



# Conducive Policy Environments for Sustainability

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# Outline

- Background
- Positive externalities :public policy
- Few Case studies
- Suggestions and recommendations

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- Background
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- Mission 2007 : A Case Study
- Suggestions and recommendations

# Why do we care?

**Microsoft**

- Microsoft
  - *Microsoft*: positive impact and long-term growth of worldwide economy
  - even after three decades, for millions of people the promise of technology is still unrealized
    - Our digital inclusion efforts, strive to address inequities in access to technology tools, skills, and innovation
  - *Microsoft India*: Core goal – being relevant to 1B Indians, contribute to domestic economy

# Why Should Developing Countries Care Model Results Reveal that IT Capital Contributes More to GDP than Non-IT Capital – Even in Economies Underinvested in IT

*Percentage Increase in GDP per 10% Increase in IT Capital,  
Non-IT Capital, and Labor Hours*

	IT Capital	Non-IT Capital (a)	Labor Hours (b)
Economies invested in IT capital	3.633*	0.557	3.977*
Economies underinvested in IT capital	1.628*	3.822*	-0.638

Notes: Values indicate the percentage change in GDP for a 10% change in a factor of production while holding the other two factors unchanged. Values marked by an asterisk are statistically significant at the 1% level. All other values are not statistically significant.

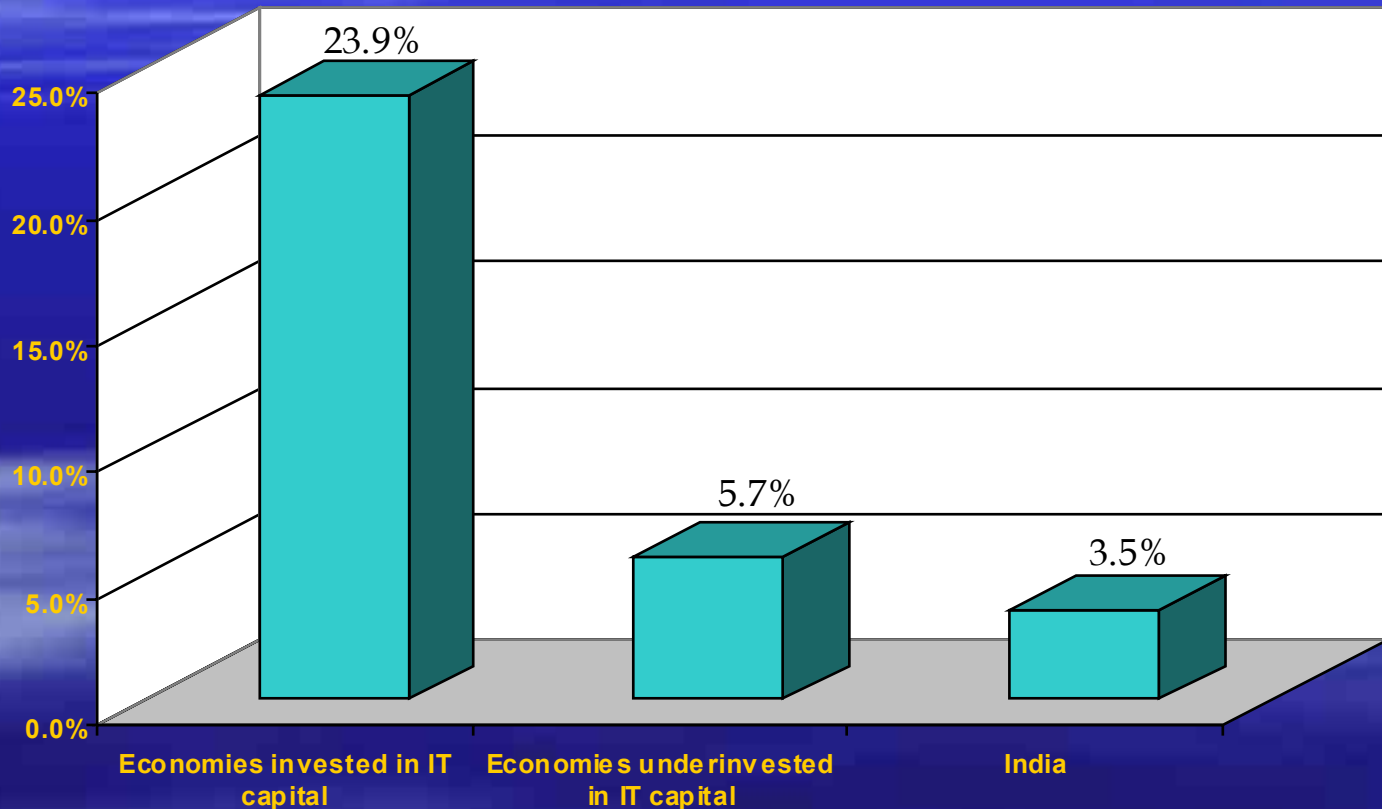
a. Because of co-linearity among the factors of production, non-IT capital is measured as residual values in a regression of non-IT capital on two explanatory factors: (1) IT capital and (2) residual values from a regression of labor hours on IT capital.

