

# Science, Technology and Innovation Policy 2013 – Some Remarks



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# Step Forward but several missing links



- 1958 Scientific Policy Resolution
- 1983 Technology Policy Statement
- 2003 Science and Technology Policy
- 2013 Science, Technology and Innovation Policy
- Decade and a half late - at last we have joined group of countries
- Step forward with various proposals but several missing links

# Where is the R&D Commitment of 2%?



- Policy aims to enhance private sector's role for attaining 2% of GDP for GERD
- 'in the next five years is realizable if the Private sector raises its R&D investment to at least match the public sector R&D investment from the current ratio of around 1:3'
- Outside PPP mode – there is no commitment at all
- Only a wishful thinking; With robust private investment in the last decade why it did not improve?
- Problems lie elsewhere – monitoring tax incentives; lack of legal underpinning;
- Failed to learn from South Korean experience which reversed govt. burden in a decade with a series of laws

# Opening research and innovation schemes to Private players – without legal backup to monitor



- No of firms regd. should have doubled; Weak eco-system for SMEs & failed to attract private R&D with incentives
- Innovation eco-system but nothing on science and technology parks – Taiwan and China experiences
- Rather than strengthening eco-system in emerging hubs like Bangalore – governance and civic systems are crumbling in all cities – technology and talents may move out
- STIP 2013 proposes to open up all public R&D research and innovation schemes to private enterprises without back up of legal underpinning

# Why Public R&D is important?



- 55% of GERD to strategic sectors (atomic energy, space and defence) and 45% to broad civilian sector
- Strategic sectors will continue to dominate due to series of Moon and Mars missions & big science projects planned in the coming decade
- STIP 2013 goals: 'positioning India among the top five global scientific powers by 2020'; increase global share of publications from 3.5% to 7% by 2020; four fold increase in publishing in top 1% of journals; and increase FTE personnel by two-thirds 1.54 to 2.50 lacs
- Without firm govt. commitment how can you reach these targets in the coming decade?

# Public R&D?



- If we were to reach anywhere near these targets government must commit 2% of GERD, irrespective of private R&D investment in the coming decade
- China currently spends 1.5% of GDP in R&D – its economy is 3-4 times larger and invests five times more than India.
- Otherwise India will continue to lag behind its Asian competitors. We currently produce 1/3 of China in science publications

# STIP 2013 – ‘universities as research outhouse’



- **1997-2007 52% of total cumulative national science publications from universities** (Gupta, B.M and S.M. Dhawan (2008), ‘A Scientometric Analysis of S&T Publications Output by India during 1985-2002’, *DESIDOC Journal of Library and Information Technology*, 28(2), pp.73-85)
- **R&D exp. In Universities 5% of GERD – very low GER**
- **Only 15-20% of 500 universities and 19000 colleges are research and teaching – rest are just teaching institutions**
- **Far away from attaining Humboldtian goal of research and teaching intensity in HEIs**
- **STIP wants to achieve targets in publications and HRD**
- **But universities are being completely neglected – old policy from the 1940s**

# Meghnad Saha to S.S.Bhatnagar late 1940s



‘The National Laboratories which you have erected will not satisfy our needs. You have erected a temple, but you have not made any provision that there should be a constant influx of qualified votaries into the temple which will bring life into it. If you want to instill life into this country, if you want to train a band of workers for the great work of reconstruction, which has been the dream, I would appeal to you to give up this policy of indifference, this policy of denial. You must gird up your loins and find out money so that we render sufficient assistance to the universities and revitalise their activities’.

(Sen, S.N., (1954), 'The War Years: 1940--45', in Professor Meghnad Saha: His Life, Work and Philosophy, Calcutta: Meghnad Saha Sixtieth Birthday Committee.)

# Universities in OECD and Asia



- OECD -25 universities (20% of GERD)
- Japanese universities (15% of GERD)
- China (15% of GERD)
- China Project 211 in mid 1990s 7.98 US \$ billion for 100 universities early – mid 1990s
- China project 985 4.87US \$ billion & shortlisted 39 universities – late 1990s
- China + Hong Kong has 5 universities in top 200 WCU
- India – **none**
- **How can we attain the goal of top 5 Science Powers??**
- Erroneous view of NIS – keeping R&D in HEIs outside STIP 2013

# 'New paradigm' – without a road map



- 'S&T for the people' – inclusive innovation – what is new about this? In a different form it was always there.
- What means inclusive innovation to science agencies? No clue!
- 'Risky Idea Fund'; 'Small Idea Small Money' – we are still looking for implementation of Inclusive Innovation Fund of 5000 crores
- Heavy reliance on SMEs policy which is some what outdated; there is no insight or reference to 600 industrial clusters, 3500 artisan clusters; informal sector where 93% of labor force exists and no reference at all to 5000 ITIs.
- Need for a new perspective of regional and rural innovation systems – example Aligarh/Moradabad

# Science organisation issues – ignored completely



- ‘Large and fragile community’ ; ‘sea of mediocrity’ ; caste and ethnic factors have come to play a big part
- STIP 2013 has nothing to say about improving the intellectual culture in science institutions; journals, peer review, science societies
- Why best talents are not attracted to science institutions like CSIR
- There is some evidence of internal brain drain taking place –professionals leaving public institutions to join private enterprises

# Other issues



- Bringing agriculture R&D policy with national R&D policy – but what about bridging defence and strategic R&D with civilian R&D
- The whole issue of forging links between science agencies (CSIR) universities – completely ignored. We have to learn from CNRS experience
- No reference to major challenges such as energy
- Too much bothered about publications but no mention about patents – implicit reliance on ‘linear model of innovation’
- Just one line to ‘Creating a robust national innovation system’ – quite puzzling how they are going to do?