The dynamics of change in India

Rajan Gupta
Rajan@lanl.gov

Theoretical Division
Los Alamos National Laboratory
http://t8web.lanl.gov/people/rajan/
Global Goal: Ensuring that each child

• grows up in a safe and nurturing environment,

• has access to good education, health care and modern job skills,

• has equal opportunity to realize her/his potential fully
In 1999 I became involved in HIV/AIDS education and prevention because I recognized that it is an exceptional pandemic.
HIV/AIDS: a devastating modern pandemic

GLOBAL STATUS

2004
Global status of HIV infection

40 million people living with HIV/AIDS and about 30 million have died as of end 2004

Adult prevalence rate
- 15.0% – 36.0%
- 5.0% – 15.0%
- 1.0% – 5.0%
- 0.5% – 1.0%
- 0.1% – 0.5%
- 0.0% – 0.1%
- not available

SOURCE: UNAIDS
Adults and children estimated to be living with HIV/AIDS as of end 2004

- **Western Europe**: 610,000
- **North Africa & Middle East**: 540,000
- **Sub-Saharan Africa**: 25.4 million
- **Eastern Europe & Central Asia**: 1.4 million
- **North America**: 1.0 million
- **Caribbean**: 440,000
- **Latin America**: 1.7 million
- **South & South-East Asia**: 7.1 million
- **East Asia**: 1.1 million
- **Oceania**: 35,000

**Total**: 39.4 (35.9-44.3) million

**Source**: UNAIDS 2004
Estimated number of adults and children newly infected with HIV during 2004

North America: 44,000
Caribbean: 53,000
Latin America: 240,000
Western Europe: 21,000
North Africa & Middle East: 92,000
Sub-Saharan Africa: 3.1 million
Eastern Europe & Central Asia: 210,000
East Asia: 290,000
South & South-East Asia: 890,000
Oceania: 5,000

Total: 4.9 (4.3-6.4) million

Source: UNAIDS 2004
Estimated adult and child deaths from HIV/AIDS during 2004

Total: 3.1 (2.8-3.5) million

SOURCE: UNAIDS 2004
Fast Spread of HIV in Sub-Saharan Africa, 1984 to 1999

Estimated percentage of adults (15–49) infected with HIV:
- 20.0% – 36.0%
- 10.0% – 20.0%
- 5.0% – 10.0%
- 1.0% – 5.0%
- 0.0% – 1.0%
- Trend data unavailable outside region

SOURCE: UNAIDS 2000
CONSEQUENCES
Africa: 1980-2004
a runaway pandemic

African HIV1 Seroprevalence for High-Risk Urban Populations

African HIV1 Seroprevalence for Low-Risk Urban Populations

DECREASING LIFE EXPECTANCY; KILLING THE MOST PRODUCTIVE
MOST PRODUCTIVE SECTOR
(YOUNG ADULTS) LOST

CHANGING LIFE EXPECTANCY

Life expectancy (years)

- High-income OECD
- Latin America and Caribbean
- E Asia and Pacific
- E Europe and CIS
- Arab states
- South Asia
- Sub-Saharan Africa

SOURCE: UN
What is their future?
Lifetime risk of AIDS death for 15-year-old boys, assuming unchanged or halved risk of becoming infected with HIV, selected countries

Source: Zaba B, 2000 (unpublished data)
UNAIDS 2001

Risk of dying of AIDS

Current adult HIV prevalence rate
TB and HIV Co-infection

Source: WHO
What makes HIV/AIDS exceptional

• Long asymptomatic infectious period (~10 years)
• Almost always fatal
• No cure. No vaccine. None expected soon!
• Stigma keeps risky sex and IV drug use – major transmission routes – underground
• Governments/people caught between adopting harm reduction strategies and maintaining moral values
• Poor, marginalized populations most vulnerable
• Kills the most productive – young adults & parents
• Increasing burden of orphans and ruined families
The continued spread of HIV/AIDS in Africa highlighted a much larger problem

THE VERY FUTURE OF THE POOR, THE ILLITERATE, AND THE MARGINALIZED
FUTURE
The Second Wave
The 2002 NSC/CIA report lists 5 important countries in the next wave

- Nigeria
- Ethiopia
- India
- China
- Russia
PROJECTIONS

Figure 1
High and Low Estimates of Current and Future HIV/AIDS-Infected Adults in Next-Wave Countries, 2002 and 2010

Millions

Source: NSC/CIA report 2002
RUSSIA: NIC concluded that at this rate of growth, 10% of all Russians aged 15-49 will be HIV+ by 2010

