Inclusive Innovation and Development: Indian Experience

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Why Inclusive Innovation now? Its roots and background

India’s policies on inclusive development and innovation w.r.t India Inclusive Innovation Fund

Some concrete examples – Can we replicate successful examples
India is not a homogenous social and economic structure.
It is a rather complex mosaic of heterogeneous segments.

- Top of the pyramid 30% (urban rich and upper middle class India)
  - Bottom of the pyramid 30% (Rural poor India)
  - Middle of the pyramid 40% (India in-between in transition)

The fundamental issue is how inclusive innovation can contribute to development and economic growth? In doing so, how it can bridge the gap Middle – Bottom?
Why now?

- Globalization led to considerable growth but increased income and inequality in income
- High technology and big science is important but is not so much directly linked to BOP problems
- Half of 1.2 billion people in India in 2013 are under 25-35 yrs and demography likely to continue till 2030+
- More than 85% of labor force in informal sector
- If we do not give education, skills and opportunities for employment and starting enterprises – youth will get frustrated and lead to violence in society
Indian Experience in inclusive innovation and development – roots in Gandhi model

- Nehruvian model – often characterised as top-down model
- Gandhian model – often characterised as bottom-up model
- Contemporary inclusive innovation and development which involves both environment sustainability and pro-poor agenda
- In a way epistemological roots of Inc. Innov goes back to Gandhian model..
It is science alone that could solve these problems of hunger and poverty, of insanitation and illiteracy, of superstition and deadening custom and tradition, of vast resources running to waste of a rich country inhabited by starving people.

Jawaharlal Nehru at Indian Science Congress, 1938

Science in its instrumental fields of activity, has played an ever increasing part in influencing and moulding human life. Industrial, agricultural and cultural advance, as well as national defence depend on it. Scientific research is, therefore, a basic and essential activity of the state and should be organized and encouraged on the widest scale.

Manifesto of the Congress Party for the first national government declared in 1945

The key to national prosperity, apart from the spirit of the people, lies, in the modern age, in the effective combination of three factors, technology, raw materials and capital..

It is only through the scientific approach and method and the use of scientific knowledge that reasonable material and cultural amenities and services can be provided for every member of the community..

The wealth and prosperity of a nation depend on the effective utilisation of its human and material resources through industrialisation...

Scientific Policy Resolution 1958, passed in the Indian Parliament
Nehru & Gandhi Share a joke in 1946, Bombay
Gandhian model

- Gandhian model of development presents somewhat contrast to Nehruvian model which underlines bottom-up approach
- For Gandhi ‘If villages perish India perishes too’
- Concepts of ‘Swadeshi’ or self-reliance; decentrslisation of development; trusteeship;
- Industrialisation, technology and science are important but if they deskill people and alienate workers – we need to control and regulate it
- Gandhi’s followers like J.C.Kumarappa (often called ‘The Green Gandhian’) put forward a sustainable concept as early as 1930s and 1940s.
Gandhian Institutions and Industries

- All India Village Industries Association (1934)
- Khadi and Village Industries Commission (1953)
- Jamanlal Bajaj Central Research Institute (1955) was rechristened as:
  - Mahatma Gandhi Institute for Rural Industrialisation (2001)
- CAPART (Council for Advancement of Peoples Action and Rural Technology) 1986
- 1970s and 1980s – Rise of Alternative and Appropriate Technology movement in India
Current policies on Inclusive Development and Innovation Fund
Contemporary Perspective of inclusive innovation and Development

- The rise of Globalisation and liberalisation in the 1990s and beyond 2000 led to criticism
- Realisation of increasing gaps between ‘haves’ and ‘have nots’ + environment and sustainability led to reinvention of Gandhian model
- Inclusive development and Inclusive Innovation
- Old agenda of tackling poverty & uplift poor still remains
Some Public Policies on Inclusive Development – **focus sustained in 12th Plan**

- **2010 -2020** Declared as Decade of Innovation by President
- **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** – US$ 7.8 billion for 2009-10
- **Bharat Nirman** involving six schemes for improving quality of life, transportation and bridging the gap between rural and urban – US$ 3.8 billion in 2009-10
- **Indira Awaas Yojana**: a national housing scheme for poor – US$ 173 million in 2009-10
- **Pradhan Mantri Gram Yojana**: for integrated development for reduction of poverty and infrastructure in 1000 villages as pilot project – 20.5 million US$ in 2009-10
- **Urban Renewal Mission**: building urban infrastructure – 2.6 billion US$ in 2009-10
- **National Rural Health Mission**: 2.8 billion US$ in 2009-10.
What means inclusive innovation

- Inclusive innovation - is developing processes / products / services at a low cost which could be afforded by masses in emerging and developing economies for a better life.

