

**Is the US a major beneficiary of Hi-tech research being undertaken in India?
R&D culture hardly conducive here**

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It would be a very limiting view and, therefore, patently wrong to say that the US is a major beneficiary of hi-tech research being undertaken in India. In fact, conversely if there was adequate high-level research on some frontier technologies taking place in India, we could benefit greatly from hi-tech research being undertaken in the US.

It has been a trend for much too long that our best students from science and technology migrate to the US by initially going there for higher education. In the course of the pursuit of masters and Ph D degrees they are exposed to research at the most sophisticated level, which is carried out in US universities. This is distinctly different from the situation in our own universities, which has gone from poor to pathetic. If we were able to establish institutions in India that provided the right environment and conditions conducive for hi-tech research, a number of Indians who study in US universities will be happy and willing to come back and work in India at least for short periods of time. Unfortunately, this does not happen because the research infrastructure and the culture existing in most of our research institutions is hardly conducive to attracting qualified Indians back to the country.

Another aspect of hi-tech research in this country that needs to be considered is the benefit of creating appropriate capacity for hi-tech work initially perhaps on behalf of major US organisations.

India earns valuable revenues for the work undertaken with employment benefits for scientific manpower that cannot be minimised in importance. But a far more important benefit of such contract research lies in the exposure that Indian scientists would receive as a result of working to specified deadlines and functioning in an environment where commercial outcomes are paramount. This unfortunately is a feature that is missing in most research organisations in the country, particularly those that are managed and funded by the government.

The initial phase of undertaking contract research, therefore, can prove a vital benefit in establishing local capacity in the country and thereby enabling our scientific establishments to set out on their own in the future and establish a leadership position. However, to attain such a level of global leadership, it is essential that R&D organisations in the country set clear-cut priorities and goals whereby they concentrate on areas of R&D in which India would have a comparative advantage in the future.

There is no reason why, for instance, India cannot attain a leadership position in certain fields of biotechnology research, the development of new and renewable sources of energy and even in the emerging field of nanotechnology. This makes it essential for any R&D organisation in India to not merely pick up contract research for the benefit of short-term gains and revenues but as a first step in moving towards excellence and leadership as a strategic objective.

One means by which the US, of course, has been a major beneficiary of efforts and investments undertaken in India is in respect of the massive brain drain that has taken

place over the past few decades from some of our best institutions to the US. This major movement of human capital remains largely uncompensated, because the taxpayer in India is subsidising education in the IITs and other institutions of higher learning, the beneficiary of which becomes the country to which talent from these institutions migrates.

However, here again the human capital that moves from here to the US achieves much greater value addition in that country. Establishing a much more enlightened model is now long overdue, and an essential prerequisite for India emerging as a technological superpower.