b. Measured as residual values in a regression of labor hours on IT capital.

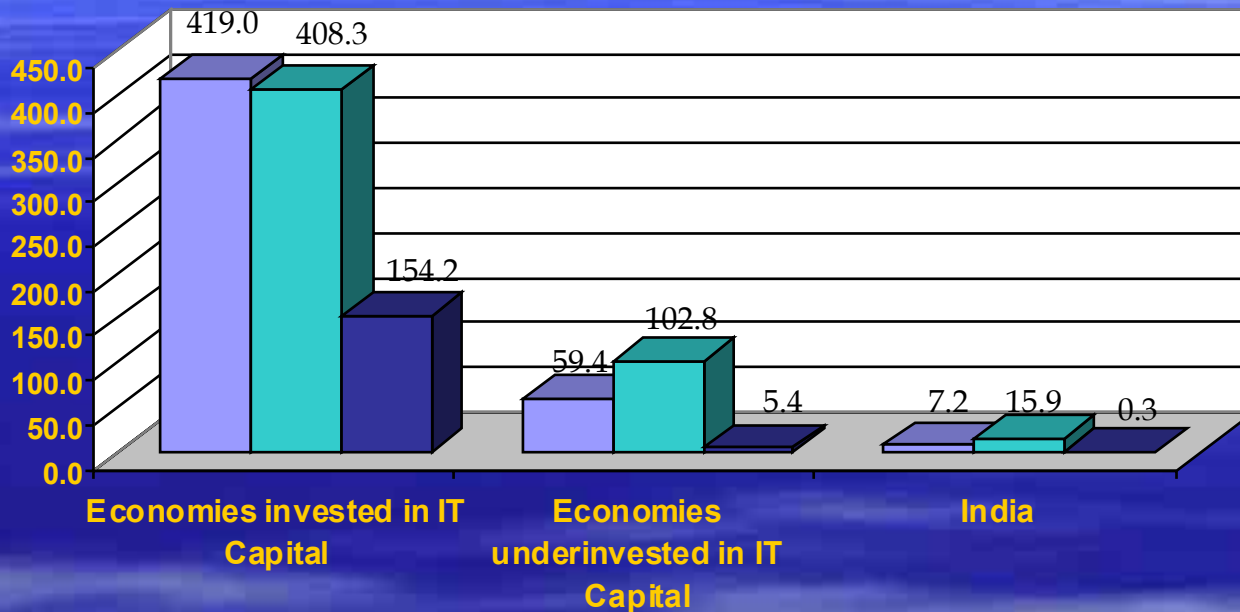
SOURCE: Nathan Associates Inc. & Salstrom Consulting, NASSCOM