- Inclusive development – equitable development
- Inclusive economic growth – all sections of society grow

- Science and technology process of development is integral to the process of inclusive innovation

- How to create a level playing field between economic growth and sustainable development without losing sight of inclusiveness?
Institutional Arrangements for Inclusive Innovation

- Institutions under the Government
- National Innovation Foundation (NIN) Ahmedabad at IIM
- CSIR’s Traditional Knowledge Digital Library
- Ayurveda Yoga Naturopathy Unani Siddha and Homeopathy (AYUSH)
- Grassroots Innovation Augumentation Network (GIAN)
- Unique Identification Card – AADHAR card 600 million
- DST, DSIR, Ministry of Rural Development and other Ministries
Case Studies

1. India National Innovation Fund
2. National Innovation Foundation
3. CAPART (Council for Advancement of People’s Action and Rural Technology) 1986 (7th Plan)
4. Jaipur Foot
5. Arvind Eye Care System
6. Barefoot College
7. Narayana Hrudalaya Hospitals
1. India Inclusive Innovation Fund, National Innovation Council - 2011

- The fund will operate as ‘for profit’ market based entity – there will be returns but at lower level guaranteed by the government
- Fund will support enterprises only those which promote employment of poor, build capacities for livelihood – link up knowledge institutions
- Create a new pattern of commercially viable inclusive innovation fund for enterprises – incubation and mentoring
objectives

- Drive inclusive growth
- Mobilise capacity
- Create eco-system
- Balance social and financial returns
- Employment/livelihood creation
- Skills and build capacity schemes
- Pool innovators
- Partner with incubators, entrepreneurship cells and VC funds
Structural /mgt aspects

- 1 billion $ target PPP model
- Govt investment 20% + 30% public banks and fin. Inst + 50% Private domestic and foreign
- Life 9 + 2
- Trustee IDBI –
- Would be professionally managed by fund managers
- Investment committee and Governing council
2. National Innovation Foundation – Honey Bee

- Building upon the Honey Bee network, the NIF, started functioning in 2000 as India’s national initiative to strengthen the grassroots technological innovations (100 million $) in collaboration with IIM Ahmedabad.
- NIF has been able to build up a database of more than 160,000 ideas, innovations and traditional knowledge practices (not all unique) from over 545 districts of the country.
- NIF filed over 550 patents on behalf of the innovators and outstanding traditional knowledge holders of which 35 have been granted in India and 4 in USA. Micro Venture Innovation at NIF has provided risk capital for 178 projects,
SOME CONCRETE EXAMPLES – CAN WE REPlicate THEM?
The world's first sub-$40 artificial foot.

The Jaipur Foot was developed in India 1970 by orthopaedic surgeon Dr Pramod Karan Sethi and sculptor Ram Chandra. It provided an appropriate, low cost and aesthetic alternative to the Western limb designs otherwise available. The design has revolutionised the lives of thousands of amputees in the developing world.
Heroes of Medicine  The $28 Foot

THE GLOBAL SCOURGE OF LAND MINES LEFT THOUSANDS LIMBLESS, AND THEN TWO GIFTED INDIANS DEVELOPED

The $28 Foot

BY TIM MCGIRK
Jaipur Foot a prosthetic with proven performance in harsh conditions, while costing US$28 (now 40) or more than 300 times less than a conventional one in the US.
Barefoot College, Tilonia, Rajasthan

- Solar lamps and devices – inspired billion solar lamps project of TERI – Head Qtrs for ICCPP
- Rainwater harvesting
- Solar water pumps
- Recycling
First woman who graduated as a solar engineer
Sophisticated equipment
A pioneering solar engineer helps install and maintain solar panels that keep the local villages supplied with electricity.
Solar panels in Tilonia produce electricity for most homes, besides feeding barefoot college facilities that include 20 computers, a telephone exchange, 700 lights, fans, a photocopying machine and an audiovisual system.
An artist from the Barefoot College prepares masks for plays and puppet shows with material from recycled World Bank reports.
100 to 200$ Incubator vs 20 000 $
4 million babies die in the first month
Cotton stripper
Bicycle sprayer
Foot pedal operated drill
3. CAPART – Ministry of Rural Development

- Assisting over 12,000 voluntary organizations across the country in implementing a wide range of development initiatives.
- To act as a catalyst for development of technology appropriate for the rural areas, by identifying and funding R&D efforts and pilot projects by different agencies and institutions;
- To act as a conduit for transfer of appropriate technology to govt. depts, public sector, cooperative societies, voluntary agencies to encourage adoption of appropriate technology in rural development;
Jaipur foot to Jaipur hand

- The Jaipur based BMVSS – Bhagwan Mahaveer Viklang Sahayata Samithi – world’s largest orgn. for hadicapped transformed lives of 1.3 million with Jaipur foot.