Estimated Infections (2004) ~900,000
Russia: Health and Demographic Crisis

Official HIV+ Numbers: 300,000
Expert Estimates: 900,000

Life Expectancy
M 60.5
F 74.0

Population decline by ~ 800,000/year

M. Feshbach 05(WWCS)
HIV/AIDS in Russia.
**HIV Estimates: India**

- Estimates of 5.134 million based on cumulative 111,608 reported cases!
- No estimates of deaths
- 2004 anomaly due to change in analysis in 2003

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV positive persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>3.5 million</td>
</tr>
<tr>
<td>1999</td>
<td>3.7 million</td>
</tr>
<tr>
<td>2000</td>
<td>3.86 million</td>
</tr>
<tr>
<td>2001</td>
<td>3.97 million</td>
</tr>
<tr>
<td>2002</td>
<td>4.58 million</td>
</tr>
<tr>
<td>2003</td>
<td>5.11 million</td>
</tr>
<tr>
<td>2004</td>
<td>5.134 million</td>
</tr>
</tbody>
</table>

Prevalence at Prenatal Clinics
- 0 - 0.20%
- 0.21 - 0.50%
- 0.51 - 1.75%
- No data

Statistics available for commercial sex workers (CSWs)
Statistics available for injecting drug users (IDUs)
State or union territory boundary

Source: Indian National AIDS Control Organisation.
The continued spread of HIV/AIDS highlights risky life-styles and the plight of the have-nots.
## Containing HIV requires a social transformation

<table>
<thead>
<tr>
<th></th>
<th>Industrialized</th>
<th>Developing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Health care</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Jobs (economic development)</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Good governance</td>
<td>? ✓</td>
<td>×</td>
</tr>
<tr>
<td>Stigma (marginalized groups)</td>
<td>? ×</td>
<td>✓</td>
</tr>
<tr>
<td>Women’s empowerment</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Healthy lifestyles</td>
<td>?</td>
<td>×</td>
</tr>
</tbody>
</table>

**What is needed to seed this transformation?**
In developing countries HIV/AIDS will not be controlled as an isolated health problem.

We will need to simultaneously address issues of poverty and development.

Intervention will require a long-term holistic approach that builds local leadership and institutions.
India

A very complex, diverse, chaotic, vibrant country full of extremes, exceptions and contradictions
India: a pivotal strategic region

- 1/6 of world population
- 1/4 of world poverty
- Strategically located
- Democratic, free, secular
- Values education: English and math skills
- Rising middle class

Can India provide adequate resources to 1.1 billion people?
“India Everywhere”: Business Landscape

• A new breed of talented, confident, cocky entrepreneurs (especially post 2002)
  – Very global in outlook and willing to compete at all levels
  – Creating their own infrastructure (electricity, water) decoupled from public works

• India offers better opportunities for small businesses (bottom up) than China

There are at least three Indias:
Progressive, “Bimaru”, unstable states
350,000 IT workers have put India on the Map
Rural India

• About 650,000 villages – 750 million people
• 80% agricultural
• 1\textsuperscript{st} Slogan: Roti, Kapra, Makan
  – (Food, Clothes, Shelter)
• 2\textsuperscript{nd} Slogan: Sadhan, Bijli, Pani
  – (livelihood, electricity, water)

Needs transition strategy as agriculture becomes mechanized business competing in global economy
India faces severe challenges

- Falling groundwater tables
- Increasing salinity of soil in irrigated areas
- Air and water pollution
  - Pesticides, fertilizers, industrial and domestic waste in water systems
  - Crowded, polluted cities
- Deforestation and loss of ecosystems
- Overuse of soil – depletion of soil nutrients
- Urban sprawl: growth of cities without adequate resources or infrastructure
(1) Global population increase
2 billion in 21\textsuperscript{st} century

1.5 B people

3 billion in 18\textsuperscript{th} century with less than $2 per day
(population growth is happening here)
<table>
<thead>
<tr>
<th>Region</th>
<th>2005</th>
<th>2025</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. America</td>
<td>329</td>
<td>386</td>
<td>457</td>
</tr>
<tr>
<td>C.A.&amp; Caribbean</td>
<td>186</td>
<td>235</td>
<td>269</td>
</tr>
<tr>
<td>S. America</td>
<td>373</td>
<td>467</td>
<td>536</td>
</tr>
<tr>
<td>Europe</td>
<td>730</td>
<td>716</td>
<td>660</td>
</tr>
<tr>
<td>Oceania</td>
<td>33</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>Africa</td>
<td>906</td>
<td>1350</td>
<td>1970</td>
</tr>
<tr>
<td>Asia (-China)</td>
<td>2617</td>
<td>3283</td>
<td>3888</td>
</tr>
<tr>
<td>China</td>
<td>1304</td>
<td>1476</td>
<td>1437</td>
</tr>
<tr>
<td>India</td>
<td>1104</td>
<td>1363</td>
<td>1628</td>
</tr>
</tbody>
</table>
Vulnerable population under 15
Of the 3 billion living on less than $2 (PPP) per day, about a billion are children below age 15 who