# Despite Being a Global IT Leader, India's Economy Is Underinvested in IT Capital

*IT Share of Total Capital Is Lowest in India*



# What Little IT Capital Exists Is Not Widely Dispersed

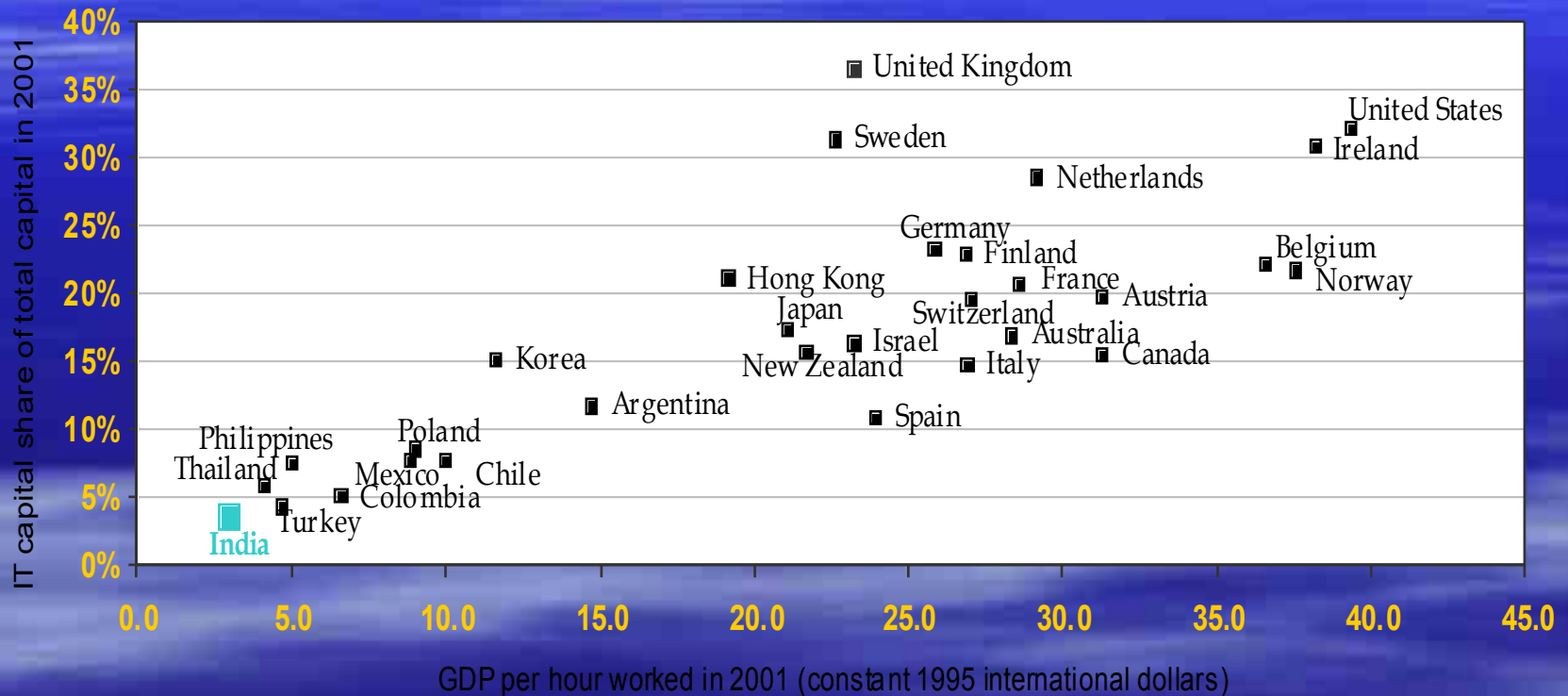


