NIS/IISER/equivalent must be established in Orissa.

- Gross injustice to Orissa: Announced National Institute of Sciences in Bhubaneswar renamed & shifted.
- Orissa ignored, neglected, and shortchanged by the HRD ministry over the years, and now punished by it.
- This must stop NOW.
- Orissa should no longer tolerate such anti-Orissa actions by the HRD ministry of India.
- India should no longer tolerate HRD ministry's behavior as a fief and its politically motivated actions that drives parts of India to backwardness and creates inequality and imbalance and puts pressure on the fabric of India.

Orissa has no institute of national importance (such as an IIT, IIM, IISc, ISI etc.), no central university and no autonomous science and technology institute. The only institute in Orissa fully funded by the HRD ministry is an NIT in Rourkela. In contrast the neighbouring state of West Bengal has an IIT, an IIM, an ISI, a central university, couple of autonomous science and technology institutes, and an NIT. A rough comparison of their funding reveals that the HRD ministry's funding of the above institutes in West Bengal is roughly 10-15 times more than in Orissa. Orissa's numerous requests for an IIT and central universities have been ignored by various HRD ministries.

With that backdrop, in 2003, the NDA government had announced the setting up of 4 National Institute of Sciences (NISs) in Pune, Bhubaneswar, Allahbad and Chennai. This included a formal letter from the UGC to Utkal University; an announcement by the then HRD minister; a mention by the President of India in his speech to the UGC on its Golden Jubilee celebration on 28th Dec 2003; and a 45 page detailed project report on NIS (which talks in detail about an NIS in Bhubaneswar) dated May 2004. The current government formed on May 22nd, 2004 seems to have scrapped the earlier decisions and announcements regarding NISs and has decided and announced two IISERs (Indian Institute of Science Education and Research) in Pune and Kolkata. The IISERs have the same objectives as the NISs and are essentially the same as NISs except normal evolution that takes place when time passes or a project moves from one regime to another. Since Kolkata was not on the earlier list of NISs and is in the same region as Bhubaneswar, and often large institutes are spread regionally; essentially the current government has punished Orissa and rewarded West Bengal for inexplicable (political!) reasons despite the fact that their decision makes the already grave regional imbalance in HRD funding even worse. Moreover, it now says that no decision was made by the center regarding establishing an NIS in Bhubaneswar. The following is a compilation of various documents that show the gross historical neglect by the HRD ministry of Orissa and the subterfuge that has been adopted recently to deprive Orissa of the earlier announced NIS in Bhubaneswar.

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Chapter 1

Subterfuge: Announced National Institute of Science in Bhubaneswar renamed and shifted

1.1 The beginning of the National Institute of Sciences proposal

9th April, 2003: The University Grants Commission (UGC) took a decision to establish four Centres for Studies in Integrated Sciences at Allahabad, Bhubaneshwar, Chennai and Pune.

> THE MINISTER OF DEFENCE (SHRI PRANAB MUKHERJEE) said the above and the following in the Lok Sabha on December 20th 2005.
> See Box 3 or http://164.100.24.208/ls/lsdeb/ls14/ses6/201205.html for his complete statement.

Box 1: A reference to the origin of the statements about 9-4-03 & 23-7-03.

23rd July 2003: Chairman, University Grants Commission had communicated to Vice Chancellor, Utkal University about the establishment of one of the centers at Bhubaneswar vide his D.O.No.F-1-74/2003(CM). The following Box contains the full text of the letter.

> From: Arun Nigavekar, Chairman UGC
>
> D.O.No.F.1-74/2003(Cm)
>
> Sub: establishment of National Institute of Sciences: UGC's new initiative in collaboration with other scientific agencies in the Xth Plan
>
> Dear Prof. Nayak,
>
> You may be aware that growing concern has been expressed at various time on various forums about continual decline in standards of education at all levels, particularly at tertiary level, as also on the recent trend of bright boys and girls shying away from science. This trend, over the years, has affected the quality of human power output into our research and development system. The matter is of national concern and is reflected in the speech given by the Hon'ble Minister for Human Resource Development. Professor Murli Manohar Joshi on the occasion of initiation of a Golden Jubilee Year of the UGC. In his inaugural speech Hon'ble Minister observed as under:
>
> *"The undergraduate education in pure sciences is a matter of serious concern. We are going to face shortage of good researchers in a few years time particularly in our premier research institutes in the field of Atomic Energy, Space, Bio-technology, Energy, Oil exploration, Communication and so on. We will have to focus at 10+2 level and "catch them young" for integrated 5 years teaching programme with a possibility of exit after three years".*
>
> Hon'ble Prime minister also, while inaugurating the Golden Jubilee year of the UGC on 28th December, 2002, expressed serious concern on this important issue and suggested creation of such facilities that will fulfil the need of quality human power input into research and development system. The university Grants commission was aware of this scenario and addressed this issue in the Xth Plan document. I am very happy to inform you that the Commission has now decided to establish four centers for studies in Integrative sciences and these centers would be established in the proximity of following four universities:

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(i) East: At Bhubaneswar in the proximity of Utkal University.
(ii) West: At Pune in the proximity of University of Pune.
(iii) North: At Allahbad in the proximity of Allahbad University.
(iv) South: At Chennai in the proximity of Anna University.

These centers would be called as National Institute of Sciences(NISc) and would have a budget of Rs 50 crores each spread over five years. The provision of Rs 100 crores has been done for this activity in the Xth Plan and UGC has approached the Planning Commission for making provision of additional Rs 100 crores for the project in the period of Xth Plan. Hence, presently each of the NISc would be provided with Rs.25 crores each.

The commission has also appointed a High powered committee to bring these NISc into operation. The members of the high power committee are:

1. Prof. V. G. Bhide Convenor Former Vice-Chancellor University of Pune
2. Prof. S. K. Joshi Member Commission, UGC
3. Prof. Ashok Kumar Gupta Member Commission, UGC
4. Prof. N. Mukunda Indian Institute of Science, Bangalore
5. Prof. D. Balasubramanian Former Director Center for Cellular and Molecular Biology, Hyderabad

The task for the high power committee is to prepare Memorandum of Association and Rules of NISc and I am enclosing with this letter a draft MOA as prepared by this committee for NISc for your perusal.

The NISc would be established as autonomous institutions under clause 12(ccc) of the University Grants Commission Act in close association and collaboration with various science agencies like CSIR, DST, DAE, ISRO and DBT. It is anticipated that Utkal University would recognize the NISc as an autonomous institution and would provide full academic, administrative and financial freedom for operational purpose. The students coming out from the NISc would get appropriate degree of your university. It is also anticipated that NISc being a national organization would have a close academic linkage with the neighbouring university, research and development laboratories as well as national laboratories and prestigious research institutions and also other universities in the country. It will also have link with the industries. NISc would also have academic links with universities and R & D institutions outside the country.

We hope that NISc at your university becomes a major teaching, learning and research center in basic sciences in times to come. As such the university may have to provide a land of about 50 acres for establishment of NISc. As mentioned earlier University Grants Commission would be providing full financial support for the establishment of NISc and would also continue to support each of the NISc under plan funds even in the future.

You may agree that this is one of the very important initiatives that has been taken by the University Grants Commission in recent years with emphasis on catching the best of the minds for launching them in research and development field in science and technology. I am sending this letter to keep you informed about this new initiative and also with a request to initiate at appropriate level the decision making process for acceptance of NISc as an autonomous degree conferring institution and providing administrative as well as logistic support for the establishment of the NISc. I may also suggest that you could call a meeting of all heads of local educational and R & D institutions/laboratories and brief them about this development. Their participation in formation and running of institute is very crucial for the success of NIsc.

I look forward for a positive response at your end on this new initiative of UGC.

with kind rewards
yours sincerely
Arun Nigavekar

Enc: As above
Prof. Pandav Nayak, Vice Chancellor, Utkal University, Vani Vihar, Bhubaneswar -751004

Box 2: Full text of the letter from the UGC Chairman to the Utkal VC in July 03.

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1.2 The current government's version of events after that (Lok Sabha speech)

Ministry of HRD vide its letter dated 9th June 2003 had raised a query, whether UGC is legally empowered to set up such educational Centres under Section 12 (ccc) of the UGC Act. The matter was further examined in detail in the Ministry of HRD in consultation with the Ministry of Law. The Ministry of Law categorically opined that the UGC cannot establish the proposed Centres for Studies in Integrated Sciences under Sections 12 (ccc) or under 12 (j) of the UGC Act. The UGC was accordingly informed by the Ministry vide its letter dated October 28, 2003.

Re: The reported decision of the Government to change the location of the proposed National Institute of Science from Bhubaneshwar to Kolkata

THE MINISTER OF DEFENCE (SHRI PRANAB MUKHERJEE): A couple of days ago, Hon'ble Member of Parliament Shri B. K. Tripathi and some other Hon'ble Members representing the State of Orissa wanted to know whether the Government has decided to change the location of National Institute of Science from Bhubneshwar to Kolkata. I assured the Hon'ble Members that after ascertaining the facts I shall come to the House and inform the Members.

The facts are – On 9th April, 2003, the University Grants Commission (UGC) has taken a decision to establish four Centres for Studies in Integrated Sciences at Allahabad, Bhubaneshwar, Chennai and Pune. These Centre were proposed to be established under Section 12 (ccc) of the UGC Act. Vide this Section of the UGC Act, University Grants Commission is empowered to establish, in accordance with the regulation made under the UGC Act, institutions, for providing common facilities, services and programmes for a group of Universities or for the Universities in general. Ministry of HRD vide its letter dated 9th June 2003 had raised a query, whether UGC is legally empowered to set up such educational Centres under Section 12 (ccc) of the UGC Act. The matter was further examined in detail in the Ministry o HRD in consultation with the Ministry of Law. The Ministry of Law categorically opined that the UGC cannot establish the proposed Centres for Studies in Integrated Sciences under Sections 12 (ccc) or under 12 (j) of the UGC Act. The UGC was accordingly informed by the Ministry vide its letter dated October 28, 2003. As such, the UGC's proposal to establish four Centres for Studies in Integrated Sciences under Sections 12 (ccc) or under 12(j) of the UGC Act at Allahabad, Bhubaneswar, Chennai and Pune could not materialize.

The Government of India has at no time approved setting up of Institutes, as proposed by the UGC. The Chairman, UGC thereafter informed the Government vide his letter dated November 26, 2003 that the UGC would like to facilitate setting up these institutions as fully autonomous institutions under the universities in which these institutions are to be established. Even this proposal was never agreed to by the Government.

Box 3: Hon'ble minister Pranab Mukherjee's statement in the Lok Sabha on Dec 20, 2003, available at http://164.100.24.208/ls/lsdeb/ls14/ses6/201205.html

As such, the UGC's proposal to establish four Centres for Studies in Integrated Sciences under Sections 12 (ccc) or under 12(j) of the UGC Act at Allahabad, Bhubaneswar, Chennai and Pune could not materialize.

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1.3 Inconsistency and omissions: Events between 26-11-03 & 22-5-04

The last statement is not quite consistent with the events that happened (and was not mentioned by the honorable minister) between 26th November 2003 and May 22nd 2004, when the new UPA government was formed. Here are some documents and quotes from them that shed light on the developments in that period and that counter the Hon'ble minister's statement in the last page.

The meeting was also informed of the steps initiated to improve the quality of teaching and research. It was informed that at post-graduate level a credit-based, modular approach is being introduced. UGC has recently upgraded monetary support at individual, group and department levels and has opened for colleges such incentive schemes as were earlier confined to universities. While five universities were identified this year, with potential for excellence, viz. Chennai, Hyderabad, Jadhavpur, Pune and Jawaharlal Nehru Open University, five more universities will be identified next year to promote excellence among universities especially in matters of research. Four national-level institutes are also being established at Bhubaneshwar, Chennai, Pune and Allahabad.

It was informed that UGC has started monitoring the health of universities using parameters for academic performance, research performance and governance. It intends to provide incentives to universities and colleges scoring high on these parameters.

Stressing that despite many recent initiatives, the quality of research still remains a matter of concern, Dr. Joshi asked UGC to promote scientific excellence in teaching institutions at a fast pace. While welcoming the exchange of students among countries, he said that if the quality of teaching and research in Indian universities is brought to top global standards, such exchanges of students would be economically beneficial to the country.

Dr. Joshi also expressed concern at the low interest shown by students in basic sciences. Arguing that today's technologies are the outcome of fundamental research undertaken in the past, Dr. Joshi called upon UGC to see how students' interest in basic sciences could be rejuvenated. He informed that the Government has decided to observe 2004 as the year of scientific awareness and a *vigyan rail*, i.e. science exhibition on wheels, is being flagged off by the Prime Minister next week.

In the presentation for the Members of Parliament, it was informed that a large number of private universities have come up in the recent past, especially in Chhattisgarh. Members expressed concern over mushrooming of institutions of learning without requisite infrastructure and faculty. UGC informed the Members that it has recently issued regulations for establishment and maintenance of private universities and the Council has asked the private universities already established to comply with the regulations within three months failing which their degrees would be de-recognised.

Dr. Joshi also emphasised the need for promotion of sports in universities. He also agreed with the members that the working of UGC needs to be reviewed in the present context and informed that an amendment to the UGC Act is being drafted to give more teeth to the Council to enable it to usher in reforms in the higher education sector.

The following members were present from Lok Sabha : S/Shri/ Ms. Sharad Pawar, Savshibhai Makwana, Dr.Beatrix D'Souza, Vinay Kumar Sorake Ananta Nayak and Ramseth Thakur. The members present from Rajya Sabha were: S/Shri/Ms. Savita Sharda, Chandra Kala Pandey, Dr. A.K. Patel, Dr. Kumkum Rai, Dr. Faguni Ram, K.Rahman Khan, Jayantilal S. Barot and Dr. Bimal Jalan.

