses. Rural areas could potentially become large platforms for milk processing units and dairy-based industries, exporting fruits and vegetables, industries preparing byproducts of apples, mango, pomegranate, guava, and custard apple, and farmers should be encouraged to grow cashew, tamarind, and citrus fruits, among others if the region's climate and soil conditions so permit.

The availability of infrastructure services, such as power, telecom, and roads can significantly help develop rural industry. Lessons from China are relevant here, especially the boom in China's Township and Village Enterprises (TVEs). These are a mix of collective and privately owned enterprises in rural China. The TVEs operate outside of the state plan, and largely without funds from state banks. Therefore, they are subject to quite rigorous market competition and hard budget constraints. China's experience demonstrates that establishment of small townships to link the countryside with urban areas is a successful strategic policy for development. This will facilitate the transportation of goods between rural and urban areas, and rising income and productivity in rural areas. As for urban enterprises, this link would open up a bigger market and help in diversification or restructuring which is currently under constraint due to area limitations.

Rural enterprises can also compete in the cities with their products having the advantage of relatively low labor costs. In this way, they will help absorb surplus labor locally, thereby resulting in less rural-to-urban migration. Urban enterprises will also provide more employment opportunities since they would have a larger market. In addition, the linkage will benefit the rural industries via flow of technology and information.

Rural India needs a new social contract, in which there will be reliable infrastructure supplied at commercial prices rather than given for free. The administration's commitment should be that every village will be assured at least clean drinking water, a road to the regional market, reliable power, a well-functioning public health and education system and internet connectivity¹⁸; but that every village will be responsible for covering the commercial costs of those services on a normal user-fee basis, except health and education. We recommend replacing the current subsidy regime with "life-line tariffs," in which all of rural India's below poverty line residents would be ensured a fixed, but limited, amount of say electricity and water at zero price, to ensure that every family can at least meet its basic needs. Above that fixed amount, families would be charged a proper tariff to cover the costs of supplying those services in amounts in excess of basic needs. This strategy – free access to meet basic needs, and an unsubsidized price for amounts above the basic needs would save vast sums of money, and yet still ensure that the poor have guaranteed free access to meet their essential needs.

There is a vast amount of economic reform that can be carried out to improve conditions in the Gangetic valley. Perhaps the key step in the Gangetic plain is to improve the most basic infrastructure so that the vast rural populations can take part in more rapid national economic growth. They will do so through increased exports to coastal states, and greatly improved productivity for local production.

On another note, we find that urbanization is a significant factor influencing growth Sachs, Bajpai and Ramiah (2002). In India, growth rates of GSDP per capita are found to be highly correlated with the extent of urbanization to start with. In a regression of growth of the states during 1980-1998 on their initial incomes in 1980 and urbanization as of 1981, the urbanization coefficient turned out to be highly significant. The regression results also show that a 10-percentage point higher rate of urbanization is associated with 1.3 percentage points of higher annual growth. As much as 82 percent of the cross-state variation in growth is explained only by the differentials in levels of "urbanization". The strong influence of urbanization is also confirmed when the regression is run without initial income as an explanatory variable. Urbanization rates in 2001 range from rates as high as 43.8 percent in Tamil Nadu; 42.4 percent in Maharashtra to much lower urbanization rates in Bihar at 10.4 percent; 14.9 in Orissa; and 20.7 percent in UP. Bihar's slow growth as compared to other states coincides with what clearly seems to be de-urbanization during the 1990s, with the proportion of its urban population decreasing from 13 percent to 10 percent. Over the last 5 years, however, Bihar has demonstrated that with improvements in the policy environment, targeted public spending and its accountability and a dynamic and visionary leadership, even the most laggard regions can grow rapidly.

¹⁸ This should be a National Goal for India to achieve by 2020 and may be announced by the Prime Minister of India in his Independence Day speech on August 15, 2011.

B) Export-led Growth

As we mentioned earlier, for coastal states, such as Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh and Karnataka, (Group II states) a strategy that focuses on vigorously promoting labor-intensive manufacturing, both for the domestic market as well as exports is called for to create large scale employment opportunities. Labor-intensive manufacturing offers the best possibility for India to create tens of millions of jobs for its vast economically active population.