■ PCs per 1,000

■ Internet users per 1,000

■ Secure Internet servers per 1,000,000

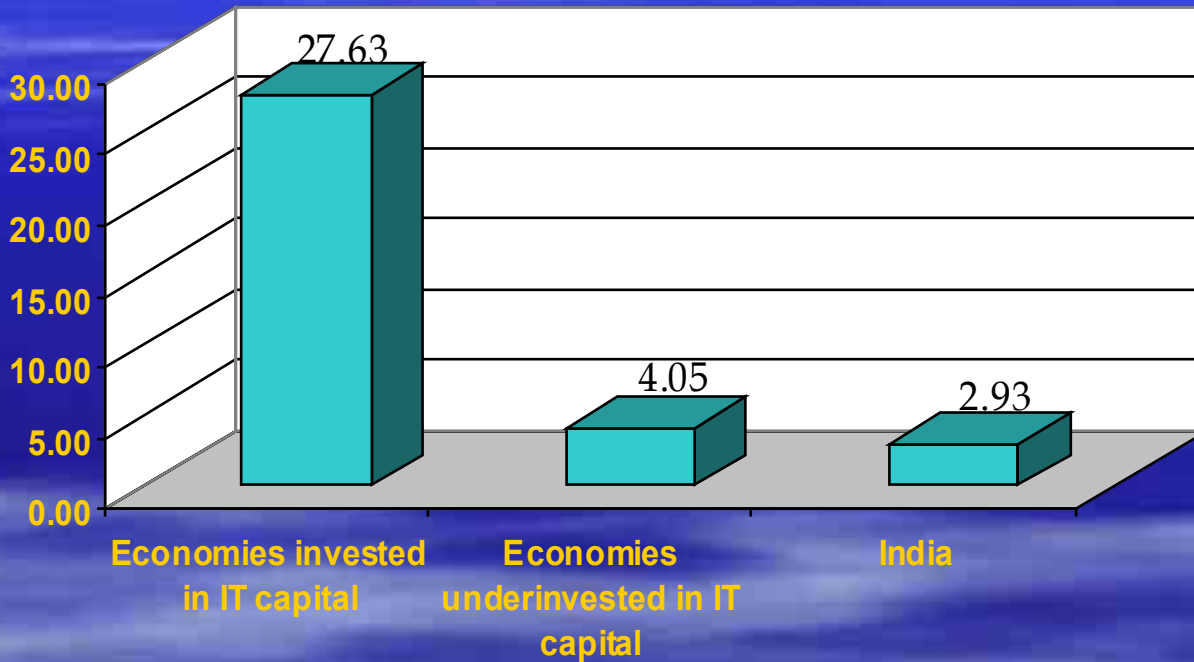
# IT Capital Deepening in India Can Raise Productivity as It Has in Other Economies



SOURCE: Nathan Associates Inc.