[previous release] [next release]

Box 4: Page 2 of PIB article dated 10th December 2003 available at http://pib.nic.in/archieve/lreleng/lyr2003/rdec2003/10122003/r1012200313.html

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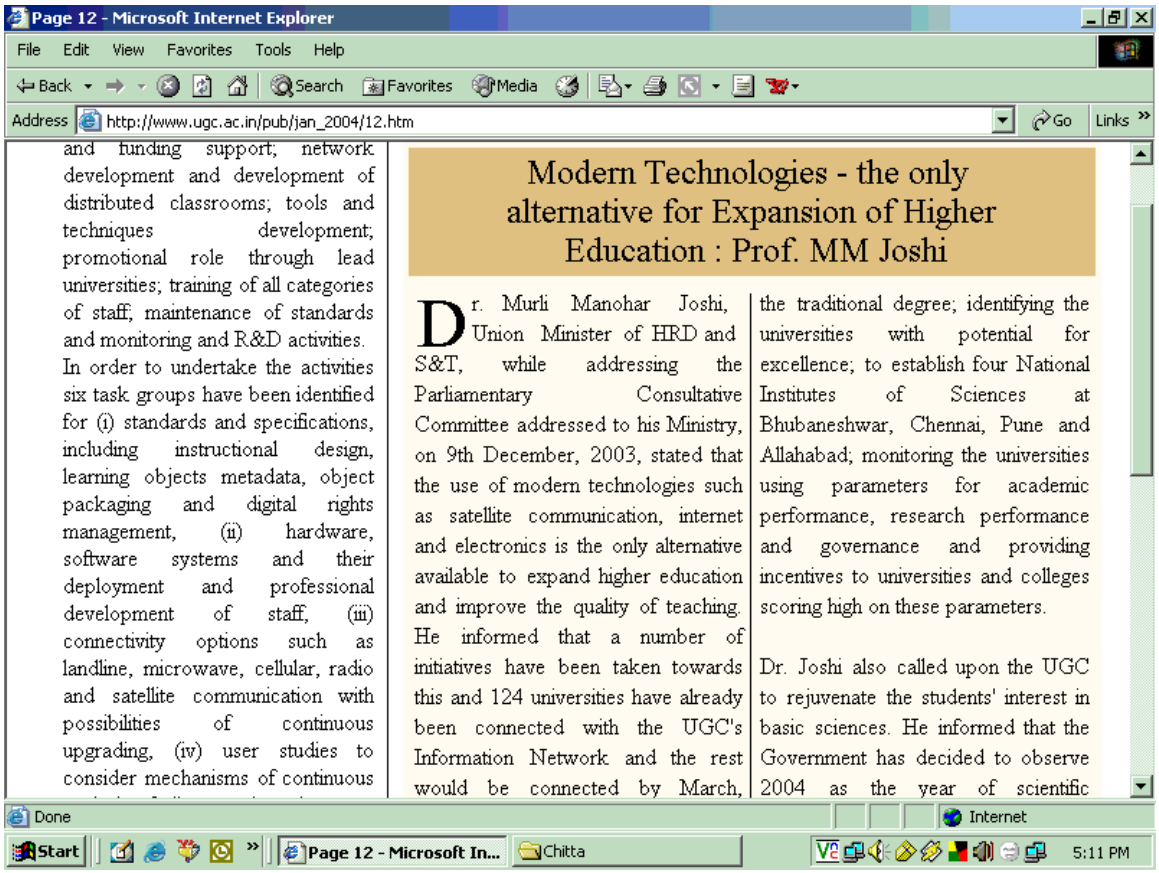
In the Ministry of Human Resource Development and Science & Technology's Press release, dated 10th December, 2003 at http://pib.nic.in/archieve/lreleng/lyr2003/rdec2003/10122003/r1012200313.html and titled INFORMATION COMMUNICATION TECHNOLOGY TO BE USED IN A BIG WAY FOR EXPANSION OF HIGHER EDUCATION: DR JOSHI UNIVERSITIES ASKED TO COMPLY WITH UGC REGULATIONS WITHIN THREE MONTHS CONSULTATIVE COMMITTEE OF HRD MINISTRY MEETS we have the following:

``... The meeting was also informed of the steps initiated to improve the quality of teaching and research. It was informed that at post-graduate level a credit-based, modular approach is being introduced. UGC has recently upgraded monetary support at individual, group and department levels and has opened for colleges such incentive schemes as were earlier confined to universities. While five universities were identified this year, with potential for excellence, viz. Chennai, Hyderabad, Jadhavpur, Pune and Jawaharlal Nehru Open University, five more universities will be identified next year to promote excellence among universities especially in matters of research. Four national-level institutes are also being established at Bhubaneshwar, Chennai, Pune and Allahabad. ..."



Box 5A: Top half of UGC news dated January 2004 and available at http://www.ugc.ac.in/pub/jan_2004/12.htm

Now let us consider the document titled ``Modern Technologies - the only alternative for Expansion of Higher Education" which is at http://www.ugc.ac.in/pub/jan_2004/12.htm . It is about Prof. MM Joshi(the then HRD minister of India)'s address on 9th December 2003 and includes the following:

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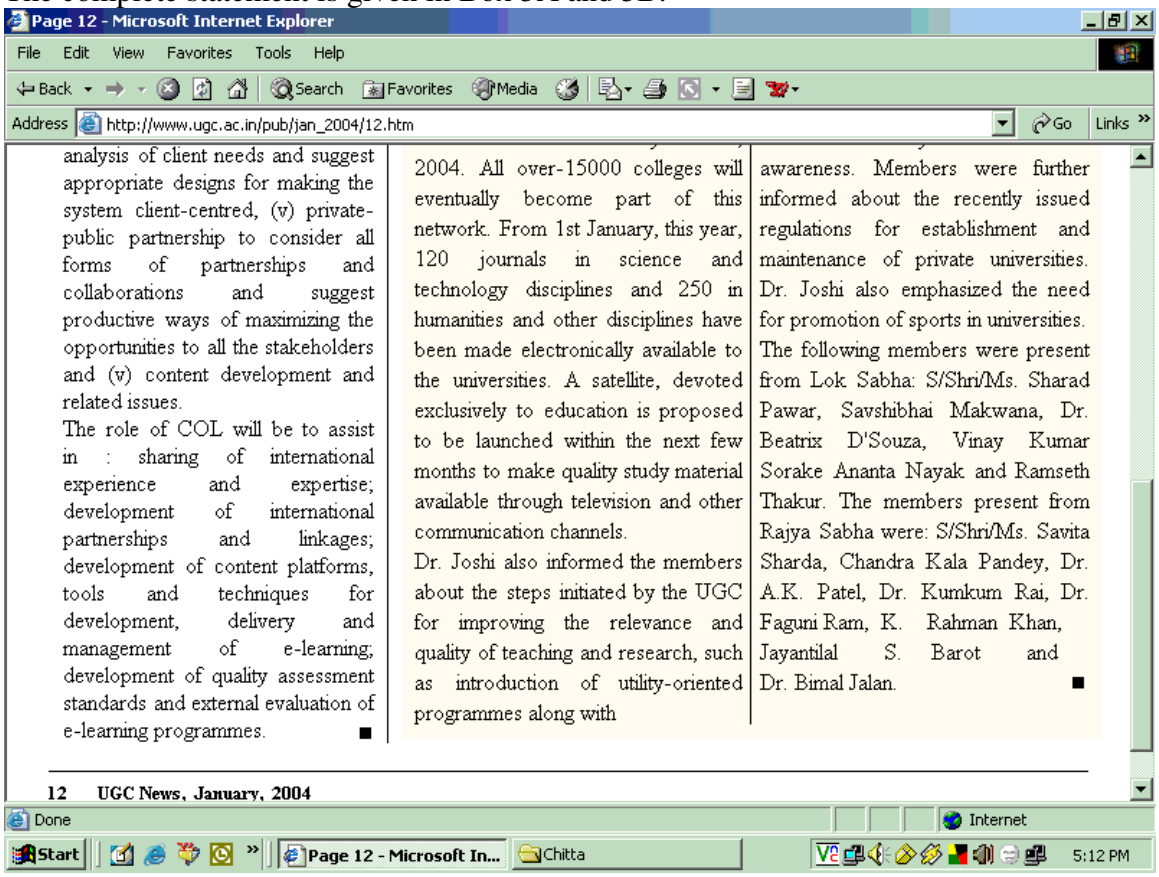
``Dr. Joshi also informed the members about the steps initiated by the UGC for improving the relevance and quality of teaching and research, such as introduction of utility-oriented programmes along with the traditional degree; identifying the universities with potential for excellence; to establish four National Institutes of Sciences at Bhubaneshwar, Chennai, Pune and Allahabad; monitoring the universities using parameters for academic performance, research performance and governance and providing incentives to universities and colleges scoring high on these parameters."

The complete statement is given in Box 5A and 5B.



Box 5B: Bottom half of UGC news dated January 2004 and available at http://www.ugc.ac.in/pub/jan_2004/12.htm

Box 6 in the next page contains the complete text of the URL http://www.ugc.ac.in/new_initiatives/newnis.html under the heading "Setting up new NISc," and is self explanatory. It contains the following text:

India has an opportunity to become the global R & D Hub. For this, the most important intervention would be to selectively and preferentially raise the standards of science education for a small section of bright students taking up science because overall status of science education suffer from severe handicaps. This is essential not only to meet the requirement high quality people in science to man and lead out national lab system and mission oriented agencies that is likely to face crisis in coming years due to large number of senior people retiring, but also to move up the value chain in global R & D services, where India is favourably positioned. This would also provide a new Model of Science Education in the Country. **Therefore, it is proposed that a number of new science institutes (to begin with four) may be set-up at different places in the country to be the Centres of Excellence in Science Education. These institutes would occupy prime position in the area of science education as IITs and IIMs occupy for technology and management education in the global setting today.**

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University Grants Commission

ensuring quality higher education for all

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- Setting up new N I Sc
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Setting up New NISc

National Institutes of Sciences

India has an opportunity to become the global R & D Hub. For this, the most important intervention would be to selectively and preferentially raise the standards of science education for a small section of bright students taking up science because overall status of science education suffer from severe handicaps. This is essential not only to meet the requirement high quality people in science to man and lead out national lab system and mission oriented agencies that is likely to face crisis in coming years due to large number of senior people retiring, but also to move up the value chain in global R & D services, where India is favourably positioned. This would also provide a new Model of Science Education in the Country. Therefore, it is proposed that a number of new science institutes (to begin with four) may be set-up at different places in the country to be the Centres of Excellence in Science Education. These institutes would occupy prime position in the area of science education as IITs and IIMs occupy for technology and management education in the global setting today.

These institutes would be established at Allahabad near Allahabad University, at Chennai near Anna University, at Pune near Pune University and at Bhuvaneshwar near Utkal University. They would primarily offer integrated five-year basic and applied science education programme, leading to a Masters Degree and would have linkages with National research labs science agencies and industry right from their inception. With a view to ensure that these Institutes come up fast, these will be incubated as a part of the existing premier universities. Though, these Institutes would be, for all purposes, autonomous institutions of the Link Universities with full academic, administrative and financial autonomy. Although the link university will award educational and research degrees to the scholars and students of this Institute in the initial phase, these Institutes will have complete and total freedom to lay down their courses, frame suitable course structure, method of teaching and evaluation. This organic link with the Link universities would be very crucial in the initial phases. Established Universities would help to nurture the Institute till they mature to be on their own.

Formal announcement for setting up of these Institutes was made by HE President of India on December 28, 2003 on occasion of the concluding ceremony of the Golden Jubilee of the UGC. Academic, administrative and financial details have been worked out and the proposal is in the approval process.

See Also Detailed Project Report. (pdf)

Any enquiries or suggestions on this initiative may be addressed to In-charge, New Initiatives & FA (UGC), University Grants Commission (UGC), Bahadur Shah, Zafar Marg, New Delhi -110002. You can reach him at pagarwal@ugc.ac.in

http://www.ugc.ac.in/new_initiatives/newnis.html 1/4/2006

Box 6: UGC web page about President's address

These institutes would be established at Allahabad near Allahabad University, at Chennai near Anna University, at Pune near Pune University and at **Bhuvaneshwar near Utkal University**. They would primarily offer integrated five-year basic and applied science education programme, leading to a Masters Degree and would have linkages with National research labs science agencies and industry right from their inception. With a view to ensure that these Institutes come up fast, these will be incubated as a part of the existing premier universities. Though, these Institutes would be, for all purposes, autonomous institutions of the Link Universities with full academic, administrative and financial autonomy. Although the link university will award educational and research degrees to the scholars and students of this Institute in the initial phase, these Institutes will have complete and total freedom to lay down their courses, frame suitable course structure, method of teaching and evaluation. This organic link with the Link universities would be

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Special attention should be paid to the last but one sentence. For further corroboration of the above we now reproduce a part of the President's address on December 28, 2003.

> Present Status of Higher Education System
>
> Number of schemes have been launched by UGC for the development of the Universities and Colleges, provide access of education to all the section of the society equitably, especially for the under privileged and differently abled persons. I understand that UGC has also launched career oriented courses at the academic staff colleges. To meet the challenges in education and in global society, UGC has evolved a scheme of granting potential for excellence status to selected universities. It is good UGC is creating four National Institute of Science at Chennai, Pune, Allahabad and Bhubaneshwar for promoting excellence in Science Education in collaboration with CSIR, DBT, ISRO, DAE, DST, DRDO and Department of Oceanography. Generating the sustained interest in the scientific discipline, will need continuity in provision of employment.

Box 7: A part of the President's address on December 28, 2003

1.4 The Detailed Project Report (DPRs) for the announced NISs dated May 2004

We now move to a document, a detailed project report (DPR) on the National Institute of Sciences, that is dated May 2004. Note that the current UPA government took office on May 22nd 2004. This means that the DPR was active during the last days of the NDA government and thus it implies that even at that time the NDA government was going ahead with its plan of establishing the four National Institutes of Sciences.

The executive summary of this document is as follows:

Executive Summary

In the emerging global scenario, the competitive advantage of a Nation is determined by its scientific capability and technological competence. While Science is universal and freely available, Technology is private, a preserve of one who develops it and has a price tag to it. Its transfer is becoming increasingly difficult and each Country has to make substantial investments to continue to reap its benefits.

India has one of the finest R & D infrastructures in the World. Our National Labs, Research Institutes and Science Agencies have weaved a number of success stories. India has inherent advantage in the R & D sector because of availability of trained manpower at low-costs. This makes the outlook for R & D services in India positive and provides the country new opportunities in this knowledge led sector. Yet there are weaknesses. The gap in research productivity, between India and the developed countries, is continuously widening as per an assessment of R & D capabilities across the nations published in Nature recently. Large number of scientists in our R & D institutions are retiring in the

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coming years. Their replacements are difficult to find. There is a wane in the interest of young people in science for their future careers. Therefore, we are not able to attract bright young people for science education. Although, India has potential to become a Global R & D Hub, but for that, we need to address the challenges that science education today faces, on a priority basis.

Science Education plays a crucial role in advancement of scientific R & D that is essential to move us further on the road to a Knowledge Society. Advantages of low-cost manpower in India, complements the large Talent Pool for the R & D Sector. However, our education system has to continue to feed to this talent pool to give us sustainable competitive advantage. There are several concerns in this regard. Standards of science education are continually declining. Our bright boys and girls are shying away from science after 10+2 stage. Though science and technology have come close to each other and all emerging technologies are all essentially science based, we do not provide composite science and technology education in our institutions. Our competitive advantage in the R & D sector may be lost unless we ensure that the country produces, on a continuing basis an adequate number of competent and motivated young boys and girls who would man and lead our National Labs / Science Agencies, Knowledge-based Industry and provide a composite model of science education that would attract bright students to science.

Task of improving overall science education is stupendous. A uniform approach is neither feasible nor desirable. Interventions required should therefore be contingent to the situation. An important intervention is to selectively raise the standard of science education for a select group of bright students through a new model of science education that is both exciting and rewarding.

For this purpose, it is proposed that a number of new science Institutes need to be set-up at different places in the country to be the Centres of Excellence in Science Education. These Institutes would be designed to occupy, in the near future, prestigious position in the global setting for science education as IITs and IIMs presently occupy for engineering and management education. These Institutes would attract the brightest science students from all over the Country.

Realizing the importance of the above initiative, scheme for support for setting up of National Institutions for Sciences in the Country has been included in the UGC's 10th Plan Outlay. Initially four (4) National Institutes of Sciences shall be established in the proximity of the prestigious universities in the four regions of the Country. These institutes would be established at Allahabad near Allahabad University, at Chennai near Anna University, at Pune near Pune University and at Bhuvaneshwar near Utkal University. They would primarily offer integrated five-year basic and applied science education programme, leading to a Masters Degree and would have linkages with National research labs science agencies and industry right from their inception.

These institutions shall be fully autonomous and have flexible and responsive academic structures. The Institutes would offer a large menu of courses from which students can

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choose depending upon their liking and aptitude. The integration will be sought to be achieved in terms of time and discipline, undergraduate and post graduate education, education and exploration, learning and research, pure and applied sciences. Unique feature of the academic programme of these Institutes would be its internship programme in the last semester spilling over to the adjoining summer vacation.

The Institutes would attract the brightest science students from all over the country. Faculty positions shall also be filled up from amongst the brightest in the Country. Faculty would be either core (tenure) faculty, on joint appointments with R&D institutions in the neighborhood, Visiting Scientists both from India and abroad and Adjunct Faculty from the Industry. In addition, Science Agencies and Industry shall be encouraged to institute Chairs in frontier areas of science through endowments.