- live amidst violence and poverty
- have little or no family supervision
- are not part of the knowledge society
- will not have access to higher education
- lack distinction between right and wrong
- are vulnerable to diseases and poor health

Who will provide them hope and what will keep them from becoming destructive?
<table>
<thead>
<tr>
<th>Region</th>
<th>Population (Millions)</th>
<th>Population under 15 (millions)</th>
<th>Vulnerable Pop. under 15 (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>861</td>
<td>362 (42%)</td>
<td>~290 (80%)</td>
</tr>
<tr>
<td>Cent. America</td>
<td>144</td>
<td>50 (35%)</td>
<td>~25 (50%)</td>
</tr>
<tr>
<td>South America</td>
<td>358</td>
<td>111 (31%)</td>
<td>~50 (45%)</td>
</tr>
<tr>
<td>West Asia</td>
<td>204</td>
<td>73 (36%)</td>
<td>~30 (40%)</td>
</tr>
<tr>
<td>S&amp;C Asia</td>
<td>1563</td>
<td>580 (37%)</td>
<td>~350 (60%)</td>
</tr>
<tr>
<td>South East Asia</td>
<td>544</td>
<td>180 (31%)</td>
<td>~90 (50%)</td>
</tr>
<tr>
<td>East Asia</td>
<td>1519</td>
<td>334 (22%)</td>
<td>~110 (33%)</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>301</td>
<td>54 (18%)</td>
<td>~11 (20%)</td>
</tr>
</tbody>
</table>

Source: Population data are from Population Reference Bureau 2003
India: key population statistics

- Population (millions): 1104 (2005); 1363 (2025); 1628 (2050)
- Population increase: (25-9 ≈ 16) million per year
- Population below 15 years old: 36% ≈ 400 million
- Rural population: 72% ≈ 800 million

- Births by attendants: 43%
- IMR: 56/1000 live births (CIA, 2005)
- TFR: 3.4 (low 20%) 2.6 (mid 20%) 1.8 (top 20%)

- Vaccinated: 21% (low 20%) 41% (mid 20%) 64% (top 20%)

- Most used birth control method: Female Sterilization
CAMPAIGN: Reproductive Health & Family Planning

Provide every man and women with easy and free access to modern family planning and disease prevention methods (pill, IDU, condom, vaccines, …)

A Global Fund for free “pills” and condoms. $15B per year
Demographics and Population Growth

Population will stabilize if modern means of birth control are provided.

Much better solution if people have opportunities at “home” rather than dealing with hordes of “boat people”
(2) India: Energy a choke point

- In 2004 India consumed 2.4 M barrels a day
- Growth in demand ~ 4% per year
- Oil and gas reserves are small
- Importing 1.6 M barrels a day
  - Cost at $60/barrel = $35 billion
  - Oil imports = 47% of export earnings of $74 billion
- Growth in use of coal (high ash content) will require strict pollution controls.
Energy use grows with economic development

Source: UN and DOE EIA
Increased volatility and high prices post 2004?

US dollars per barrel

World events

Sumatra production begins  
Feared of shortage in USA  
Growth of Venezuelan production  
Loss of Iranian supplies  
Post-war reconstruction  
Suez crisis  
Iraq invaded Kuwait  
Asian financial crisis  
Netback pricing introduced  
Iranian revolution  
Yom Kippur war  
Invasion of Iraq

BP 2004

1861-1944 US average.  
1945-1983 Arabian Light posted at Ras Tanura.  
1984-2003 Brent dated.
Ranking of reserves: 2004

USA 12, 6, 1
Russia 8, 1, 2
China 11, -, 3
India - , -, 5
EU -, -, 4
AT - , -, -
Persian Gulf
OIL 1, 2, 3, 4, 5
GAS 2, 3, 4, 5, 10
No Coal
Fast forward to 2020