# India's Productivity Is Low

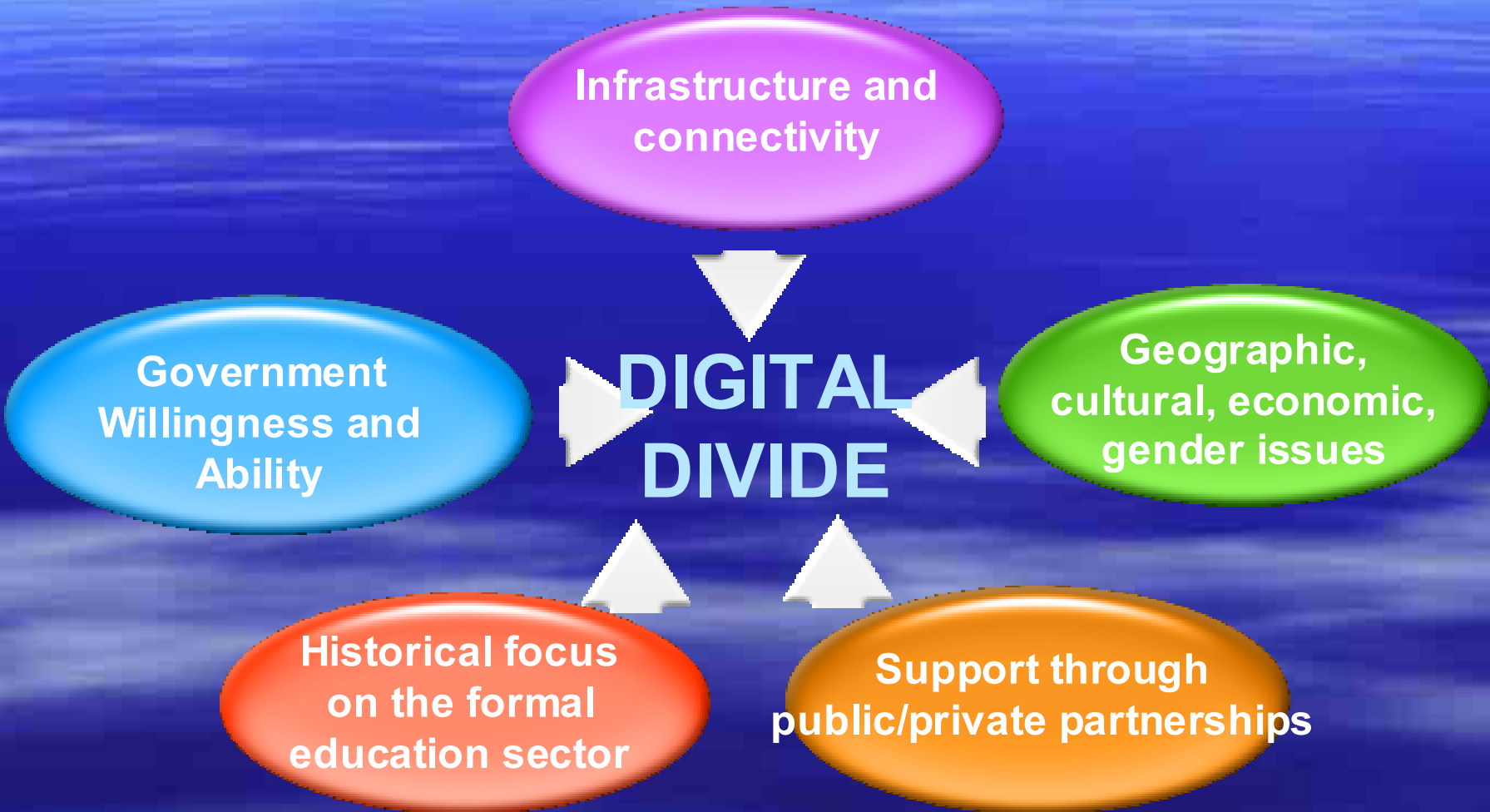
*GDP per Hour Worked Is Lowest in India*



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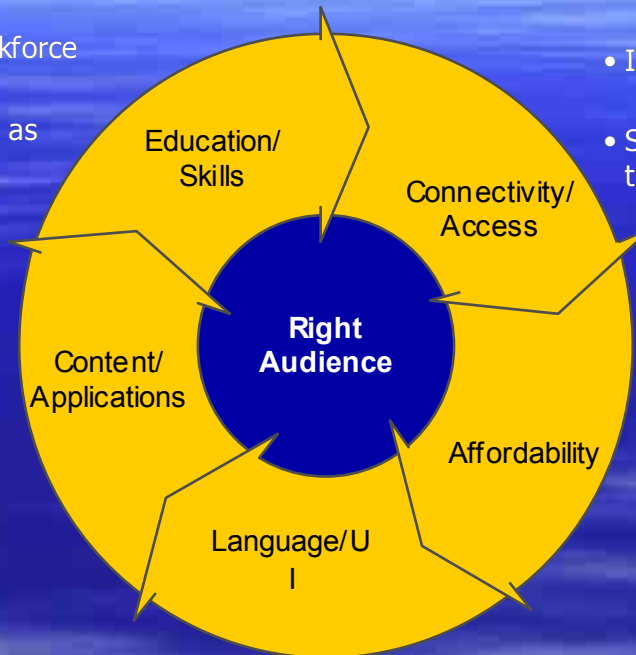
# Factors to the Digital Divide



# Success is not all about technology

- ICT Trained Teacher, Support Workforce
  - Capacity /Infra Building
  - Scale successful ventures such as Microsoft Shiksha?

- Little content relevant to local needs
  - Is incubation of local ISVs and content providers the solution?
- Online Digital Resources: e-learning foundations and online curricula



- Inadequate telecom infrastructure
  - Is wireless the answer?
- Support infrastructure – electricity, transportation etc.?

- Overall cost of a connected PC
  - Alternative form factors
  - Mobile phones as the first computer?
- Software - Solutions such as Microsoft Windows Starter Edition
- Support, Training Costs
- Can we work together as an industry and drive costs down?