- In collaboration with Stanford University ‘Jaipur foot’s institution is developing Jaipur hand. Will be available in few months by 2013
Indian pharma firm produces AIDS drug which is supplied to world's 92% of AIDS patients worth US$ 1 billion

The rest 8% is supplied by West and earns US$20 billion
5. Arvind Eye Care System

- The Conrad N. Hilton Humanitarian Prize for 2010 awarded by the Conrad. N. Hilton Foundation.
- The Gates Award for Global Health for 2008 awarded by The Bill and Melinda Gates Foundation.
- The António Champalimaud Vision Award.
- WHO Collaborative Centre for Prevention of Blindness (India 15 million blind people).
Arvind Model – serving more to cost less & to benefit a larger segment

- Reasonable charge and increase the base of servicing to make it economical for poor
- Manufacturing lens, suture needles, cataract kits, pharmaceuticals and instruments related eye care
- Training institute, research institute and eye bank
- Community outreach via IT systems

Inclusive innovation is developing processes / products / services at a low cost which could be afforded by masses in emerging and developing economies for a better life.
Arvind Eye Care System

- 1970s founded by retired surgeon Dr Venkataswamy Madurai as alternate health care model in the country
- 5 hospitals with a capacity of 3649 beds in Southern India
- Speciality clinics for cataract, retina, cornea, glucoma, neuro-opthalmology, uvea low vision, pediatric ophthalmology, ocular oncology, orbit etc.
- 2009 to 2012 – 2.8 million outpatients and 340,000 surgeries for poor Indians
- Hospitals work on 24 x 7 basis
6. Centre of Science for Villages

- An independent institution created by Devendra Kumar in 1990s – close associate of Gandhiji
- Operates in rural housing, renewable energy, women and technology, rural industries, sanitation training and extension
White Revolution – via AMUL

- India is largest producer of milk in the world
- Largest cooperative network in the world
- Networks of cooperation for innovation and development
- 3.0 million milk producers
- 13500 village Dairy cooperative societies
While Revolution

Rural women deliver milk at counters at 4 am

Anand
Milk products from AMUL
(sales turnover 2010 2 bil US $)
Frugal innovations: Nano Car by TATA
Frugal innovation

What makes the Tata Nano so cheap?
- No air conditioning on standard model
- Windows wind down by hand
- Height 1.6m (5ft)
- Manual steering, no air bag
- 624cc two-cylinder engine in boot giving max speed of 70km/h (43mph)
- Plastic and adhesive replaces welding
- Bodywork made of sheet-metal and plastic
- Length 3.1m (10ft)
- Width 1.5m (5ft)
INDIAN JUGAAD

Or like this .... -

When innovated by Tata’s .... Leading to ‘Frugal Innovation’
INDIAN ‘JUGAAD’

.......looks like this in India -

Powered by Agriculture Pump Engine and Attached to a bullock-cart trailer
INDIAN JUGAAD

Or like this …. -

Powered by a locally assembled Engine…
or a Two-Wheeler
INDIAN JUGAAD

Numerous Examples: Water pumping Using motorbike
Mobile revolution – 950 million
Akash 2 Tab Launched on 13 Nov 2012
Akash 2 Tab specifications

- Akash 2 Tab Rs 2263 (43 US$) 50% government subsidy
- 512 RAM 1 GHz, 3hrs battery life, runs on Android 4.0,
- 7 inch screen, 4 GB Memory
- 50% government subsidy on INR 2263 (43 US$) to be distributed to 220 million students in India
Concluding Remarks

Public Policies and Governance
- India currently has the world’s largest inclusive development and social sector programme and public policies
- Big demand via public procurement but structural problem of linking across various actors and agencies – need for systemic innovation
- Role of intermediaries linking formal and informal institutions is imp.

Knowledge and Innovation
- The folly of AT of 1980s should be avoided.
- Recast education, skills and training to align with demographic dividend – need foresight perspective
- S&T pluralism and blending of modern and traditional technology – still there is a big gap and this needs to be bridged
- The issue of regulation to professionalise actors and agencies
Concluding remarks

**PPP perspective**
- Govt. is pro-active and robust policies to encourage
- Role of private enterprises is encouraging but is yet to reach the optimal level

**Problem of Replication/multiplication**
- Indian experience so far shows a good number of successful cases – multiplying but slow except in milk
- The issue of market good vs public good – appropriate economic model with reasonable returns other wise models and perspectives will fail
Thanks