Total student population at any time will be around 1000 in various academic programmes with around 200 Research Fellows / Post Doctoral Students in each Institute. Core faculty will be around 100 for each Institute. In addition, at any given point of time there would be around 100 faculty members in the form of joint appointees, visiting and adjunct professors. Non-academic staff will be limited to the barest minimum. All
necessary support services will be provided on contract basis through reputed agencies.

Campus of the Institute shall have lecture room complex, experimental laboratories, R & D laboratories, Information Resource Centre cum Library, Administrative and Residential facilities. Cost-estimates for buildings and services work to Rs. 3705 lakh per Institute over the next three years. Cost of equipment would be Rs. 2600 lakh for the first three years. Ultimately, equipment worth nearly Rs. 7000 lakh may be required. Possibility of getting additional support from the national laboratories, science agencies and industry for setting up labs shall also be explored. Recurring cost is estimated as Rs. 1100 lakh during the next three years. The science agencies of the Govt. and Industry are expected to assist by creating endowment chairs, equipping laboratories and by sponsoring research development projects.

Strategically, these Institutes would be driven by the national research laboratories, science agencies and Industry acting in concert. The Institutes will have full academic autonomy and flexibility and will be structured to quickly respond to changes while being stable, innovative and efficient. The management structure of the Institutes shall provide for autonomy, flexibility, quick decision-making and efficiency in its academic functioning and in the use of resources, with both internal and external accountability. These Institutes shall be set up as Autonomous Societies under the Society Registration Act. Initially, they will be autonomous institutes of the link universities with link universities granting educational and research degrees but the Institutes will be fully free to set up their own courses of studies, system of teaching and evaluation, etc.

Total investment in each Institute would be Rs. 74.5 crores during the Tenth Five Year Plan. Both recurring and nonrecurring expenditure would be supplemented by project funding, consultancy, etc. Eventually, these Institutes would be brought under the

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formula based funding arrangement with outcome focus. As per the operational plan, these Institutes would enroll the first batch of students from July 2005.

These Institutes would not only meet requirement of high quality well trained young boys and girls to man and lead our national laboratory system and mission oriented agencies but also help the Country to move up the value chain in the global R & D sector, where India is favorably positioned. In addition, these Institutes would provide a new model for composite science education that is both exciting and rewarding and help in restoring the interest of the young people in science education and opting for science as a career.

It is strongly believed that discovery itself is the greatest and the most effective form of teaching, and that teaching and learning are viewed as an adventure in discovery. These Institutes will thus lay stress on acquisition of knowledge and on the ability to use that knowledge to solve academic and societal problems. Therefore, these Institutes would not only provide exciting academic programmes, but also promote first-rate R & D in frontier areas of science under one roof. In order to foster a spirit of innovation, these institutes shall forge strong and productive interfaces with national research laboratories, science agencies and industry.

In fact page 14 of the above document says:

Realizing the importance and the urgent need for setting up such National Institutes of Sciences, this proposal has been approved as a part of the UGC's 10th Five Year Plan. Recently, it was recommended that such Centres could be more appropriately called as National Institutes of Sciences. To work out academic, administrative and financial details, a High Powered Committee was set up by the UGC in early 2003. Composition of the committee is given at Appendix I. The commission also gave its in-principle approval to this proposal on April 9, 2004.

1.5 Did the Hon'ble minister mislead or lie in the floor of the parliament?

The above quote raises the question that if what the Hon'ble minister in the last sentences of Box 3 says

The Chairman, UGC thereafter informed the Government vide his letter dated November 26, 2003 that the UGC would like to facilitate setting up these institutions as fully autonomous institutions under the universities in which these institutions are to be established. Even this proposal was never agreed to by the Government.

is true then how come the DPR says that the UGC gave its in-principle approval to this proposal on April 9, 2004. **Is the UGC part of the government or not?**

Thus the Honorable minister's statement in the Lok Sabha is misleading. It is unfortunate that the Honorable minister does not consider an announcement (Box 5) by the earlier HRD minister and by the President of India (Box 6 and Box 7) about establishment of an NIS in Bhubaneswar, and an in-principle approval of UGC on April 9, 2004, a decision of the central government. Moreover, if the NDA government had not decided to set up

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the institutes, why would they have produced a detailed project report (Box 8A-8D) dated May 2004, around the time when their term ended and the UPA government took over. Finally, even if the UGC could not legally establish the proposed NISs, they could have been established under a different parameter, the same one used for the IISERs, which happen to be almost same as the NISs in terms of their aims.

During establishment of institutes of the scale of an NIS or an IISER legal opinions of various kinds are often sought and appropriate changes are made. If one follows the time line, the legal opinion regarding the inappropriateness of using Sections 12 (ccc) or under 12 (j) of the UGC Act was given in October 28, 2003. The Chairman, UGC informed the Government vide his letter dated November 26, 2003 that the UGC would like to facilitate setting up these institutions as fully autonomous institutions under the universities in which these institutions are to be established. In December 2003 the HRD minister and the President announced the setting up of NISs. In May 2004, a DPR about the NISs without any mention of the Sections 12 (ccc) or 12 (j) of the UGC Act and with complete details about the institute was published. This DPR mentions that on April 9 2004, the UGC gave its in principle approval to the NIS proposal. Thus it is clear that:

The explanation given by the Hon'ble minister in the Lok Sabha is misleading and borders on violating the sanctity of presenting the truth in the Parliament: The UGC is part of the government. Its in-principle approval of the NIS proposal is an in-principle approval by the government.

Moreover, under what logic the UPA government decided to set up IISERs in Pune and Kolkata, in states that already have IITs, central universities and autonomous science and technology institutions, and scrap an NIS in Bhubaneswar which is in a state with very little HRD funded institutions and has no institution of national importance (IIT, IIM, ISI, etc.) and no central universities. This is especially puzzling when the planning commission and the PM himself have rued the imbalance in higher educational institutions among various states. Scrapping the NISs and the decision on the IISER locations aggravate the imbalance of HRD ministry's funding for higher education and technical education. A rough calculation shows that at present West Bengal has 10-15 times the funding under the above mentioned heading as Orissa and the ratio will be 15-20 times if the UPA government's decision to punish Orissa (UP and TN) and reward West Bengal (and Maharastra) stands.

This 45 page detailed project report dated May 2004 is available at http://www.ugc.ac.in/new_initiatives/newnis.html and is also included at the end of this document.

Box 8: The reference to the 45 page DPR dated May 2004

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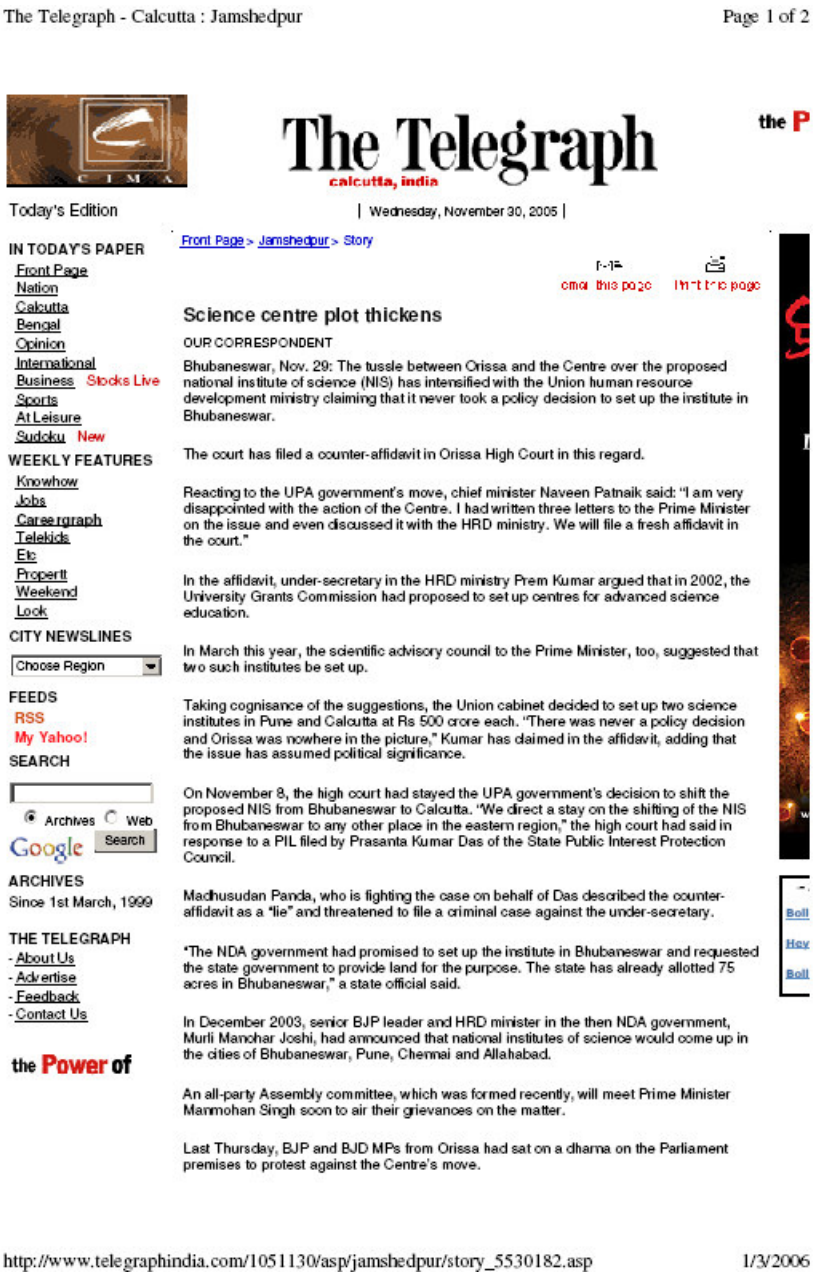

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Science centre plot thickens

OUR CORRESPONDENT

Bhubaneswar, Nov. 29: The tussle between Orissa and the Centre over the proposed national institute of science (NIS) has intensified with the Union human resource development ministry claiming that it never took a policy decision to set up the institute in Bhubaneswar.

The court has filed a counter-affidavit in Orissa High Court in this regard.

Reacting to the UPA government's move, chief minister Naveen Patnaik said: "I am very disappointed with the action of the Centre. I had written three letters to the Prime Minister on the issue and even discussed it with the HRD ministry. We will file a fresh affidavit in the court."

In the affidavit, under-secretary in the HRD ministry Prem Kumar argued that in 2002, the University Grants Commission had proposed to set up centres for advanced science education.

In March this year, the scientific advisory council to the Prime Minister, too, suggested that two such institutes be set up.

Taking cognisance of the suggestions, the Union cabinet decided to set up two science institutes in Pune and Calcutta at Rs 500 crore each. "There was never a policy decision and Orissa was nowhere in the picture," Kumar has claimed in the affidavit, adding that the issue has assumed political significance.

On November 8, the high court had stayed the UPA government's decision to shift the proposed NIS from Bhubaneswar to Calcutta. "We direct a stay on the shifting of the NIS from Bhubaneswar to any other place in the eastern region," the high court had said in response to a PIL filed by Prasanta Kumar Das of the State Public Interest Protection Council.

Madhusudan Panda, who is fighting the case on behalf of Das described the counter-affidavit as a "lie" and threatened to file a criminal case against the under-secretary.

"The NDA government had promised to set up the institute in Bhubaneswar and requested the state government to provide land for the purpose. The state has already allotted 75 acres in Bhubaneswar," a state official said.

In December 2003, senior BJP leader and HRD minister in the then NDA government, Murli Manohar Joshi, had announced that national institutes of science would come up in the cities of Bhubaneswar, Pune, Chennai and Allahabad.

An all-party Assembly committee, which was formed recently, will meet Prime Minister Manmohan Singh soon to air their grievances on the matter.

Last Thursday, BJP and BJD MPs from Orissa had sat on a dharna on the Parliament premises to protest against the Centre's move.

http://www.telegraphindia.com/1051130/asp/jamshedpur/story_5530182.asp 1/3/2006

Box 9: A news item on an affidavit made by under-secy. Kumar in response to a PIL

1.6 Another misleading statement by the Hon'ble minister?

Coming back to the Hon'ble minister's statement in the Lok Sabha as presented in Box 3, it says:

The Scientific Advisory Council to the Prime Minister in its meeting held on 4th March 2005, New Delhi under the Chairmanship of Prof. C.N.R. Rao recommended creation of two new institutes devoted to science education and research and also recommended that they may be located at Pune and Kolkata. It was at the recommendation of the SAC-PM

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that the process of setting up of these two institutes at Pune and Kolkata was initiated by Ministry of Human Resource Development.

The above says that the SAC-PM recommended the locations Pune and Kolkata. This is not consistent with the reported affidavit in Box 9. There it is said that the

… SAC-PM, too suggested that two such institutes be set up. Taking cognizance of the siuggestions, the union cabinet decided to set up two science institutes in Pune and Calcutta at Rs 500 crores each.

The affidavit is consistent with the statements of a few SAC-PM members who have privately mentioned that they did not recommend the locations, they only recommended that two IISERs be set up. Thus the following questions arise:

1. Did the SAC-PM recommend the two sites or was the two sites chosen by their political masters?

2. Did the Hon'ble minister say the truth when he said that the SAC-PM recommended the locations Pune and Kolkata?

1.7 Are NISs and IISERs different?

Now let us move to the topic regarding whether the IISERs are different from the NISs, as some have argued that scrapping NISs and making the IISERs does not imply any shifting of institutes from Bhubaneswar to Kolkata.

First we will compare the NISs with the IISERs, based on the DPR of NISs which is available in the UGC website and various articles about the IISERs as we could not find a DPR for the IISERs. In particular we use the following documents for our comparison.

[1] http://www.ugc.ac.in/new_initiatives/dpr_nis.pdf (NIS)
[2] http://www.rxpgnews.com/medicalnews/healthcare/india/article_2713.shtml (IISER)
[3] http://www.telegraphindia.com/1051029/asp/calcutta/story_5412063.asp (IISER)

1. The motivation behind both institutes is the lack of quality science institutes in the country, where under graduate courses are offered.

NIS: [1] (section 3.2)
……..There is no exclusive institute, excepting Indian Institute of Science at Bangalore for science education. Even **IISc, Bangalore** offers post B.Sc. programmes. As a result, meritorious students who take science at the 10+2 level tend to opt for professional programmes, at the first-degree level……..

IISER : [2] RxPG news

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…….It may be mentioned that at present the only Science Institute in the country is the **Indian Institute of Science, Bangalore** which is fully funded by the Ministry of Human Resource Development. This Institute does not have an under-graduate stream and it caters to only post-graduate education and research……..

2. Both strive to be like IIT and IIM but in the field of sciences.

***NIS:* [1] executive summary page 3**
…..it is proposed that a number of new science Institutes need to be set-up at different places in the country to be the Centres of Excellence in Science Education. These Institutes would be designed to occupy, in the near future, prestigious position in the global setting for science education as **IITs and IIMs** presently occupy for engineering and management education. These Institutes would attract the brightest science students from all over the Country……

IISER: [3] Telegraph, Kolkata, Oct 29
…….The Indian Institute of Science Education and Research, which got the final clearance of the Union cabinet on Thursday, will function as a counterpoint to the **IITs and IIMs**. Expected to be commissioned on a small scale next year, the institute will offer advanced, inter-disciplinary studies in science……

3. Both mention Interdisciplinary studies.

NIS: [1] Mission of NIS (section 5.1)
……The Mission of these National Institutes of Sciences is to be Global Centres of Excellence for education in basic and applied sciences, research in pure and applied sciences and also cutting edge technology development in **interdisciplinary areas** of importance to the country……

And (section 6.1)
The proposed institutes should serve as **interdisciplinary institutions** for education and research in the areas

IISER: [3] Telegraph Oct 29
…Science on revival route- New centre to offer integrated, **inter-disciplinary studies**…

4. Integrated programme after 10+2 level is the target of both institutes:

NIS: [1] section (3.3)
……. We have to catch them young for five year **integrated programme** with a possibility of exit after three years'……

IISER [3] (from Telegraph Oct 29)

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…….After passing Class XII, students can study under an **integrated programme** at the proposed institute……

5. Both institute aim for research based education:

NIS: [1] (section 8.10)
…….so that students, right from the day one, can participate in creative endeavors in research laboratories and study in exciting and creative atmosphere. Creative research atmosphere is an essential part of a good educational institution as discovery itself is the greatest and the most effective form of teaching and teaching and learning are viewed as an adventure in discovery……..