India's exports surged to record high growth in the fiscal year 2010-11 despite the uncertainty over the global economy. As against the government's target of \$200 billion, India's merchandise exports rose by 37.5 percent to \$ 246 billion in the last fiscal year that ended in March 2011, the highest growth on record as demand soared for engineering goods, oil products and textiles. India will aim for at least 25 percent export growth in the 2011-12 fiscal year, as the government hopes to double its merchandise exports within three years. By contrast, China's exports in 2010 stood at a staggering \$1,506 trillion, over six times that of India's best performance so far.

For India to become a major platform for labor-intensive manufacturing production, a variety of reforms in the policy and institutional arenas will be necessary along with major improvements in the infrastructure sector, mainly in the ports and power sectors.

Special Economic Zones (SEZs) are critical if India is to sustain high rates of economic growth in the years and decades ahead. These zones can play a major role in making India a major platform for manufacturing exports, especially in labor-intensive manufacturing, which will help the country create large scale job opportunities, attract substantially higher levels of foreign direct investment (FDI) and boost its export earnings. But none of this is likely to happen with the way SEZs are being conceived and developed.

First, India should have ideally developed, say, a dozen or so large SEZs, rather than giving approvals for setting up hundreds of very small-scale SEZs as half of the projects that have been approved cover less than one sq. km, against an average of 150 sq. kms in China. As per the Ministry of Commerce and Industry, India has 130 functional SEZs, of which seven were previously called EPZs and later converted into SEZs¹⁹. Twelve are new SEZs²⁰. Then, there are 110 SEZs²¹ (average size 4.2 sq. km) that are also functional. 584 SEZ proposals have been granted approval by the Government of India. By contrast, since 1980, China has established

¹⁹ These are federal government run SEZs (1-7) previously termed export processing zones

²⁰ These are state government/private sector established prior to the SEZ Act 2005 (8-19)

²¹ SEZs notified under SEZ Act 2005 (20-130)

special economic zones in Shenzhen, Zhuhai and Shantou in Guangdong Province and Xiamen in Fujian Province, and designated the entire province of Hainan a special economic zone.

Second, India's SEZs should provide for liberal labor laws and exit policies or else they are unlikely to succeed as their Chinese counterparts have. Since labor laws fall under the Concurrent List of the Constitution, both the Union and State governments can legislate on areas under this List. However, the Union Government has not been able to mobilize enough political will to reform laws such as the Industrial Disputes Act, leaving such decisions to the State governments. Only a handful of State governments have attempted to make modest changes to the country's stringent labor laws.

China's experience suggests that while workers in that country's state sector are accorded generous job guarantees, those in the non-state sector (including the SEZs) are not guaranteed employment. By contrast, in India, workers in both the public and the private sector, once employed, cannot be laid off without governmental permission. In India, for firms of 100 employees or more, reductions in the workforce can only happen with the permission of the local government, which is almost never granted. Labor legislation should be revised to allow managerial flexibility in the hiring and dismissal of workers in SEZs. Alternatively, at a minimum, this limit of 100 employees should be raised to 500 or, better still, to 1,000 for units located in the SEZs. As a result of liberal hire and fire policies in China, there has been rapid growth of employment, as firms can hire workers without fear of being stuck with unwanted labor due to restrictions on dismissals. Formal sector employment in China has increased dramatically, from 95 million in 1978 to 158.5 million in 2000 and is currently about one-third of total employment. In India, however, there has been a meager increase — from 22.9 million in 1978 to 27.9 million in 2000 to 35 million in 2008, of which 21 million are employed in the public sector. Less than 7 percent of India's labor force is employed in the formal sector.

Remarkably, India's legislation continues to restrict the entry of large firms, or the growth of small firms into large firms, in several areas of potential comparative advantage. Thus, garments, toys, shoes and leather products continue to be reserved, to a varying extent, for small-scale producers. Such restrictions virtually assure China's dominance in these sectors compared with India. India's tax and tariff structures similarly remain anti-export biased. The reservation of labor-intensive sectors for small-scale enterprises should simply be scrapped. This is the kiss of death to effective international competitiveness in labor-intensive exports.