- Digital Illiteracy
  - Will non conventional i/o devices bridge the divide?
- Limited content in local language
  - Local language enablement
  - Locally relevant content

**Success is about creating a sustainable ecosystem**

# “Strong telecommunications & Internet Infrastructure are Important to growing the local market”

(Source: NASSCOM Study Information Technology in the Economy of India)

## *Greatest Concern of Policy Influentials - Infrastructure*

Statement	Rank Score
Strong telecommunications and Internet infrastructure are important to growing the local IT market	4.9
India has an adequate domestic physical IT infrastructure	2.5
Teledensity is adequate in India	1.8
The telecom industry is sufficiently competitive (needs no further liberalization)	3.2
Internet usage in India is adequate	1.5
The government has done enough to provide access to Internet infrastructure	1.6
There are enough public and low cost Internet facilities that the public can access if they desire	2.4
Broadband is sufficiently deployed in India	1.2

Scale: 1-5 with 1=Strongly Disagree and 5=Strongly Agree

# How to Respond

## Government on Target with Min Communications Technology 10- Point Agenda

- Int'l, long distance, & basic telephone service open for competition
- ISPs granted license freely
- Unified licensing regime
- Internet telephony officially permitted
- Revenue sharing permitted
- Competitive limited mobile services

## Consider In Addition

- Government owned monopolies open last mile access
- Facilitate financing for telecom by prioritizing sector with banks
- Relax revenue share paid to government by private operators
- Eliminate price distortions that favor government
- Pass the Convergence Bill
- Raise foreign investment limits
- Progressive spectrum policies spurring low cost radio technologies

*Unbundling the last mile is a critical success factor*

# Financial Capital: “Capital is a Key Resource Factor”

## Funding Cycle May Not Be Functioning for Domestic Product Development

### Policy Influentials Believe

- Capital and VC unavailable for domestic IT projects
- Capital is too expensive
- Tax policy does not adequately target VC for domestic market
- Domestic banks don't understand IP recouping mechanism
- Best and brightest going abroad and taking investment (1984-1998 – share of Indian owned high tech start-ups in Silicon Valley tripled)

# Financial Capital: Fixing the Capital Availability Cycle in India

## VC Cycle & Challenges

**Need:** Proven viability of segment  
**Problem:** No investment, no industry, *no proof of viability.*

**Need:** Clear value for investment;  
**Problem:** No Incentive to give \$'s to this segment. No understanding IT/IP concerns.

**Need:** VC funding  
**Problem:** not available for domestic VC; Normal banks too expensive)

## Financial Capital: Consider

- Government prioritize and back VC in domestic software
- Back bank loans
- Government matching loans of banks
- Direct grants
- Education program for banks
- Focus on IPR enforcement
- Educate banks on gov't commitment to area
- Tax incentives

# **Human Capital: India Believed to Have a Competitive Human Capital Base Tending to Focus on Export Oriented Product**

## **Assets:**

- Education in math and science 14 of 102 countries
- Good quality producing enough engineers

## **Challenges According to Policy Influentials:**

- Best & brightest being exported
  - 1990's India supplied 9x as many temporary IT workers to US than the next country
  - 33% all Silicon Valley workers are foreign born. 66% of those are Asian.
  - 55% of PhDs in Silicon Valley are Indian
- Not working on domestic IT projects
- Not well dispersed across country
- Programming versus engineering
- Not generally educating consumers

# Human Capital: Recent Indicators

Country	Researchers in R&D per Million People, 1990-2001	Technicians in R&D per Millions People, 1990-2001	Scientists and Engineers in R&D per 1,000 Inhabitants in 2000	World Economic Forum's Country Ranking of Scientists and Engineers in R&D
PRC	584	202	0.55	51
India	157	115	0.16	80
Japan	5,321	667	5.10	1
Korea	2,880	564	2.32	19
Malaysia	160	45	0.16	79
The Philippines	156	22	0.16	81
Singapore	4,052	335	4.14	4
Thailand	74	74	0.07	90
Viet Nam	274	na	0.27	70
Brazil	323	129	0.32	65
United States	4,099	Na	4.10	6

Notes: na means not available. Taipei, China ranked 18 in the WEF's rankings of countries.