…We have to catch them young for five year **integrated programme** with a possibility of exit after three years'……

IISER
……..'The concept is new, as students will be exposed to research-based education from a very young age…… **[3] (from telegraph Oct 29)**

….to set up high caliber institutes in which science teaching and education will be totally integrated with the state-of-the-art research…**[2] (from RxPg news oct 25)**

6. Both institutes planned for faculty and resource sharing with other institutes

NIS: [1] page.13 point (e)
…….to involve national research laboratories, science agencies and the corporate sector in pure and applied science education…….

[1] Section 9.3
……The Core Faculty shall be supplemented by (a) Joint Appointees holding appointments in the nearby reputed National R & D Institutes and the Link university, (b) Visiting Faculty drawn specifically from reputed research institutions in the country and abroad (c) Adjunct faculty drawn from Industry. Ratio of core faculty to the other faculty is likely to in the ratio of 60:40……..

[1] Section 8.20
……Accordingly, the Institute shall benefit both from UGC InfoNet and the Indian Digital Library in Engineering Science and Technology (INDEST) Consortium right from its inception…….

IISER [3] (from telegraph Oct 29)
……other significant concept of the proposed IISER is to actively forge strong relationship with the existing universities and colleges and network laboratories and

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institutions, in order **to share and complement faculty resources as well as research, library and computational facilities**……..

7. Comparing the faculty and student target numbers between the two institutes.

NIS each [1] (TABLE- 1 & 2)
Total student strength= 1000
Total faculty strength=100 (core faculty)

***IISER each*: [2] RxPG News 14th Nov**
Total student strength= 2000
Total faculty strength=200

The size in terms of faculty and student strength is the main difference that we could find between NISs and IISERs: The NIS proposal was for 4 institutes initially while the IISER proposal is for 2 institutes initially, and later to have five institutes. Thus IISERs are basically twice funded NISs. The difference in budget estimates between them is due to two reasons: 4 NISs initially vs 2 IISERs initially and the budgets of national level institutes have changed drastically from 2002-03 (when the predecessor of NIS was conceived) to 2005 (when IISER was finalized). This can be verified by looking at the IIT budget estimates in 2002-2003 and their budget in 2005.

Besides let us look at Box 11, Box 12, Box 13 and Box 14, where NISs and IISERs used interchangeably. In Box 12 the Chief Minister of West Bengal is reported to have referred to IISER in Kolkata as an NIS. In Box 11 and 13 the newspapers have referred to IISERs and NISs. In Box 14 the article says how Kolkata got into the mix of the earlier proposed four national centers. **From all of them it is evident that there is not much difference between NISs and IISERs except the name and the almost doubling of the sizes.** To claim that the doubling of the targeted size make them different is as ludicrous as saying IIT Kharagpur is no longer IIT Kharagpur if its student population (and budget) doubles. In fact, its budget has more than doubled in the last few years.

Quote from Box 11: Dated March 12-25 2005 says: *"... the SAC-PM has advocated the creation of two new institutions to be called National Institute of Sciences, in Kolkata and Pune.''*

Quote from Box 12: *"It's a piece of good news that we will have the National Institute of Sciences, modeled after Bangalore," Bhattacharjee said.*

Quote from Box 13: *However the UPA government recently decided to set up regional center of National Institute of Sciences at Kolkata fuelling speculation that the proposed Bhubaneswar center would be shifted to Kolkata….*

Quote from Box 14: *The University Grants Commission (UGC) recommended setting up four national centers in Allahbad, Chennai, Pune and Bhubaneswar.*

Calcutta became a contender after chief minister Buddhadeb Bhattacharjee mounted a campaign early this year. Backed by the Prime Minister, Bhattacharjee submitted a detailed proposal to the Centre.

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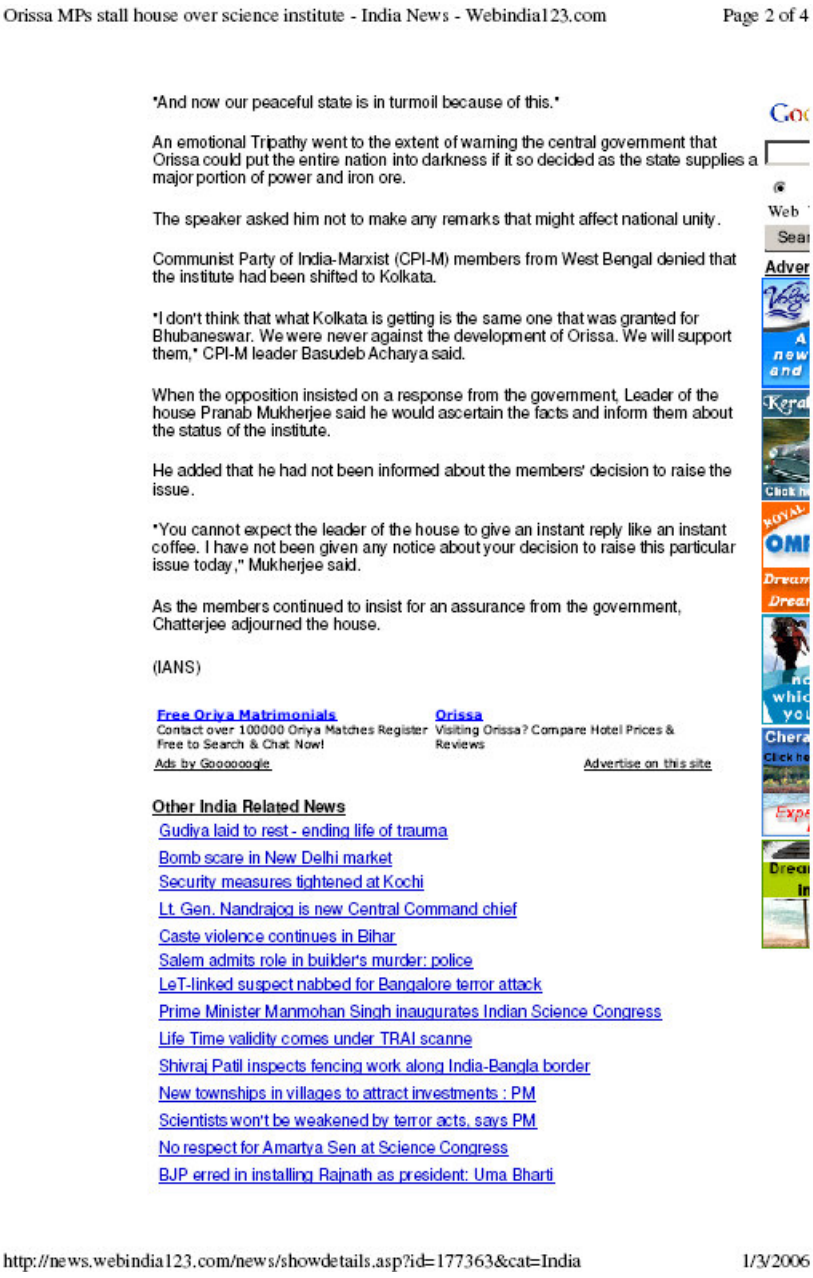
"Delhi agreed to include Calcutta and in March 2005, asked the state government to prepare the groundwork for setting up the institute," education department sources said.

In July 2005, the Planning Commission, after examining the ministry for human resource development proposal, recommended that instead of five cities, only Calcutta and Pune should house the centre.

"Buddhababu's achievement lies in the fact that he could place Calcutta above all other locations," said Satyasadhan Chakraborty, state higher education minister.



Orissa MPs stall house over science institute - India News - Webindia123.com Page 2 of 4

"And now our peaceful state is in turmoil because of this."

An emotional Tripathy went to the extent of warning the central government that Orissa could put the entire nation into darkness if it so decided as the state supplies a major portion of power and iron ore.

The speaker asked him not to make any remarks that might affect national unity.

Communist Party of India-Marxist (CPI-M) members from West Bengal denied that the institute had been shifted to Kolkata.

"I don't think that what Kolkata is getting is the same one that was granted for Bhubaneswar. We were never against the development of Orissa. We will support them," CPI-M leader Basudeb Acharya said.

When the opposition insisted on a response from the government, Leader of the house Pranab Mukherjee said he would ascertain the facts and inform them about the status of the institute.

He added that he had not been informed about the members' decision to raise the issue.

"You cannot expect the leader of the house to give an instant reply like an instant coffee. I have not been given any notice about your decision to raise this particular issue today," Mukherjee said.

As the members continued to insist for an assurance from the government, Chatterjee adjourned the house.

(IANS)

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BJP erred in installing Rajnath as president: Uma Bharti

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Box 10: News item mentioning MP Basudeb Acharya's statement saying the proposed institutes in Kolkata and Bhubaneswar are different

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Thus, in response to Mr. Basudeb Acharya's statement that "I don't think what Kolkata is getting is same as what was granted to Bhubaneswar", we say that just because one changes the name from NIS to IISER the institute does not become different; as a person does not become different when he or she changes the name.

autonomous entity may enable such programmes to be initiated proactively. But the track record of the proactively initiated multi-agency National Superconductivity Programme (NSP) during 1987-1996, funded independently and managed by scientists, does not instil much confidence. Even if an autonomous research funding body can be justified, the level of funding that has been recommended lacks justification.

Indeed, an editorial in *Current Science* in 2002, titled `Science in India: Signs of Stagnation' - the very issue that the proposed foundation seeks to address - stated: "Ironically, the decline of scientific productivity coincides with enhanced inputs into scientific research (during the 1980s and 1990s)... .One possibility is that the universities, which used to contribute substantially to published output, have been declining alarmingly. While many new, and sometimes embarrassingly well-endowed, national institutions have been created since the mid-1970s, the academic science departments in most universities have been rapidly plunging downhill." Post-doctoral research is the stage for fresh research ideas. Unfortunately, observers point out that even in institutions such as the IISc there is decline in the quality of post-doctoral research scholars, a direct consequence of the declining quality among university doctoral students.

So it is well recognised that the issue is not money but the declining human resource quality. And yet, even as the SAC-PM moots an annual research fund of Rs.1,000 crores, nothing has been said about how this money is going to leverage creation of quality researchers. On the contrary, the SAC-PM has advocated the creation of two new institutions to be called the National Institute of Science, in Kolkata and Pune.

The root cause of the problem lies elsewhere. Not only is there declining interest in science among entry-level students, but there is lack of quality faculty as well, the so-called `missing generation'. The problem requires drastic academic and administrative reforms that call for vision and innovative ideas in the corridors of the HRD Ministry and the University Grants Commission, which are sadly lacking.

The Rs.100 crores announced by the Finance Minister for the IISc also defies logic. This one-time grant cannot really achieve what he desires. The IISc can at best buy some expensive equipment or build some laboratories and other infrastructure with the money. As an the IISc scientist put it: "If money could get you a Harvard or Princeton, Dubai and Saudi Arabia would have a proliferation of such universities. What is needed are people." Indeed, if not already, at least a few years down the line, even the IISc would face shortage of quality students and faculty. Chidambaram would have done better by giving it to some select universities.

Indeed, even the sum of Rs.1,000 crores, proposed for the NSERF, could be better utilised by channelising it into the universities well known for science in the 1950s and 1960s, such as the ones in Kolkata, Delhi,

Box 11: A Frontline article dated March 12-25 2005 that refers to the institutes in Pune and Kolkata as National Institute of Sciences.

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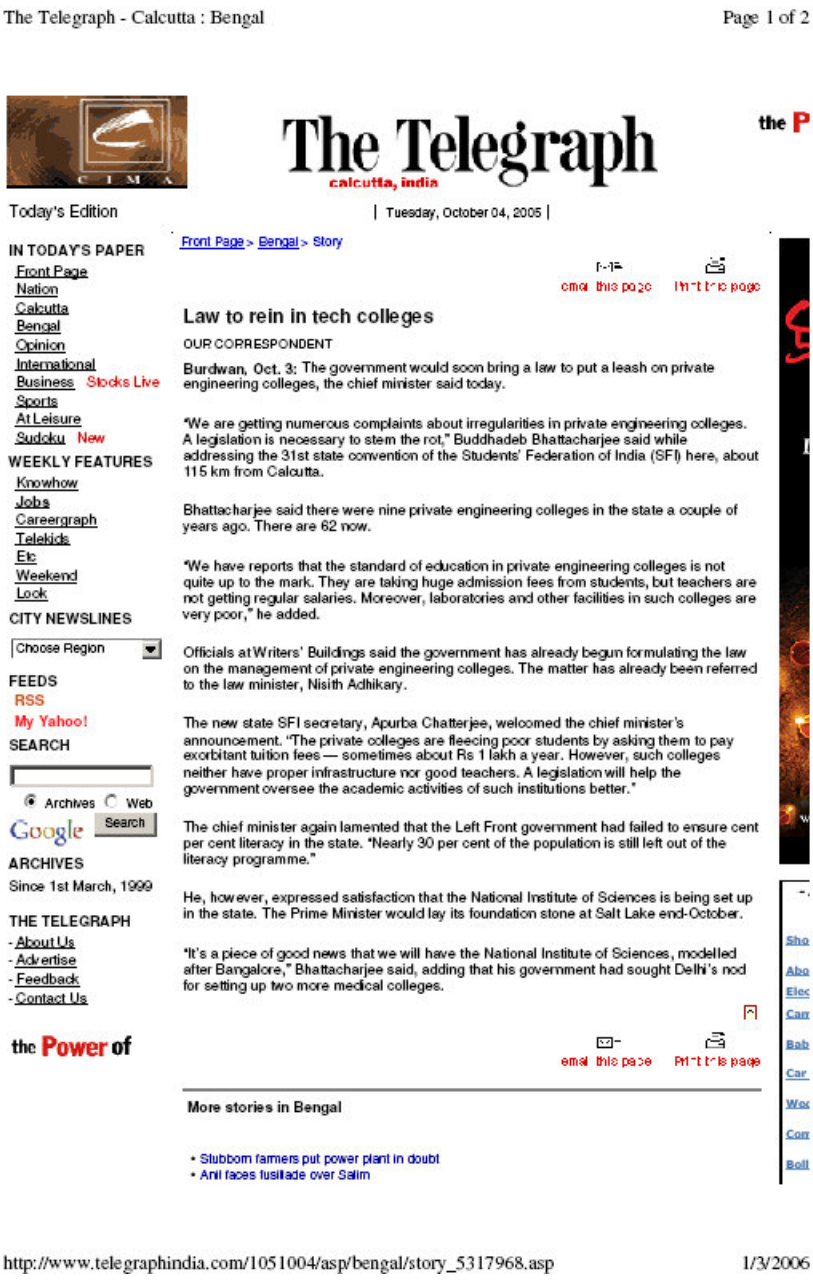

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Law to rein in tech colleges

OUR CORRESPONDENT

Burdwan, Oct. 3: The government would soon bring a law to put a leash on private engineering colleges, the chief minister said today.