Additionally, reform to put in place an exit policy for firms is vital to the profitability of Indian SEZs. An exit policy needs to be formulated such that firms can enter and exit the market freely. While the policy should recognize the need for, and potential merit of, certain

safeguards, if wrongly designed and/or poorly enforced it would turn into a barrier that may affect the health of the firms.

SEZs should be located, by and large, in the coastal States, close to the ports rather than in the landlocked States unless, of course, they are for the services sector. Since all the Chinese SEZs are in the manufacturing sector, they are located along the southern provinces of coastal China. In India, approvals for setting up SEZs have also been given in the landlocked States. Finally, most, if not all, of the SEZ land should be earmarked for setting up manufacturing or service sector units, rather than for developing residential or commercial properties.

In terms of ports, because of the absence of a global hub port and the lack of transshipment facilities, about 60 percent of India's export and import containers were being transshipped through outside ports such as Singapore and Colombo. This costs an additional expenditure of \$300 per container and an extra 7-10 days of transit time, thereby greatly reducing the international competitiveness of India's exports.

Recognizing this serious problem, the country's first transshipment terminal is being set up at Vallarpadom Island off Kochi. With the new facility, Indian exporters can now access mainline container vessels. This will also help in the development of several port-based service industries and processing centers in its proximity that will take advantage of the logistics to be provided by the terminal.

Briefly put, both the hardware and software of export-led growth need revamping. On the hardware side, the development of industrial parks for exports should be greatly intensified and enhanced. Private developers need the freedom to acquire urban and semi-urban land and to develop privately financed infrastructure in support of exports.

We must mention, in addition to labor-intensive manufacturing exports, India's clear and fast growing capacity in service-sector exports based on information and communications technology. IT will be an important bulwark of export growth for many years to come assuming that the remaining administrative barriers are overcome.

An Information Technology based Development Strategy:

New IT-based tools can spur rural development. This idea is motivated by two essential facts. First, most of India's poor live in rural areas. Second, IT technologies are potentially suited to offer fundamentally new approaches to rural-based development, so much so that the overall "macro scale" characteristics of the economic development process may be fundamentally altered in the future. For example, the location of industries, population

densities, division of industrial value chains, the terms of trade and the division of labor between rural and urban sectors, may all be fundamentally affected in the future by the advent of IT-based rural development.

India is in the forefront of IT-based rural applications. Many important experiments are already underway, both in hardware, software, and systems of e-based governance and e-based industry. India's lead results from known factors: (1) global leaders in IT-based activities; (2) scientific and engineering excellence; (3) continued rural-based poverty calling out for new solutions; and (4) active experimentation emanating from a remarkable mix of public, private, and civil-society programs. Famous examples of such IT-based experiments include: M S Swaminathan Foundation's Village Knowledge Centers, ITC's e-Choupal, IIT-Chennai's low-cost wireless solutions such as CorDECT, Byrraju Foundation's Gram IT, e-Seva in Andhra Pradesh, the Baramati sub-district initiative, and more.

These projects have inspired the growing confidence in the hypothesis of IT-empowered rural development, led to an increasing number of policy initiatives, and provoked a growing number of private-sector and foundation-based projects. Yet it is fair to say that no macro-scale breakthrough has yet occurred. The projects to date have tended to be in four areas:

- Information centers (using IT to collect and disseminate information on farming, weather, markets, etc.)
- Training centers (IT-based test preparations and distance learning)
- E-governance (IT-based retrieval of public documents such as deeds, birth certificates, etc.)
- Rural E-kiosks (private-sector provision of ICT tools, such as email and mobile phone services)

The total impact of these activities, however, has remained modest, and scaling up in general has proved to be limited and sometimes even disappointing. There have been several reasons for limited impact to date. Most importantly, many of the Rural ICT initiatives have been too diffused and de-linked from public policy to reach scale. The projects have not enjoyed the leverage and scale that can be achieved in public-private partnerships. Second, many of the projects have tended to be narrowly conceived, as education or health or agriculture initiatives or IT kiosks, rather than as integrated IT-enabled tools and services. Third, the projects have not, by and large, adequately encouraged the generation of large numbers of rural jobs and livelihoods, e.g. rural-based BPO operations. The e-kiosk approach has been relatively disappointing, as the numbers of e-kiosks have been small, profit margins have been modest (if positive), and the range of services offered has been useful, but limited, and not transformative. Overall, the focus has been too much on the delivery of market-based services

and too little on the generation of large-scale livelihoods and a holistic range of public and private services.