- USA: 1
- Russia: 1, 2
- China: 3
- EU: 4
- India: 5
- AT: -

Persian Gulf
- OIL: 1, 2, 3, 4, 5
- GAS: 2, 3, 4, 5, 9

No Coal
Energy Priorities

- Develop Iran, Pakistan, India gas pipeline (USA wants to isolate Iran)
- Develop refinery capacity for Middle East oil (happening)
- Promote renewables (wind, solar, biomass, small hydro) and distributed generation
- Develop nuclear power with advanced fuel cycle (Thorium)

Developed countries have to lead the R&D for cheap clean energy
Campaign: Provide each poor family with at least 6 hours per day of electricity

- Energy for cooking
- Energy for clean water
- Light (kids can study)
- Energy to start micro enterprises

Allow women to step out of the kitchen
Access to basic enabling technologies

- Medicines and vaccines
  - Global jackpot fund for essential medicines and vaccines
- Cheap and clean energy
- Quantity and quality of water

Need small scale inexpensive solutions
(3) Nurturing 21st century global citizens

Emphasis on novelty, math and science skills, ability to perform under pressure, intra-personal skills
Thresholds are increasing rapidly

• Nurturing children fit for the 21st century takes 22+ years of investment
  – Health care and nutrition
  – Good education (at least bachelor’s degree)
  – Stable home environment (emotional health)
  – Healthy leisure time activities

• Infrastructure → job creation

• Access to energy and potable water

Poor cannot access these without significant help
In the absence of healthy leisure time activities people gravitate towards

- Shallow television
- Gambling
- Alcohol and drugs
- Risky sex → HIV/AIDS

Need education and meaningful jobs
HEROIN THREAT

India will increasingly be targeted by drug cartels as prosperity grows.

The golden crescent (~90%)

The golden triangle (~5%)
Confront criminal organizations and rogue economies

- Alcohol (*major impediment to development*)
- Tobacco
- Drugs
- Weapons
- Money laundering
- Corporate/government corruption
- Illegal trade in resources

Harmful to rich and poor nations
The universal number one complaint by women is alcohol abuse by their men.

Despondency: Landless labor works only 8-15 days a month.
Markets are driven by profit and not long-term environmental, social, health impacts and costs
GUTHKA: (chewing tobacco 1990 - )

- Single shot: vacuum sealed pouches preserve flavor
- Marketing: colorful, shiny pouches, eye-catching display
- Low cost (2-7 cents): even poor children can buy
- Palatable: sweetened combination liked by kids
- Easy access: Any shop can sell them (illegally)
- Ready access: can carry anywhere in one’s pocket
- Shopkeepers give guthka in lieu of small change
- No social barrier to consumption
The full cost of chewing tobacco

Cheek cancer

Removal of cancerous cheek

Skin graft to patch hole
Campaign: Ban international trade in cigarettes

• Smoking a recognized health hazard
• Growth predominately in developing countries
• Advertisements target the youth
• Savings in health care costs will offset losses
• Moral victory for developed nations

Ratify the WHO lead Framework Convention on Tobacco Control, and work towards a ban
(4) Good Governance

Developing Local Leadership to Sustain Change
India: Political Landscape

• Few national parties (Congress, BJP, Janta Dal) many regional parties
• Coalition governments: national + regional parties
• Caste, communal, religious card played often
  ❖ Many politicians have criminal records
  ❖ Corruption has become “normal” — a way of life
  ❖ Inflated, inefficient, corrupt bureaucracy

❖ Rich muddle through; Poor are devastated
There are at least 7 characteristic regions in India

Many State Governments are corrupt and in financial and structural chaos
How do we affect change under dysfunctional corrupt governments?

Empower local communities, make schools work, and create jobs
Developing local leadership takes time and nurturing

• At village level to energize communities
• Non Government Organizations (NGO)
• In all social activities: education, public health, medicine, gender equality, ....

Need to identify, train and empower potential leaders

The number of good NGOs in India make its development a hopeful case!
Migration and Reinvestment

- Migration created a global Indian community
- This community has skills, capital, entrepreneurship
- Helped create the IT revolution in US & India
- Many are keen to help and invest
- Can engage meaningfully in poverty reduction and development
- Promote and facilitate the engagement of migrant communities
Scenario Under Business-as-Usual
Eight Economic Zones: each of about 400M “global” people
Impediments to development: Sharks and Barracudas come in many guises

- Despotic, corrupt governments
- National and transnational criminals
- Fanatics and terrorists
- Exploitative multinationals
The more we ignore the needs of the poor and marginalized, the more we empower the despots, the sharks and the barracudas!
Conclusion

500 million Indians need education, health care, job skills, energy and potable water to develop.

Their fate, and the future of 3 billion people worldwide that live on less than $2 per day, depends on the rich making an exceptional commitment to global development today.