"We are getting numerous complaints about irregularities in private engineering colleges. A legislation is necessary to stem the rot," Buddhadeb Bhattacharjee said while addressing the 31st state convention of the Students' Federation of India (SFI) here, about 115 km from Calcutta.

Bhattacharjee said there were nine private engineering colleges in the state a couple of years ago. There are 62 now.

"We have reports that the standard of education in private engineering colleges is not quite up to the mark. They are taking huge admission fees from students, but teachers are not getting regular salaries. Moreover, laboratories and other facilities in such colleges are very poor," he added.

Officials at Writers' Buildings said the government has already begun formulating the law on the management of private engineering colleges. The matter has already been referred to the law minister, Nisith Adhikary.

The new state SFI secretary, Apurba Chatterjee, welcomed the chief minister's announcement. "The private colleges are fleecing poor students by asking them to pay exorbitant tuition fees — sometimes about Rs 1 lakh a year. However, such colleges neither have proper infrastructure nor good teachers. A legislation will help the government oversee the academic activities of such institutions better."

The chief minister again lamented that the Left Front government had failed to ensure cent per cent literacy in the state. "Nearly 30 per cent of the population is still left out of the literacy programme."

He, however, expressed satisfaction that the National Institute of Sciences is being set up in the state. The Prime Minister would lay its foundation stone at Salt Lake end-October.

"It's a piece of good news that we will have the National Institute of Sciences, modelled after Bangalore," Bhattacharjee said, adding that his government had sought Delhi's nod for setting up two more medical colleges.

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Box 12: An article from Telegraph dated October 4, 2005, where the CM of West Bengal refers to the institute in Kolkata as National Institute of Sciences.

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NRIs FREE and FAST money transfers to India

[Orissa Plus]

Central university in KBK demanded

Statesman News Service

BHUBANESWAR, Oct. 24. — Chief minister Mr Naveen Patnaik today urged the Centre to accord approval for a central university in the undivided Koraput-Bolangir-Kalahandi (KBK) districts, besides expediting setting up the proposed Regional Centre of Studies in Integrated Sciences at Bhubaneswar.

These requests were made by the Chief minister during his meeting with the Union Human Resources Development minister Mr Arjun Singh at New Delhi today. Mr Singh sought a formal proposal from the state government for the establishment of a central university in KBK region while appreciating the rationale behind the idea, said an official release.

The Union minister also assured to review the matter relating to the establishment of the Regional Centre of Studies in Integrated Sciences under the National Institute of Science framework. It may be noted that the then NDA government had announced establishment of regional centres of National Institute of Sciences at six places across the country including Bhubaneswar.

However, the UPA government has recently decided to set up a regional centre of NIS at Kolkata, fuelling speculations that the proposed Bhubaneswar centre would be shifted to Kolkata.

Discussion on this Orissa Plus item

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http://www.thestatesman.net/page.news.php?clid=9&theme=&usrsess=1&id=94013 10/24/2005

Box 13: An article in the Statesman dated 24th Oct 2005, in which the institute in Kolkata is referred to as NIS.

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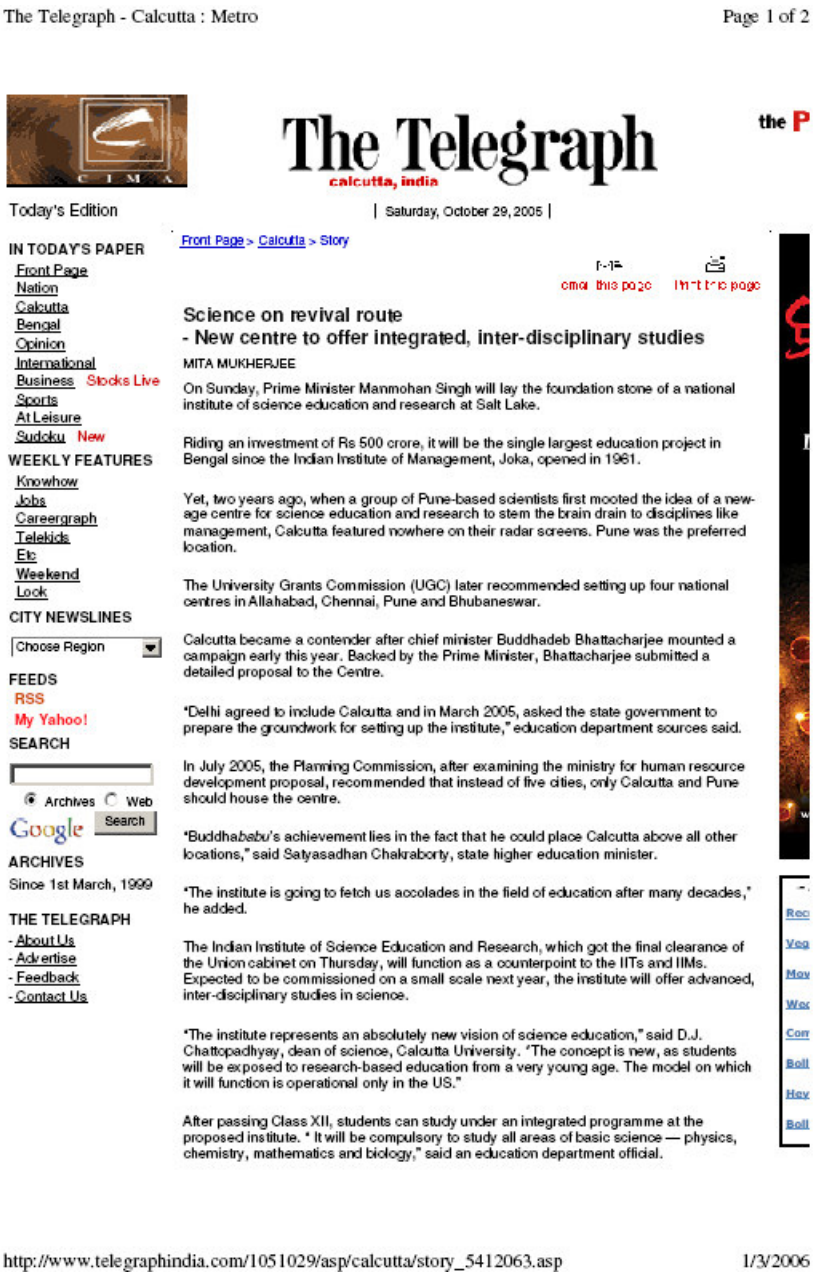

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Science on revival route
- New centre to offer integrated, inter-disciplinary studies

MITA MUKHERJEE

On Sunday, Prime Minister Manmohan Singh will lay the foundation stone of a national institute of science education and research at Salt Lake.

Riding an investment of Rs 500 crore, it will be the single largest education project in Bengal since the Indian Institute of Management, Joka, opened in 1961.

Yet, two years ago, when a group of Pune-based scientists first mooted the idea of a new-age centre for science education and research to stem the brain drain to disciplines like management, Calcutta featured nowhere on their radar screens. Pune was the preferred location.

The University Grants Commission (UGC) later recommended setting up four national centres in Allahabad, Chennai, Pune and Bhubaneswar.

Calcutta became a contender after chief minister Buddhadeb Bhattacharjee mounted a campaign early this year. Backed by the Prime Minister, Bhattacharjee submitted a detailed proposal to the Centre.

"Delhi agreed to include Calcutta and in March 2005, asked the state government to prepare the groundwork for setting up the institute," education department sources said.

In July 2005, the Planning Commission, after examining the ministry for human resource development proposal, recommended that instead of five cities, only Calcutta and Pune should house the centre.

"Buddha*babu*'s achievement lies in the fact that he could place Calcutta above all other locations," said Satyasadhan Chakraborty, state higher education minister.

"The institute is going to fetch us accolades in the field of education after many decades," he added.

The Indian Institute of Science Education and Research, which got the final clearance of the Union cabinet on Thursday, will function as a counterpoint to the IITs and IIMs. Expected to be commissioned on a small scale next year, the institute will offer advanced, inter-disciplinary studies in science.

"The institute represents an absolutely new vision of science education," said D.J. Chattopadhyay, dean of science, Calcutta University. "The concept is new, as students will be exposed to research-based education from a very young age. The model on which it will function is operational only in the US."

After passing Class XII, students can study under an integrated programme at the proposed institute. " It will be compulsory to study all areas of basic science — physics, chemistry, mathematics and biology," said an education department official.

http://www.telegraphindia.com/1051029/asp/calcutta/story_5412063.asp 1/3/2006

Box 14: An article in the Telegraph which describes how Kolkata got into the mix and rose to become a contender.

1.8 Subterfuge adopted to shift an announced for NIS from Bhubaneswar to Kolkata?

Finally, as in case of the 4 NISs, although the current decision is for 2 IISERs, as stated below the plan is to expand it to 5 IISERs. The following quote is from an article in the Hindu http://www.hindu.com/2005/11/11/stories/2005111104331400.htm
given in Box 15.

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……..The country's growth was a corollary to scientific advancements, and various steps were being taken to harness the potential. Foundation for two Institutes for Science Education and Research (ISER) in Pune and Kolkata at a cost of Rs. 500 crores each will be laid in 2006, and three more ISERs will be started in the north, south and central parts of the country in the coming years…….

This also means that if the regional distribution pattern mentioned above is followed then there will not be any IISERs in Bhubaneswar. Thus what we have is NIS is renamed as IISERs and while one of the NISs was to be established in Bhubaneswar, none of the IISERs would be established in Bhubaneswar. **Thus it is not off the mark to say that a subterfuge of renaming of NIS to IISER was adopted to shift an announced for NIS from Bhubaneswar to Kolkata.**

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control, and monitored by the scientific community on the lines of the National Science Fund of the United States.

It would revamp the research and funding system in the universities, work towards enhancing their basic research in science and technology, Prof. Rao told presspersons here.

The country's growth was a corollary to scientific advancements, and various steps were being taken to harness the potential. Foundation for two Institutes for Science Education and Research (ISER) in Pune and Kolkata at a cost of Rs. 500 crores each will be laid in 2006, and three more ISERs will be started in the north, south and central parts of the country in the coming years.

To expand the science base, more than 200 students will be admitted to each of the two IITs (Kanpur and Madras) in integrated science courses from 2006, and such admissions to other IITs would be made in the following years.

Prof. Rao was hopeful that the newly instituted Ramanujam Fellowship, having a value of Rs. 50,000 a month and an additional contingency amount of Rs. 5,00,000 a year for a five-year period, and the J.C. Bose Fellowship, recognising active and performing scientists and engineers with a fellowship of Rs. 20,000 a month in addition to their regular income during a five-year term, will attract the best scientific talent to boost research in the country.

The Taskforce for Women in Science, established by the Ministry of Science and Technology, would seek to provide flexible working hours for women scientists to invest their knowledge.

A sum of Rs. 50 crores has been spent over the recent past under the country's Nano initiatives, for research through the 8 Nanoscience units, and 6 centres for Nano technology.

The idea for establishing Neutrino Laboratory under the Nilgiri Hills has been cleared and the report for the Rs. 400 crore project was ready, Prof. Rao said.

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Box 15: An article in the Hindu which mentions SAC-PM Chair's statement on plan for 3 more IISERs in north south and central region and beyond Pune and Kolkata

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Chapter 2: Does Bhubaneswar deserve an NIS?

In this chapter we argue that Bhubaneswar deserves an NIS, not just to achieve regional balance in national institutes, or for a local need, but also because Bhubaneswar has shown its ability to support such a world class institute.

2.1 A case for Bhubaneswar -- Why an NIS or IISER should be established in Bhubaneswar

India is economically shining as a whole. But it is falling behind in science and technology, especially in research. According to [1], the best Indian university, IISc Bangalore is grouped at 300-400 internationally. The next best, IIT Kharagpur is grouped 400-500 internationally. Within Asia they are grouped 37-65 and 66-93respectively. For a long time India had 5 IITs and one IISc. Since then even though one new IIT has been established at Guwahati and University of Roorkee has been made to an IIT, with large population increase and with India falling behind in Science, there is a need for more IISc (and possibly even IIT) like institutions. Moreover with India's economy doing well now, India can financially afford to create several more IISc like institutions. The Indian government, scientists and academicians all are aware of the above and thus there are plans to create more IISc like institutions. In this context on 9th December 2003, the then HRD minister Professor M. M. Joshi had announced [2,3] that UGC has established steps to initiate four National Institute of Sciences (NIS) at Bhubaneshwar, Chennai,Pune and Allahabad. Recently [4], Prime minister Dr. Manmohan Singh announced the setting up of two Indian Institute of Science Education and Research (IISER), which are the same in all but name to the NIS, at Pune and Kolkata, respectively.

Since it is a consensus that India needs more high quality institutions like or better than the existing IISc, one of the important questions that arises is where these new institutions should be established. Two main principles, with some possible tension among them, need to be followed in the determination of locations.

1. For all around growth of India the institutions need to be distributed across the country. (In this regard recently PM Dr. Singh, in [5], addressed the regional imbalance issue in terms of educational institutions and said "I trust our government as well the state governments will take note of these findings and evolve policies to remedy these regional imbalances.")

2. The institutions need to be located in places where it will have the largest impact and where it will benefit India as a whole the most. (i.e., the biggest bang for the buck.)

Based on the marginal utility principle where the marginal satisfaction of eating a second rosogolla is much less than eating the first rosogolla, it is clear that biggest bang for buck of a new NIS/IISc will be in a location or state which does not have such an institution yet. But among these places the following criteria becomes important:

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3. The institution should be located in a place that can nurture it locally, that has the promise to nurture it locally and that benefits the local population also, so that the local population has vested interest in supporting such an institution.

Finally, because of the urgency of establishing such institutions, we need to consider the issue of:

4. Whether the location and the local and state government can help in the quick establishment of such an institution?

We will argue here that Bhubaneswar, Orissa satisfies all the above criteria, and if they are all taken into account it comes out in the top among all cities in India.

(1) Currently Orissa does not have a central university [6], an institution of national importance (such as IITs, ISI, etc.) [7], a reputed centrally funded institute such as an IIM, or a centrally funded IIIT or IIITM. It also does not have an autonomous science and technology institution [8] of the department of science and technology.

(2 and 3) We will address the issues 2 and 3 through two points.
(a) Orissa government and the people of Orissa have helped create several top notch institutions in Bhubaneswar, Orissa which do world class research; and (b) An IISc/NIS in Bhubaneswar will tremendously benefit the local population, thus they will have a vested interest in nurturing it.

(a) Orissa government and the people of Orissa have helped create several top notch institutions in Bhubaneswar, Orissa. Notable among them are the Institute of Physics, the Xaviers Institute of Management and the Institute of Life Sciences, all in Bhubaneswar. We now describe these institutes using phrases from their web pages.

The Institute Of Physics, Bhubaneswar is an autonomous research institution funded jointly by the Department Of Atomic Energy (DAE) and the Government of Orissa. The Institute was officially established in 1972 by the Government of Orissa [9]. Research at Institute of Physics is top notch by international standards. Its alumni [10] have gone on to many good institutions all over the world. Many of its faculty and students have preferred it over an IIT. Its annual report [11], publication list [12], faculty vita, and alumni biography [10] are testament to the quality of this institution in Bhubaneswar.

The Xaviers Institute of Management [13] owes its origin to a Social Contract between the Government of Orissa and the OJS (Orissa Jesuit Society). It was established in 1987, and ranks among the top business schools in India [14]. This year's Outlook magazine ranks it 8 in the country among various business schools, including the IIMs. It has faculty with Ph.Ds from top business schools such as University of Massachusetts, and Stern School of Business, NYU, New York. It also has a fellows program which is equivalent to Ph.Ds.

