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Education

Three Years of Energy, Education and Technology Under Narendra Modi

By Anil Kakodkar on 06/06/2017

India's remaining competent in both domestic and global markets is hinged on building a society upon the four pillars of technology, institutions, infrastructure and incentives.

Three years, while well past the halfway mark in one tenure of the Government in India, is actually a short span in the history of nations. While it is natural to discuss the performance of an elected government on the basis of election promises made at various stages during its five-year mandate, I have no such intentions. Election promises by their very nature are driven by ideologies and focus on short-term deliverables and promises. On the other hand, in the context of some of the key long-term issues that India should be addressing to secure its future, even five years is too short a time to see the results.

Consider, for example: energy security in the backdrop of depleting resources and transitions in energy use patterns; waste management consistent with the carrying capacity of the environment and its sustainability; issues of climate change and sustainable development goals; and many others. The prevailing diversities and diverse short-term interests, and uncertainties about the future and such other factors, invariably lead to the degeneration of any serious discussion on addressing such long-term but vital human-interest issues into competitive politics, and this does more harm than good. We see this happening every day at the regional, national and international levels.

In our own country, we are all too familiar with issues like river-linking and all approaches to GM crops eluding national consensus. Moreover, in recent years, we also see technology-led transitions taking place at a pace much faster than before. These transitions impact our lives faster than we are able to adjust with them. We need to be prepared to derive full benefits from a new technology while keeping the potential ill-effects at bay. Most of the time, we (governments included) end up reacting to a situation arising out of a new technology-driven

paradigm – whereas a timely and well considered proactive approach would have been more optimum and effective.

There is also a question of India becoming competitive in terms of innovative value-added products and capturing the markets. In fact, the global markets are likely to be dominated by emerging technologies like the internet-of things, universal 3D printing in homes/garages, smart clothing, autonomous mobility, gesture-controlled devices, cheap and accessible diagnostics, unhackable cryptography, biomimetic materials, artificial intelligence, brain computer interface and so on.

Thus, there is a lot of catching up and capacity-building that needs to be realised rather quickly for us to be able to cope with the 'emerging knowledge' era – lest the window of opportunity provided by our demographic dividend gets lost forever. Addressing such issues needs a visionary approach with the will to expend political capital – particularly when policy goals are driven by national dynamics rather than international dynamics. The latter is the case when there are global dimensions to addressing the issues at hand.

A need to scale up renewable sources of power

Let me begin with energy. A sharp increase in the renewable energy program's targets (175 GWe by 2022), a clever driving down of the cost of energy-efficient LED lights, building momentum to deploy solar-powered pumps for agriculture, approving the construction of 10-700 MWe indigenous nuclear reactors in the fleet mode, along with four 1,000 MWe nuclear reactors of Russian design, with high emphasis on domestic manufacture, streamlined supply of coal to thermal power plants – all of these have created a strong non-carbon outlook together with a condition of self-sufficiency in power. (The demand for power driven by manufacturing and agriculture should however be rising faster, creating a *continuously* rising demand for power.)

In fact, India seems to be well on the path to realising its declared intended nationally declared contributions. We are all aware of how, at the climate change negotiations, the country transitioned from assuming a traditionally defensive posture to one suggesting a more confident contributor, to a protector of Earth on our terms. Likewise, on the hydrocarbon side, there has been a thrust towards leveraging our refining capacity while finding pathways to reduce oil imports through greater production from our assets in India and abroad; through greater use of ethanol for blending; and through a search for technologies to make fluid fuels.

On the longer-term horizon, there are efforts to develop technologies to sequester carbon dioxide, leading to usable materials; to split water to produce hydrogen, in turn to be used for non-fossil hydrocarbon; and to deploy both solar and nuclear energy for the purpose. 'Technology Vision 2035' visualises an India that is non-fossil-energy based, with 50% power coming from renewable sources by 2035. Clearly, there is a need to further scale up non-fossil-energy-development programs. More attention is also necessary in terms of larger value addition in the country, in particular for silicon production, solar thermal technology, energy storage and advanced nuclear technology (such as fast breeder reactors, thorium reactors, accelerator driven sub-critical reactor systems and high-temperature reactor systems).

In terms of making the country future-ready, the push to digital India is clearly a much-needed initiative to build the necessary digital infrastructure. Adopting the unique personal identification framework, Aadhaar, built by the previous government, has been a key decision that is at the core of several far-reaching initiatives. These

include the direct benefit transfer, cashless transactions and grassroots empowerment. However, more needs to be done to prepare our youth to be fully capable of exploiting the opportunities offered by this new era.

In this context, rural India deserve more attention since a much larger number of the country's youth reside there. Information and communication technologies (ICT) by their nature favour a more decentralised and democratic approach to socioeconomic development. By leveraging the new technological domains, and our youth made fully capable in them, it should be possible to narrow down a number of disparities – including, but not limited to, the rich/poor gap, urban/rural gap, etc. It should also be possible to make rural India a preferred destination for young people because of its potential to offer greater opportunities as well as an enriched quality of life.

The four pillars of competitiveness

This then would require a paradigm shift in the education-research-entrepreneurship ecosystem in urban and rural areas, along with close linkage between education and development activities. An important step towards this would be to make tablets more affordable level by creating massive demand, as was done in the case of LED lamps. In principle, the price of a tablet that can accommodate content for several years can be lower than the cost of textbooks. The digital content could also be more interesting and lucid, for example by using animations and simulations. The tablet should serve as an important teaching/learning aid by acting as a gateway through which to access cyber-resources and being a convenient teaching/management tool. Such an intervention would take us several steps closer to having a digital school *everywhere*.

Students coming out of such schools/institutions – where concepts are well understood, curiosity is continuously addressed *and* sustained, and there is firsthand participation in addressing real-life problems – would naturally be self-empowered, with their feet firmly anchored on the ground. By nurturing conducive ecosystems, we could motivate such people to devise integrated and sustainable solutions to enriching life, bridging the divides of conflict. These solutions can be built with *technology*, *institutions*, *infrastructure* and *incentives* as the four pillars of sustainable competitive societies, and which we must build to remain globally competent.

But in order to strengthen all pillars, balanced attention is required. This is perhaps the most complex governance matter, particularly when it comes to realising it at scale. Done non-intrusively, with a mechanism to learn from each other's best practices and assuming adequate financial resources are available, the challenge can be surmounted.

There are of course several other aspects that would need to be addressed even in the context of energy, education and technology. They all would require innovative approaches. But one thing that distinguishes the incumbent government at the Centre is the will and the courage to try out new ideas and its leadership from the front. The traditional and the established sections of the government always tend to pursue a safer and more secure incremental approach. It is for the leadership to put forward a realisable but bold vision and display the political will and the courage to drive that vision forward – through a revolutionary approach with plenty of out of box ideas.

In addition to being decisive, the multiple ramifications of key decisions need to be fully factored in and the conviction carried through all sections of stakeholders. The Narendra Modi government has strong leadership and

a strong political mandate. It must make sure India goes on to the highest level of achievement in the fields energy, education and technology.

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