SOURCES: World Development Indicators of The World Bank and the World Economic Forum 2004 Global Report, KPMG-NASSCOM Study

## Post Study

- **250,000 engineer shortfall over next 3 years**
- **BPO seeing 100% turnover rates**
- **Salaries skyrocketing**
- **McKenzie tech candidates 100 applicants – 70% not hireable**
- **PRC more viable**

**Crisis among human capital on export side means you have 2 or 3 times the problem now on the domestically oriented human IT capital.**

# Human Capital : Some recommendations

- 35 % Illiteracy
- Quality gaps : Urban Vs Rural
- Drop outs : socio-economic factors
- Prioritization of elementary and secondary education by Govt. (SSA, National Literacy Mission)
- Drive PPPs and market driven skill building education

*"The developed world has a strong network, facility and curricula for computer education in their schools even at primary levels. But, Information technology has not made even its barest appearance in most Government schools in many countries in the Asian region..."*

*Sava Shiksha Abijan Report, 2003*

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## India's most significant ICT4D advocacy program

- A national Alliance of more than 100 partners: NGOs, Govt., Industry, Multi-laterals
- Led by Prof. M S Swaminathan ([www.mission2007.org](http://www.mission2007.org)) : Setting a new standard for PPP
- Vision : achieve the target of VKCs in 600,000 villages of India by 2007
- Key Taskforces : Connectivity, Content, Space Applications, Organization, Monitoring & evaluation, Training & Capacity Building, Policy Issues, Financial Resources & Management
- A national platform for Knowledge sharing : co-existence of many models – VKCs, rural Kiosks, CLCs, govt. run CSCs Akshaya etc.



## India's most significant ICT4D advocacy program

- Microsoft India partnering with many participating NGOs – MSSRF, Datamation, NASSCOM Foundation, SEWA
- Leading Industry partner in the Mission & supporting NGOs, Govt. : skills training curriculum for free to the VKCs set up under the Mission's goals



- Support through Unlimited Potential Grants program skills Training for communities through VKCs



India's most significant ICT4D advocacy program

## Impact on Govt. : Excerpts from Union Budget 2005

"Mission 2007 is a national initiative launched by an alliance comprising nearly 80 organizations including civil society organizations. Their goal is to set up a Knowledge Centre in every village by the 60th anniversary of Independence Day. Government supports the goal, and I am glad to announce that Government has decided to join the alliance and route its support through NABARD. I propose to allow NABARD to provide Rs.100 crore out of RIDF.

"....Finance Minister's budget speech, March 2005

"There is a demand for specific skills of a high order which is often unmet. I, therefore, propose a Public-Private Partnership between Government and industry that will take up the skills development programme under the name Skills Development Initiative or SDI. Details of the scheme will be worked out and announced shortly."....Finance Minister's budget speech, March 2005

"Government intends to continue with its effort to turn the focus of commercial banks, regional rural banks (RRBs) and cooperative banks towards providing credit, especially production credit, to rural households and farm households. Particularly in agricultural credit, innovations are possible. I propose to request the Reserve Bank of India (RBI) to examine the issue of allowing banks to adopt the agency model, by using the infrastructure of civil society organizations, rural kiosks and village knowledge centres, to provide credit support to rural and farm sectors" ....Finance Minister's budget speech, March 2005

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# Suggestions & recommendations: Summary

- Market driven Broadband rollout : Unbundle last mile
- Deregulate spectrum : progressive policies for radio and RSPs
- Dual use of public infrastructure – PRIs, SBTs
- Govt. as anchor client in rural : commit demand to VKCs, kiosks – PRIs, Govt. commercial banks
- Increased Govt. spending on education and PPPs
- Reorient elementary education
- Access to capital : Reforms in IPR enforcement, enable environment for risk capital
- Political Will & a Vision, Positive attitude of Govt. & Bureaucracy

*Enable Physical, Human and Financial Infrastructure :  
... ..sustainability will follow... ..*