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The Institute of Life Sciences, an initiative by the Govt. of Orissa, Department of Science and Technology started a decade back. On August 2, 2002 it came under the administrative and financial control of Department of Biotechnology, Government of India. It was dedicated to the nation on July 15, 2003 by the Prime Minister ofIndia with a declaration to develop it as "National Centre of Excellence" engaged in research on various areas of modern biology. The researchers of this institute publish often in international journals [15].

To reiterate, the above three institutions were created by the foresightedness of the Government of Orissa, and are now premier research institutions, albeit with limited focus, but doing world class research and teaching. Besides these three there are several other research institutions in and around Bhubaneswar that do very good and useful research. This includes the Regional Research laboratory (RRL) [17] in Bhubaneswar, the Regional medical research center (RMRC) [18] (see page 123 – 125) in Bhubaneswar, the Central Rice research institute (CRRI) [19] in Cuttack , the central institute of fresh water aquaculture (CIFA) [20,21] in Bhubaneswar, and the national institute of rehabilitation training and research[22] in Olatpur. In additions two fledgling institutions, the Institute of Material sciences [23] and the Institute of mathematics and application [24] have been established by the Government of Orissa and are in their beginning stages.

The above illustrates how Bhubaneswar and Orissa have established and nurtured top notch research and educational institutions. Thus one can extrapolate and conclude that with high probability an NIS/IISER in Bhubaneswar will be very successful and well nurtured. Nevertheless, as we mentioned earlier, it is important that an institution like NIS/IISER should have some significant benefit to the local population, lest the local population feel alienated by it.

(b) In the greater Bhubaneswar area (which includes Puri and Cuttack) there are now 2 state funded and 19 private engineering colleges. An NIS/IISER in Bhubaneswar will benefit these institutions as a place where the faculty of the local colleges can pursue higher education (without moving away and thus negatively affecting their parent institutions), the local colleges can recruit high quality faculty from among the NIS/IISER graduates, and the students of the local colleges can pursue summer research and training at the NIS/IISER. Besides Bhubaneswar and its vicinity have a large range of industries with many more industries set to come. This includes metal based industries such as NALCO and the Kalinganagar complex to software companies such as Infosys and Satyam, and planned operations of TCS, and Wipro. There will be significant synergy between these industries and the proposed NIS/IISER in terms of joint research, students of NIS/IISER pursuing practical training at the industries, and employees of the industries pursuing higher degree at the NIS/IISER. In addition Orissa has two STPs (at Bhubaneswar, Rourkela), and one more STP in Berhampur in the making, which will provide opportunities to the graduates of the NIS/IISER to incubate start-up companies. Thus, with great benefit potential of an NIS/IISER to the local population and the benefit

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to the NIS/IISER from existing infrastructure, Bhubaneswar is an ideal place for establishing an NIS/IISER.

Now moving on to the final point, because of the urgency an NIS/IISER can be immediately started in Bhubaneswar by using some of its existing infrastructure.

(4) In particular, the Institute of Physics and the Institute of Life Sciences can be the starting point of an NIS/IISER. The picturesque Institute of Physics campus can be used to start an NIS/IISER right away. As mentioned earlier, Bhubaneswar also has the beginning of an Institute of Material Science, and an Institute of Mathematics and Applications, which may be folded into an NIS/IISER. If an NIS/IISER is started in Bhubaneswar, the Institute of Physics and Institute of Life Sciences faculty can form the initial core faculty and teach the first classes until the institute hires additional faculty. The researchers at Regional medical research center and Regional research laboratory can also chip in.

Conclusion: In summary, Bhubaneswar is the best in the country with respect to the various criteria necessary for the next location of an NIS/IISER. It is clear that for that reason, in December 2003, the then HRD minister Professor M. M. Joshi had announced [2,3] that UGC has established steps to initiate one of the four National Institute of Sciences at Bhubaneswar. Unfortunately, for some reason the recent announcements for IISER did not include Bhubaneswar. Although this injustice needs to be corrected for many other reasons, by its own merit, as we elaborated in this article, Bhubaneswar, Orissa deserves an NIS/IISER immediately and we sincerely hope the central government will agree with us and pursue this at the earliest.

Postscript: All or most of the above arguments also hold for establishing a new IIT in Orissa. But since that does not seem to be in cards at this time, we do not elaborate on it. Also, in our arguments we have focused on the key issues and do not mention many other synergies such as the existence of other fine universities (Utkal University, and Orissa University of Agriculture and Technology) in the Bhubaneswar area.

[1] http://ed.sjtu.edu.cn/ranking.htm
[2]. http://www.ugc.ac.in/pub/jan_2004/12.htm
[3]. http://pib.nic.in/archieve/lreleng/lyr2003/rdec2003/10122003/r1012200313.html
[4]. http://pib.nic.in/release/release.asp?relid=12305
[5]. http://in.rediff.com/news/2005/sep/28pm1.htm
[6]. List of central Universities
http://www.ugc.ac.in/inside/utype.php?st=Central%20University
http://www.education.nic.in/htmlweb/autbod.htm (NONE in Orissa)
[7]. List of Institute of National Importance
http://www.ugc.ac.in/inside/utype.php?st=Institute%20of%20National%20Importance
(NONE in Orissa)
[8]. List of autonomous Science and Technology Institutions
http://dst.gov.in/autonomous/autonomous_index.htm
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[9] http://www.iopb.res.in/overview.php
[10] http://www.iopb.res.in/~alumni/members/members.html
[11] http://www.iopb.res.in/~library/ar_02_03/
[12] http://www.iopb.res.in/~library/ar_02_03/Publications.pdf
[13] http://www.ximb.ac.in/about/
[14] http://www.orissalinks.com/#ximb
[15] http://www.ilsc.org/
[16] http://www.ilsc.org/publication.htm
[17] http://www.rrlbhu.res.in/publication.html
[18] http://www.icmr.nic.in/000517/ann2002.pdf
[19] http://crri.nic.in/accomplishments.htm
[20] http://www.stpbh.soft.net/cifa/list_of_extfundedproject.doc
[21] http://www.stpbh.soft.net/cifa/insti_based.doc
[22] http://nirtar.nic.in/
[23] http://orissagov.nic.in/sciencetechnology/ims.htm
[24] http://orissagov.nic.in/sciencetechnology/ima.htm

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Chapter 3: HRD lopsidedness: Orissa ignored, neglected, and shortchanged by the HRD ministry over the years

3.1 State wise distribution of mega centrally funded HRD institutions

The following table shows the distribution of the various central universities, institutions of national importance such as IITs, IIMs, ISI, and IISc, and other national institutes such as IIITs, across the various states and union territories in India.

Sl. No.	State/Union Territory	National Educational Institute
1 S	Andhra Pradesh	University of Hyderabad (CU), Maulana Azad National Urdu University (CU)
2 S	Arunachal Pradesh	North Eastern Regional Institute of Science*
3 S	Assam	Assam University (CU), Tezpur University (CU), IIT Guwahati
4 S	Bihar	---
5 S	Chattisgarh	---
6 S	Delhi	University of Delhi (CU), IGNOU (CU), Jamia Islamia (CU), JNU (CU), AIIMS, IIT Delhi
7 S	Goa	---
8 S	Gujarat	IIM Ahmedabad
9 S	Haryana	---
10 S	Himachal Pradesh	Indian Institute of Advanced Studies*
11 S	Jammu & Kashmir	---
12 S	Jharkhand	Indian School of Mines, Dhanbad
13 S	Karnataka	IISc, IIM Bangalore
14 S	Kerala	IIM, Kozhikode, Sree Vhitra Tirunal Institute for Medical Sciences and Technology*
15 S	Madhya Pradesh	IIM, IIITM Gwalior
16 S	Maharastra	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (CU), IIT Mumbai, AFMC Pune.
17 S	Manipur	Central Agricultural University (CU)
18 S	Meghalaya	North Eastern Hill University (CU)
19 S	Mizoram	Mizoram University (CU)
20 S	Nagaland	Nagaland University (CU)
21 S	Orissa	---
22 S	Punjab	National Institute of Pharmaceutical Education and Research*
23 S	Rajasthan	---
24 S	Sikkim	---
25 S	Tamil Nadu	IIT Chennai
26 S	Tripura	---
27 S	Uttranchal	IIT Roorkee
28 S	Uttar Pradesh	Aligarh Muslim University (CU), BHU (CU), Babasaheb Bhimarao Ambedkar University (CU), IIT Kanpur, IIM Lucknow, IIIT Allahbad

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29 [S]	West Bengal	IIT Kolkata, IIM Kolkata, ISI Kolkata, Viswa Bharati (CU)
30[u]	Andaman & Nicobar	--
31 [u]	Chandigarh	Postgraduate Institute of Medical Education & Research *
32 [u]	Dadra and Nagar Haveli	--
33 [u]	Daman and Diu	--
34 [u]	Lakshadweep	--
35 [u]	Pondicherry	Pondicherry University (CU)

Box 16: State Wise Distribution of Central University (CU), IIT, IIM, IIIT, and IIITM across India

*Other institute, [s] states, [u] union territory

	Zone	States which have IITs/IISc/IIM etc	States that are ignored
1	Northern zone	Uttar Pradesh	Jammu & Kashmir, Haryana, Himachal Pradesh, and Punjab
2	Southern zone	Equal distribution	
3	Eastern zone	West Bengal	**Orissa**, Bihar, Sikkim,
4	Western zone	Maharashtra	Rajasthan, Goa
5	Central zone	Madhya Pradesh	Chhatisgarh
6	North east zone	Assam	Tripura

Box 17: Zone wise listing of states that are ignored and states that are blessed

The data in the Box 16 shows that among the sizable states Orissa, Haryana, Himachal Pradesh, Punjab, Rajasthan, Jammu & Kashmir, Bihar, Chhatisgarh do not have a single national educational institute. It also shows that the states in the south have a more balanced distribution of national educational institutes among themselves compared to their counter part states in North, West and East India. Thus in the last 50 years there has not been an equitable distribution of these institutes in the Eastern, Western and Northern zones of India as opposed to the Southern zone of India. Since independence West Bengal, Maharastra and Uttar Pradesh seem to be getting much more than the average number of national institutes, while states like Orissa and Rajasthan have been completely ignored.

3.2 A rough quantitative analysis: comparing HRD funding between WB & Orissa

Often a quantitative analysis makes comparison easier and makes disparity between regions or states with respect to a particular aspect more easily noticeable. For example, one can easily compare two states by the total length of national highways, average length of national highways per area, or average length of national highways per capita and thus easily get an idea of any disparity. In the case of HRD funding, comparing which states have institutions like IITs and may not make the disparity easily noticeable as there are only 7 IITs and hence not all states can have an IIT. Thus we try to add up the HRD funding of the various national institutes and make the comparison. Since we were not able to get the latest data for all the institutes we used the following sources and make

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a rough comparison between the HRD spending on fully centrally funded institutes in West Bengal and Orissa.

[A] http://www.education.nic.in/Annualreport2004-05/Uhe.pdf
[B] http://www.baral.us/orissa/pdf/hrd-planning-commission.pdf
[C] http://www.education.nic.in/Annualreport2004-05/Techedu.pdf
[D] http://mospi.nic.in/rti_manual11_2005.pdf

West Bengal has: IIT Kharagpur, IIM Kolkata, Vishwa Bharati Central University, ISI Kolkata, and NIT Durgapur.

To compute the total spending on these institutes, we use the Box [B] for estimating the budget of IIT Kharagpur, IIM Kolkata and NIT Durgapur. For the central university we use [A], and for ISI Kolkata we use [D]. For ISI Kolkata we take a much lower number as the numbers in [B] are five years old and the numbers in [D] are for this year.

Thus the total HRD spending in West Bengal five years back was approximately 36.51 crores + 10 crores + 43.3 crores appx + 10 crores appx + 7.7 crores = 98.51 crores

A similar calculation for Orissa, which has only NIT Rourkela, shows the HRD spending to be 7.7 crores.

Thus the HRD ministry spends approximately 13 times more per year on institutions in West Bengal than on Orissa. After taking into account the population, the HRD ministry spends approximately 6-7 times more per capita on West Bengal residents than on Orissa residents. One can imagine how worse this will become if an NIS is not established in Bhubaneswar or an IISER is established in Kolkata or both. This ratio was infinite six years back when NITs were called RECs. At that time the HRD's funding on Orissa on fully funded central institutions was ZERO.

One can fathom the magnitude of the disparity by putting it in terms of roads. It would then mean, six years back Orissa did not have any National highways while states like West Bengal had plenty and now the percapita highway in West Bengal would be 7 times more than in Orissa. This would ofcourse be not acceptable and indeed the national highway numbers of Orissa and West Bengal are comparable. But when it comes to HRD, the most important resource of a state, West Bengal has 6-7 times the HRD national highways (i..e, national institutes) than Orissa. HOW IS THIS ACCEPTABLE TO INDIA? HOW DARE THE CENTRAL GOVERNMENT PLANS TO MAKE IT WORSE? HOW COME THE REST OF INDIA IS NOT OUTRAGED?

Footnotes: We realize that the above data is a bit outdated and incomplete. For example, according to a source with close knowledge of NIT RKL and IIT KGP budget, the current funding of NIT Rourkela is about Rs 15 crore annually on non plan (revenue expenditure) and 10 crore on plan (construction, special projects), and the current funding of IIT Kharagpur is some thing like Rs 80 crore under nonplan and Rs 30 crore under plan grant. Although the exact number changes the ratio between the funding level of an IIT and NIT remains same. Hence our current calculation with old data is a good approximation even for the present situation.

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Similarly, according to http://mospi.nic.in/rti_manual11_2005.pdf the current funding (in 2005) of ISI is 40 crores. However, ISI is not funded by the HRD ministry. We have taken it into our calculation as it is an institute of national importance.

We have requested for and are waiting for the exact data for all the HRD institutes. Nevertheless, the above analysis gives us a rough idea of the magnitude of the disparity and imbalance in the HRD ministry's funding with respect to its technical and higher education institutions.

infrastructural facilities which are much below the national average. The proposed scheme will support facilities of technical education by modernizing laboratories, libraries and providing digital resources.

Technical Education

Table

(Rs. crore)

A. Continuing Schemes

Sl. No.	Name of the Scheme	Ninth Plan 1997-2002 Allocation	Ninth Plan 1997-2002 Likely Expdr.*	Tenth Plan 2002-07 Proposed Outlay
1	AICTE	400.46	360.73	655.00
2	Sant Longowal Institute of Engineering and Technology	74.61	63.30	50.00
3	Apprenticeship Training	82.00	52.07	150.00
4	UGC Schemes	173.68	123.42	
5	IISc, Bangalore	90.00	80.00	150.00
6	Community Polytechnics	309.84	104.08	701.35
7	Payment for Professional and Special Services	8.82	7.81	20.00
8	IITs	450.75	627.36	1278.00
9	RECs	244.36	246.17	700.00
10	IIMs	102.31	88.39	300.00
11	Engineering College at Jammu	2.50	2.00	
12	Technology Development Mission	0.38	8.00	62.50
13.	Ed.CIL	0.08	0.79	01.00
14	North Eastern Regional Institute of S&T	58.00	58.00	50.00
15	RAGNICAS	11.00	47.00	80.00
16	IIITM, Gwalior	54.43	65.09	80.00
17	Polytechnic for Disabled	21.00	5.95	300.00
18	TTTIs	66.74	43.56	192.00
19	NITIE, Bombay	13.22	21.64	40.00
20	NIFFT, Ranchi	15.60	14.59	44.00
21	SPA, New Delhi	17.21	16.61	34.00
22	Research and Development	23.64	27.14	50.00
23	MODROB*	38.50	25.00	50.00
24	Thrust Areas of Technical Education*	29.10	19.00	50.00
25	Software Manpower Development	62.28	0.01@	
26	ISM, Dhanbad	12.50	12.50	30.00
27	BOATS	10.50	5.64	15.00
28	Research and Information Services	-	3.00@	
29	Student Counselling and Development Programme	-	3.00@	
30	Information Technology	-	-	
31	Technical Education III	-	0.01@	
32	IIT, Allahabad	-	-	
	Total (Technical Education)	2373.51	2132.46	5082.85

* Includes actual expenditure from 1997-98 - 2000-01 and 2001-02 Approved Outlays

@ No expenditure incurred from 1997-98 to 2000-01 and this reflects only approved outlay for 2001-02

33

Box 18: A page of the report of the steering committee on secondary, higher and technical education for the tenth 5 yr plan 2002-2007, Dec 2001 (Full Report at http://planningcommission.nic.in/aboutus/committee/strgrp/stgp_scndry.pdf)

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The higher education system of India has seen a 14-fold increase in the number of universities and a 33-fold increase in the number of colleges in comparison to the number at the time of independence. There are 329 universities and 203 state universities in all at present. The Indian Higher Education System comprises of 18 Central Universities, 90 Deemed Universities, five institutions established under States legislation acts and 13 institutes of national importance established by Central legislation, nearly 16,885 colleges, including around 1,798 women colleges.