For rural India, we'd suggest an integrated program that should focus on at least five areas of IT-based and IT-enabled activities within the villages:

- (1) IT-enabled training (e.g. distance learning, technical training, vocational training)
- (2) IT-enabled services (e.g. health, education, e-governance, weather forecasting, market prices, emergency response services, logistics)
- (3) IT-enabled livelihoods (village-based BPO operations, IT staffing of local government service providers in health, education, agriculture, and other sectors, value-chain and logistics management in the private sector, etc.)
- (4) Environmental management with remote sensing (e.g. water management, micro-irrigation) and enabling access to data-rich layers of information on existing or potential natural resources.
- (5) Support for novel rural-based financing institutions and financial services (rural ATMs, smart cards for delivery of government services such as power and water, microfinance services, IT-empowered financial instruments such as rainfall insurance, crop options, etc.)

Enabling IT infrastructure and a workforce trained in IT and other skills will make rural areas attractive for setting up larger commercial and industrial enterprises if complementary infrastructure, adequate and reliable power, roads, rail and drinking water are present. However, national programs (e.g. Bharat Nirman and Rajiv Gandhi Grameen Vidyutikaran Yojana) already exist that are precisely designed to improve rural road, water and electricity infrastructure. Where such programs exist, new integrated programs should take advantage of them, working in close collaboration with the local, state, or national governments to ensure that funds earmarked for this purpose can be effectively accessed and channeled towards the related infrastructure. Similarly, other national scale public sector projects such as the NRHM and SSA could be significantly bolstered through IT-based training programs. Projects could offer mass training of Accredited Social Health Activists for the NRHM and teachers for SSA, as well as training trainers via distance learning programs.

Anthropogenic Climate Change and Implications:

The economic shocks of the 2008-09 global economic crises came on top of a trajectory of worsening environmental and demographic conditions. While we cannot attribute each climate disturbance to long-term anthropogenic climate change, there is growing evidence – and certainly a very powerful feeling worldwide – that climate patterns are increasingly unstable in highly vulnerable regions, especially dry lands that depend on rainfall for crops and pastures. Droughts are becoming more frequent; rainfall is coming in shorter and in more

intense bursts; higher temperatures are threatening crop yields; and all of this is hitting against rapidly rising populations.

There is a powerful scientific consensus that human activity, mainly the burning of fossil fuels (coal, oil, gas), as well as deforestation and other land uses (such as growing paddy rice), leads to massive emissions of carbon dioxide into the air. This is causing anthropogenic climate change, which is accelerating and poses serious risks to the planet.

The single biggest threat comes from the production and consumption of energy for electricity, transport, and heating and cooling buildings. However, the problem can be solved if the world put its best thinking and action into real solutions. This can be done by shifting to alternative energy sources, economizing on energy use, and capturing and safely storing the carbon dioxide produced by fossil fuels. Global society can limit its emissions of carbon dioxide to prudent levels at an estimated cost of under 1% of global income. The changeover to a sustainable energy system will not come quickly, and will require new kinds of electrical power plants, new kinds of automobiles, and “green buildings,” which economize on energy use.

The process will take decades, but we must start now and act on a global basis, using carbon taxes and emission permits to create market-based incentives for companies and individuals to make the necessary changes. Those incentives will come at modest cost and huge benefit, and they can be designed to protect the poor and shift the climate-change burden to those who can afford it.

This is important not just for India, but the entire world. For India as for most developing countries, the stakes couldn't have been higher if the world were to continue with business as usual. For instance, climate change has the potential to seriously disturb the hydrological cycle leading to major changes in the rainfall patterns implying thereby that it does not rain or rains very little during the monsoon period and rains during the non-rainy months. This, in turn, can have major implications for agricultural production and food security as large parts of India still depend on monsoon rains for agriculture production.