The enrolment of women students at the beginning of the academic year 2004-05 was 40.03 lakh, constituting 40.22 per cent of the total enrolment. Of the total women enrolment, only 12 per cent women have been enrolled in professional courses and the rest in non-professional courses. The women enrolment is the highest in Kerala (60.57 per cent) and lowest in Bihar (24.35 per cent) in terms of percentage enrolment to total enrolment.

The number of doctoral degrees awarded by various universities (as on January 1, 2003) was 13,733. Of them, the faculty of arts had the highest number with 5,034 degrees followed by the faculty of science with 4,497 degrees. These two faculties together accounted for 69.40 per cent of the total number of doctoral degrees awarded.

The regular faculty strength in universities and colleges was 0.76 lakh and 3.81 lakh, respectively, totalling 4.57 lakh in the beginning of the reporting year.

General Development of Universities and Colleges

The University Grants Commission has been providing financial assistance for the development of universities and colleges, by making budgetary Plan provision for various programmes during different plans, including the Tenth Plan. The assistance to Central and a few Deemed Universities, and colleges affiliated to Delhi and Banaras Hindu University is being provided both under Plan and non-Plan heads while assistance to state universities and their affiliated colleges is being provided only under the Plan head. During the Tenth Plan, period (2002–2007), general development assistance to individual universities is being provided based on the outlays determined by the UGC. One-third of the outlay is based on performance of the individual university.

The objective of development assistance programme is to improve infrastructure and basic facilities in universities and colleges so as to achieve at least the threshhold level, ensuring qualitative development. In the Tenth Plan, emphasis is being laid on reducing disparity between urban and rural areas, developed and backward regions by supporting universities located in disadvantaged areas and also to increase access and enhance equity for marginalised groups like women, SC/STs, backward and Minority groups.

Under the development assistance programme, the UGC is assisting each eligible university for items namely, staff–both teaching and non-teaching, and technical, equipment for laboratories, special office equipment and modern teaching aids, repair of major equipment, books and journals, buildings, campus development, health centres, student amenities, etc. Assistance for these items is on 100 per cent basis.

Central Universities

Out of 18 Central universities, 16 universities are being given development grants, 14 of which are being given maintenance grants in addition to development grants. During 2003-04, the UGC made available an amount of Rs. 692.13 crore to meet the maintenance expenditure of 16 universities and Rs. 192.97 crore as a development assistance to 17 universities, including IGNOU.

Box 19: A page of the 2004-2005 UGC annual mentioning total funding amounts for the CUs.

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Manual 11

Ministry of Statistics and Programme Implementation
Sardar Patel Bhavan, Sansad Marg
New Delhi-110001.
Website :- http://mospi.nic.in

Right To Information Act, 2005

The budget allocated to each of agency, indicating the particulars of all plans, proposed expenditures and reports on disbursements made.

BUDGET 2005-06

S.No.	Division	Non-Plan (Rs. lakh)	Plan (Rs. lakh)	Total (Rs. lakh)
1.	Central Statistical Organisation (including Computer Centre)	1271.60	7448.00	8719.60
2.	National Sample Survey Organisation	8390.15	1667.00	10057.15
3.	Grant in aid to ISI, Kolkata	4153.00	1505.00	5658.00
4.i	Programme Implementation Wing (other than MPLADS)	259.00	650.00	909.00
ii	MPLAD Scheme	Nil	158000.00	158000.00
5	Secretariat Services	641.00		641.00
	Others (ICT, IARNIW)	14.25		14.25
	TOTAL	**14729.00**	**169270.00**	**183999.00**

35

Box 20: A page from http://mospi.nic.in/rti_manual11_2005.pdf on ISI Kolkata

3.3 What the PM said versus what he did

On the day the honorable Prime Minister announced the establishment of IISERs in Pune and Kolkata, and remained silent about the earlier announced NISs, he took a big step towards increasing the disparity in HRD funding across India. Yet it is ironical, and hypocritical of him to say the following, the same day.

This report also points to a grave regional imbalance in terms of educational institutions in different states, he said.

"I trust our government as well the state governments will take note of these findings and evolve policies to remedy these regional imbalances," Singh said.

How can he make the above statement with a straight face when his action, that he announced the same day, added to the grave regional imbalance he refers to above?

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Science should be made an exciting discipline: PM Page 2 of 2

generate high technology, create wealth and prestige for India, while also ensuring that this technology improves the lives of the poor."

There are other causes of concern in the report, which shows that 20 per cent of science graduates and 14 per cent of PhDs in science do not find gainful employment. What is equally worrisome is the finding that many people employed in science-centred jobs are insufficiently qualified," he said.

This report also points to a grave regional imbalance in terms of educational institutions in different states, he said.

"I trust our government as well the state governments will take note of these findings and evolve policies to remedy these regional imbalances," Singh said.

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Box 21: An article in Rediff about the PM's statement on regional balance.

3.4 The folly continues: unchecked increase in regional imbalance

Despite the PM realizing the regional disparity the folly of adding to the regional imbalance continues. Following are two instances of such follies.

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3.4.1 Upgrading institutions to IITs and deemed IITs: Why NIT Rourkela was not considered?

Seven institutes have been identified by the Joshi panel, set up by the previous government, for upgradation to IITs or deemed IITs. These are Institute of Technology, BHU; University Colleges of Engineering and Technology of Osmania University; Bengal Engineering College, Howrah; Engineering and Technology Departments of Jadavpur University; Zakir Hussain College of Engineering and Technology, AMU;

Table C: 2005 The Perception Factor

The Perception Factor		
Rank	College	Score
1	IIT Kanpur	25
2	IIT Bombay	25
3	IIT Chennai	24.5
4	IIT Kharagpur	24.5
5	IT-BHU, Varanasi	22.4
According to the HR heads' perception, IIT Kanpur and IIT Bombay topped the list		

Table D: 2005 Performance region-wise

How They Stack Up

North		
S No	College	Overall Rank
1	IIT Kanpur	1
2	IT-BHU, Varanasi	5
3	Thapar Institute of Engg & Technology, Patiala	9
4	Netaji Subhash Institute of Technology, New Delhi	10
5	MN-NIT, Allahabad	12
South		
1	IIT Madras	3
2	NIT Warangal	7
3	NIT Trichy	8
4	NIT Suratkal	11
5	IIIT Hyderabad	14
East		
1	IIT Kharagpur	4
2	IIT Guwahati	6
3	NIT Rourkela	17
4	Jadavpur University, Calcutta	25
5	SIT Kolkata (Formerly IIIT)	27
West		
1	IIT Bombay	2
2	Government College of Engineering, Pune	24
3	Sardar Patel College of Engineering, Bombay	26

Box 22: A page from an article on Rediff that ranks engineering colleges in India.

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Andhra University College of Engineering; and, Cochin University of Science and Technology.

There are several glaring problems with the above selections.

1. They further aggravate regional disparity.

2. Even these 7 institutions are not the best non-IIT institutions. Among them only IT BHU is better than all NITs. Five NITs (NIT Warangal, NIT Surathkal, NIT Trichi, MN-NIT Allahbad, and NIT Rourkela) are better than the other 6 in the list.

If merit was the criteria why were these NITs not considered and the short listed institutions are now being funded to overtake the NITs.

Among these NITs, NIT Rourkela is in a state with no IITs or IISc. Upgrading it to an IIT or deemed IIT would have been a step forward towards decreasing the regional disparity. Why is not that being considered?

One of the few people in an influential position who get it and have the courage to speak about it publicly is Professor Bhalchandra Mungekar, Member (Education), Planning Commission. He is reported to have said:

...
It said that the IITs should be spread as far and wide and all seven should be in seven different states where neither an IIT nor an IIM existed. “I suggested that institutes of national importance should be dispersed as widely as possible for balanced regional development," said Bhalchandra Mungekar, Member (Education), Planning Commission.
...

We hope that the rest of the planning commission and the government listen to his publicly stated views.

3.4.2 No sense behind the selection of the new IIFT campus

Recently it has been announced that a new IIFT branch will be established in Kolkata. IIFT offers MBA equivalent programs, and Kolkata already has an IIM. It would have been more useful to the country if the new IIFT branch was established in a city which does not yet have a premier government funded MBA institute rather than in a city which already has one such institute. Why was that not done? Who decides where such institutes are established and what logic do they use? Why is it not done in an open manner so that appropriate feedback can be given to the decision makers?

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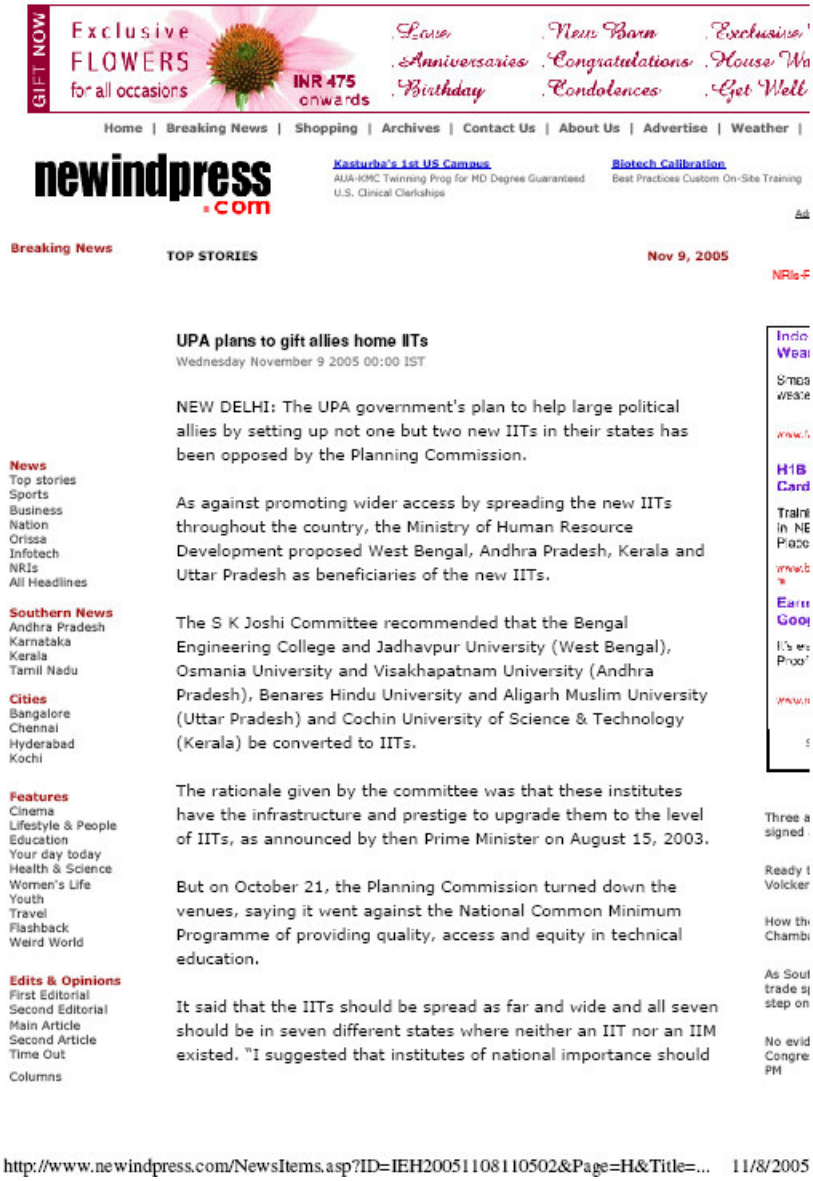

Box 23: A newindpress article that reports on Dr. Mungekar's statement on the new IITs.

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Industry & Economy - Foreign Trade

IIFT to start new campus in Kolkata

Deepak Goel

New Delhi , Dec. 23

THE Delhi-based Indian Institute of Foreign Trade (IIFT) is launching its second campus in the country at Kolkata for the 2006-08 batch. The new campus would have 60 seats initially. The college has 120 seats at its New Delhi campus. With the Kolkata campus, the annual intake of students at IIFT would go up to 180.

The West Bengal Government has identified eight acres of land for the campus, said Dr. Ravi Shankar, Chairman, Graduate Study Division, IIFT. The Ministry of Commerce, which set up the college at New Delhi, has granted Rs 10 crore for the new campus. The college is hopeful of obtaining clearance from the Universities Grant Commission for the Kolkata campus in about a month, he added.

Placement: Back at the New Delhi campus, a number of corporates are queueing up to deliver the pre-placement talks to the students with the formal placements scheduled for the first week of February for the 2004-2006 batch. Companies that have already delivered the pre-placement talks include ICICI, Accenture, Jindal Steel and CSC among others. More than 75 companies would confirm for placement this year, said Prof. Munish Bhargava, Placement Head, IIFT.

These companies would range from sectors like FMCG, financial services, IT and trading, he said. "Last year, 30 per cent of the students were hired by IT firms. But this year we expect financial services and FMCG companies to hire more students," said Prof. Bhargava.

Speaking about the composition of the students who would take part in the placements in February, Prof Bhargava said about half of them have 0-1 year of experience while the other half have more than one year of experience. Seventy two per cent of the students have engineering background, 11 per cent have commerce and eight per cent have science background.

IIFT, founded 40 years ago, offers a two-year degree in Master of Business Administration in International Business. The average salary for the 2003-05 batch was Rs 7.28 lakh.

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Box 24: An article in Hindu about a new IIFT campus in Kolkata.

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Chapter 4: Last word: Our humble request

It may appear that in this document we are picking on West Bengal. We are not against West Bengal or Maharashtra or for that matter any other state of India. We are not against having an IISER in Pune and Kolkata. The more such premier institutes in India the better. In particular, we are proud of West Bengal and its achievements and inspired by it.

All we want is that HR being the most important resource of a state, funding for its development should be equitable across all states, and as a start an NIS/IISER/equivalent should be established in Bhubaneswar (as announced earlier) immediately.

As we can not have two states (with roughly equal area and roughly twice the population) where one has 10-15 times the length of the national highways than the other, similarly we should not have one state with 10-15 times the funding on national institutes than another. Thus HRD ministry and the planning commission should make an emergency plan so that the HRD ministry spends at least 1/3rd, if not half, of what it spends in West Bengal, in Orissa. They should do similar actions for correcting the imbalance with respect to other HRD neglected states such as Chhatisgarh and Rajasthan.

In general its our humble prayer that the powers to be pay immediate serious attention towards achieving regional balance in centrally funded higher education and technical institutions so that all parts of the country prosper together, every citizen in every state has the opportunity to excel, and every state has the opportunity to produce highly educated human resources.