Large and rapidly growing economies, such as China and India will continue to burn coal to meet their growing energy requirements, but it is in their own long-term interest that they work with the U.S., Western Europe, Japan, Australia and the others to help arrive at plans and programs to deal with the global climate crisis. Of course, the G-8 countries should primarily take on the responsibility of meeting the costs and providing access to relevant technologies.

Enhanced Global Role for India:

As the world's largest democracy and a very rapidly growing economy which is next only to China, India should assert a greater leadership role and occupy the rightful place it deserves in the global comity of nations. India's leadership should be playing a critical role in various venues, including the G-20, future international summits between developed and developing countries, the International Monetary Fund, World Bank, World Trade Organization, and the World Health Organization among others. As a leader of the interests of the developing world, it is essential that India play a significant role in the functioning of, and deliberations at, these international organizations. India, we also believe, has the manpower, resources, and technology to address any and all issues and challenges confronting the developing world and can potentially play a leading role in south-south cooperation. For instance, the experiences of India's development over the decades, especially in rural South India, can suggest lessons for sub-Saharan Africa. We believe India can offer a lot to Africa, not necessarily in financial terms, but with its vast expertise and experience in the areas of agriculture and Green Revolution, agro R&D, railroad development, rural small-scale industry, non-conventional energy, and information and communications technology among others.

Scholarships for African students to undertake higher studies in Indian institutions is an area where India has made a significant beginning²² and plans to substantially scale up in the years ahead. Prime Minister of India, Dr. Manmohan Singh addressing the Plenary Session of the 2nd Africa-India Forum Summit in Addis Ababa on May 24, 2011 said and we quote "We would like to make education in India an enriching experience for each student who comes from Africa. We are substantially raising the number of scholarships and training slots for African students and experts, including under the Indian Technical and Economic Cooperation Programme. Our total commitment for the next three years by way of scholarships to African students will stand at more than 22,000".

²² In 2005, the Government of India launched a scholarship program for 400 African students (20 per year for Ethiopia for example) to study at Indian institutions for their Master's degrees and on completion to return to their home countries and teach. The first four batch of students in the Ethiopian case studied in India coming from the Mekelle Institute of technology (MIT) and since returned to Mekelle and MIT has been able to begin their own Master's Program.

Concluding Remarks

In the post-independence period, never has India had a period like 2000-06, when at the federal level, much needed, large scale public programs were put in place for the development of rural India. In 2011, looking back at the first decade of the 21st century – 2000-2010 - we strongly believe that this decade indeed can be called – *India's Decade of Development*.

We believe that with a much more focused approach towards the agricultural sector and agro-based industrialization in rural India; the implementation of India's unfinished reform agenda with a key focus towards policy, institutional and governance reforms in general and in particular reforms that would help make India a much more improved platform for labor-intensive manufacturing production; and substantially higher public spending in areas, such as health and education, that over the next twenty years, India can and will continue to grow at high rates of economic growth which can be far more inclusive than what it has been over the last two decades.

While we have noted that large public investment programs in a number of critical sectors have been put in place over the last decade, however, this does not by any means imply that all these programs are delivering what they are supposed to deliver. Some of the key shortcomings in governmental programs especially in the fields of service delivery in health and education for example are: lack of effective management systems for implementing programs leading to very little, if any control and oversight which in turn leads to grossly lacking accountability. The system does not call for an explanation and/or punish non-performers and similarly does not reward those who perform well. These programs are vital, but their successful implementation requires the building of new systems approaches that transcend the severe limitations of the current bureaucratic arrangements.

In a broad sense, we believe, growth strategies for large landlocked and laggard states, such as Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Assam and the other north-eastern states, (Group I states) an agriculture-led growth strategy is called for (with an urgent need to bring about a Second Green Revolution in these states) along with a major push to help set up agro-based industries. For coastal states, such as Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh and Karnataka, (Group II states) a strategy that focuses on vigorously promoting labor-intensive manufacturing, both for the domestic market as well as exports is called for to create large scale employment opportunities.

Efficiency and dynamism will require the transfer of more power to states and local governments, and more democratization at the local level. Dynamic metropolitan areas (built around major cities) will constitute the main engines of growth for India in the coming decades.

These urban areas will need taxation and regulatory powers to be effective in supporting the business and social environment.

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