Finally, after all the neglect and injustice that has been done to Orissa, the government should not aggravate the situation by establishing IISERs with the new larger budget in Pune and Kolkata and an NIS with the old smaller budget in Bhubaneswar. As we argued before the NIS and IISERs are same in all but name, and the change in the funding level is only due to the increase in Science and Technology funding with respect to all institutes over the last few years. Thus establishing an NIS in Bhubaneswar with the old smaller budget will further reinforce the neglect and injustice done to Orissa over the years. We sincerely request that an NIS/IISER/equivalent be immediately established in Bhubaneswar with a budget similar to the budget of the proposed IISERs.

Note: We must note that most other departments of the central government during the current UPA regime have dealt with Orissa and Orissa issues fairly, promptly and equitably. This includes support towards roads and railways necessary for the vigorous industrialization activities going on in Orissa, though much more needs to be done. *It is mainly the current HRD ministry that is treating Orissa like dirt.* (It is inexplicable why the PM and the UPA Chairperson are overseeing this maltreatment and why the planning commission and the SAC-PM are keeping mum.) The record of the past HRD ministries is equally bad, except that during the last NDA regime all RECs were converted to NITs and the government had announced, but not fully executed, the establishment of an NIS in Bhubaneswar.

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Appendix

A.1 CM's letters to the PM

A.1.1 CM of Orissa Naveen Patnaik's letter to the PM on 23rd Aug 2005

D.O.No UM.1/05-421/CM

Dear Prime Minister Ji:

This is regarding establishment of National Institute of Sciences at Bhubaneswar. In this connection it may be mentioned that Chairman, University Grants Comission had communicated to Vice Chancellor, Utkal University, Utkal University about establishment of one of the centers at Bhubaneswar vide his D.O.No.F-1-74/2003(CM) dated 23.07.2003. Steps have been taken by my government to identify necessary land for the purpose.

Newspaper reports have appeared stating that the Institute is now getting shifted to Kolkata. If these reports are correct, I would like to point out that this will be a reversal of the decision of NDA government. Orissa has neither an IIT nor IIM or even an IIIT nor a central university. I, therefore, urge you to kindly sanction establishment of National Institute of Science under Government of India at the earliest for which state government have already completed works like identification of land as per the advice of U.G.C.

with regards
yours sincerely

Naveen Patnaik

A.1.2 CM Naveen Patnaik's letter to the PM on 29th Sept 2005

D.O.No UM.1/05-491/CM
Dated 29.09.2005

Dear Prime Minister Ji:

Kindly refer to my D.O. letter No UM.1/05-421/CM., Dated 23.08.2005 regarding establishment of National Institute of Sciences at Bhubaneswar. As I had mentioned, Orissa was favoured with establishment of the National Institute of Sciences which was communicated to us by the Chairman, University Grants Comission vide their letter No. F-1-74/2003(CM) dated 23.7.2003 and accordingly my Government had gone ahead for selection of a suitable site for the same. In the meantime, the site has already been selected. It is worth mentioning that in the past Orissa has not been favoured with either an IIT or IIM or any other Central University. The current spurt in the industrial activity in the State makes it a deserving location for establishment of National Institute of Sciences at Bhubaneswar.

I would, therefore, request you to kindly take immediate steps for establishment of National Institute of Sciences at Bhubaneswar for which Government of India had given definite commitment and any deviation at this stage would bring wide spread discontentment among the people of the state.

with regards
yours sincerely

Naveen Patnaik

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A.1.3 CM Naveen Patnaik's letter to the PM on 11th Nov 2005

D.O.No UM.1/05-547/CM
Dated 11.11.2005

Dear Prime Minister Ji:

The news item that the National Institute of Sciences is now being set up at Kolkata instead of Bhubaneswar has aroused widespread public discontentment. Of late, there has been a public interest litigation in the High Court of Orissa praying that the Institute should not be shifted from Orissa. The people of Orissa feel letdown by the decision to shift the Institute to Kolkata particularly because the Chairman, University Grants Commission had, as early as23.07.2003, indicated establishment of the Institute in Orissa. The site for the institute has already been selected and the change of decision at this stage is a serious set back to us. I have taken up the matter with you twice vide my D.O. letter No UM.1/05-421/CM.,Dated 23.08.2005 and No UM.1/05-491/CM., Dated 29.09.2005.
I once again strongly urge that the earlier decision of Government of India may please be honoured and the institute set up in Orissa.

with regards
yours sincerely

Naveen Patnaik

A.2 A sample letter sent by thousands of Oriyas: Open letter to the Prime minister of India -- Gross Injustice done to Orissa

To: Dr. Manmohan Singh
South Block,
Raisina Hill,
New Delhi, India-110011.
Telephone: 91-11-23012312.
Fax: 91-11-23019545 /91-11-23016857.
email: http://pmindia.nic.in/write.htm

cc: Smt. Sonia Gandhi President:
INDIAN NATIONAL CONGRESS
24, Akbar Road, New Delhi – 110011 ,
INDIA TEL : 91-11-23019080
FAX : 91-11-23017047
email: aicc@congress.org.in

Dear Esteemed Prime minister:

On 9th December 2003, the then HRD minister Professor M. M. Joshi had announced that UGC had established steps to initiate four National Institute of Sciences at Bhubaneshwar, Chennai, Pune and Allahabad. This is documented in the UGC web document [4] and the press release [5] by the Ministry of Human Resource Development and Science & Technology, dated 10th December, 2003. As of today both are available, directly or in archival sites, in the Internet.

Sir, Recently on September 28, 2005 [6] you have announced the setting up of an Indian Institute of Science for Education and Research (IISER) at Pune and Kolkata, respectively.

Sir, The aim of the National Institute of Sciences that Professor Joshi had announced in December 2003 is the

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same as the proposed IISERs. Thus, NIS and IISER, though they defer in their names; as proposed institutions, both refer to the same concept. In fact the CM of West Bengal has referred to it [10] as National Institute of Sciences.

Sir, It is extremely unfair on your part, and gross injustice to Orissa that previously announced Bhubaneswar is excluded from your list of announced IISERs. Perhaps, the other announced (and now unmentioned in the context of IISER) locations Chennai and Allahabad are not as much concerned as they already have an IIT and an IIIT respectively, or perhaps they have been placated with promises. But for Bhubaneswar and Orissa this is a matter of survival [7,8], as Orissa does not have any central university [1], any institution of national importance [2] (such as IITs, ISI, etc.), any reputed centrally funded institute such as an IIM, or any centrally funded IIIT or IIITM. It also does not have an autonomous science and technology institution of the department of science and technology as listed in [3]. Moreover, there is a high likelihood that when additional IISERs are established, Bhubaneswar will not be one of them as many would then argue for a regional balance. Thus this wrong needs to be corrected now.

Sir, It is unacceptable of a government of India and Prime minister of India to change an educational investment decision made by an earlier government, especially related to a state like Orissa which has historically very little central government investment in higher education.

Sir, if every new central government callously changed the decision of the previous Government, seemingly based on the (lack of) strength of the ruling party representation of that state, and particularly in the area of long term projects like the IISER; it will set a wrong precedent, and will be disastrous in the long run because no decisions will be final and binding. And such reversal of decisions will lead to perpetual friction among the regional groups and interests leading to reversal of forces of national integration. Thus the negation of the NIS decisions made by the previous government, besides being a gross injustice to Orissa, is a big blow to India's democracy and regional balance and all round development. It is reported in [9] that you recently (around the same time as [6]) addressed the regional imbalance issue in terms of educational institutions and said "I trust our government as well the state governments will take note of these findings and evolve policies to remedy these regional imbalances." In light of this your Government's action of excluding the announced and planned for NIS/IISER in Bhubaneswar is utterly inexplicable, and makes your word sound hollow.

Sir, our Indian system of proportional representation makes smaller states like Orissa susceptible to such injustice and neglect. That is where we expect statesman like you, Smt. Sonia Gandhi, and Mr. Arjun Singh to lead, rise above politics, and make sure resources are fairly distributed across the country and comparatively smaller and weaker states are protected and not bullied by power centers with larger representations.

Sir, according to newspaper reports, our chief minister wrote to you about this, but to no avail, so far.

Sir, Orissa has been severely wronged by your recent action of ignoring previously announced Bhubaneswar for an NIS/IISER. As an admirer of your simplicity, honesty, fairness, and erudition, I am deeply disturbed and disappointed by this action of your Government. With tears in my eyes, I sincerely request you to reconsider your decision and at least add back Bhubaneswar to the initial list of IISERs, thus bringing back dignity and a sense of fair play to the Government of India, and rescuing Orissa from successive central Government's neglect in the higher education arena.

I must add that in a few areas your Government has been a bit more responsive to Orissa; although there is need for more. This includes decisions regarding important infrastructure matters as well as health matters. In particular, we thank your Government for continuing with the promised AIIMS-like institutions, although not much has been done in the ground yet. Please note that an AIIMS is not a broad educational institution with the breadth of an IIT, IISc or a central university. Thus, the AIIMS decision, should not be held against Orissa. *If and only if* someone has used or uses it against Orissa, then it should be pointed out to them that the state of West Bengal where one of the IISERs is proposed has an IIT in Kharagpur, a central University in Shanti Niketan, two additional institutes of national importance in an IIM and an Indian Statistical institute (ISI), and three autonomous science and technology institutions [3], all in Kolkata. Similarly, the state of Maharastra where the other IISER is proposed, has the Armed Forces Medical College(AFMC) in Pune, an IIT in Mumbai, and three other autonomous science and technology institutions [3]. As mentioned earlier Orissa does not have any central university, any institute of national importance (such as an IIT, IIM, ISI, etc.), and nor any autonomous science and technology institution [3]. Just to clarify, I am not against IISERs in Kolkata and Pune; I just want your government to undo the injustice done to Orissa by not taking away from it an announced and planned for NIS/IISER.

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Sir, if you have any doubts about Orissa's preparedness to help jump start an IISER at short notice or regarding Orissa's commitment and past efforts towards higher education and scientific research, I would like to point you to [7] http://www.public.asu.edu/~cbaral/orissa/nis-why.html for additional information on this. Also, I am pretty sure that our Chief Minister will be happy to allay any concerns that you may have.

sincerely,

References:
[1]. List of central Universities http://www.ugc.ac.in/inside/utype.php?st=Central%20University, http://www.education.nic.in/htmlweb/autbod.htm (NONE in Orissa)
[2]. List of Institute of National Importance from http://www.ugc.ac.in/inside/utype.php?st=Institute%20of%20National%20Importance (NONE in Orissa)
[3]. List of autonomous Science and Technology Institutions from http://dst.gov.in/autonomous/autonomous_index.htm (NONE in Orissa)
[4]. A document titled ``Modern Technologies - the only alternative for Expansion of Higher Education'' which is at http://www.ugc.ac.in/pub/jan_2004/12.htm It is about Prof. MM Joshi(the then HRD minister of India)'s address on 9th December 2003 and includes the following:

``Dr. Joshi also informed the members about the steps initiated by the UGC for improving the relevance and quality of teaching and research, such as introduction of utility-oriented programmes along with the traditional degree; identifying the universities with potential for excellence; to establish four National Institutes of Sciences at Bhubaneshwar, Chennai, Pune and Allahabad; monitoring the universities using parameters for academic performance, research performance and governance and providing incentives to universities and colleges scoring high on these parameters.''
[5]. In the Ministry of Human Resource Development and Science & Technology's Press release, dated 10th December, 2003 still available at http://pib.nic.in/archieve/lreleng/lyr2003/rdec2003/10122003/r10122003r1012200313.html and titled INFORMATION COMMUNICATION TECHNOLOGY TO BE USED IN A BIG WAY FOR EXPANSION OF HIGHER EDUCATION: DR JOSHI UNIVERSITIES ASKED TO COMPLY WITH UGC REGULATIONS WITHIN THREE MONTHS CONSULTATIVE COMMITTEE OF HRD MINISTRY MEETS it includes the following:

``... The meeting was also informed of the steps initiated to improve the quality of teaching and research. It was informed that at post-graduate level a credit-based, modular approach is being introduced. UGC has recently upgraded monetary support at individual, group and department levels and has opened for colleges such incentive schemes as were earlier confined to universities. While five universities were identified this year, with potential for excellence, viz. Chennai, Hyderabad, Jadhavpur, Pune and Jawaharlal Nehru Open University, five more universities will be identified next year to promote excellence among universities especially in matters of research. Four national-level institutes are also being established at Bhubaneshwar, Chennai, Pune and Allahabad. ...''
[6]. http://pib.nic.in/release/release.asp?relid=12305 Wednesday, September 28, 2005 Prime Minister's Office PM CLEARS NEW INSTITUTES OF SCIENCE IN PUNE AND KOLKATA 20:20 IST
``Prime Minister Dr Manmohan Singh has approved the setting up of an Indian Institute of Science for Education and Research (IISER) at Pune and Kolkata, respectively. The Union Ministry for Human Resource Development has been authorized to fund both the institutes this year, so that they can become operational in 2006. ...''
[7]. http://www.public.asu.edu/~cbaral/orissa/nis-why.html
[8]. http://www.public.asu.edu/~cbaral/orissa/iit-nis.html
[9]. http://in.rediff.com/news/2005/sep/28pm1.htm
[10]. http://www.telegraphindia.com/1051004/asp/bengal/story_5317968.asp last but one paragraph.

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A.3 A letter to the planning commission

Date: Nov 1, 2005 11:48 AM

Subject: A letter to the Indian planning comission members from an Indian origin professor in the US

To: Esteemed Planning Comission Members of India

Subject: http://www.iiser.blogspot.com/

Dear members:

I would like to bring to your notice the following article from Telegraph
http://www.telegraphindia.com/1051029/asp/calcutta/story_5412063.asp
which says that "In July 2005, the Planning Commission, after examining the ministry for human resource development proposal, recommended that instead of five cities, only Calcutta and Pune should house the centre." It refers to the National Institute of Sciences which was originally planned for Bhubaneswar, Pune, Chennai and Allahabad and was later renamed to IISER.

Dear Sirs: I wonder if you considered the distribution of central universities, and institutes of national importance (IITs, IIMs, ISIs etc.) across India? Many states have multiples of them while states like Orissa, Rajasthan, Chhatisgarh etc. have none. They happen to be backward in many indices. Please see http://iiser.blogspot.com/2005/10/unequal-distribution-of-higher.html for the distribution.

Do you think this is fair?

Do you think some states should have many of them while others have none, even though they (such as Orissa) have shown that they can nurture good institutions?

Do you think the way to improve backward states is to take away planned 500 cr higher education institutions from them?

Dear Sirs: It is a gross injustice that you took the dream (of NIS/IISER) away from the people of Orissa, which does not have a single central university, IIT, IIM, IISc, etc. and yet has on its own initiated the development of quality institutions such as Inst of Physics, Inst of Life Sciences and Xaviers Institute of Management.

Dear Sirs: You are supposed to watch out and plan for all of India; especially, since in India (unlike the US where each state has 2 senators) larger states have more MPs thus more power and smaller states have less power. With due respect, by approving the removal of Bhubaneswar from the list of IISERs, you have not done your job appropriately and have done grave injustice to Orissa, and perhaps to the fabric of India.

We sincerely hope you will make appropriate amends at the earliest, and if the political leadership (which so far has not considered it appropriate to reply to hundreds if not thousands of letters and emails sent to them over the last month) does not allow you to correct the injustice then you should consult your conscience about what to do. Please see http://www.iiser.blogspot.com/ about the details of your injustice and some thoughts on how to amend it.

sincerely,

Chitta Baral

A.4 Indian democracy in work: letters to PM and Planning commission are not answered and not even acknowledged

We often pride ourselves of being the largest democracy in the world. Thousands of letters were sent to the PM, many to the UPA Chairperson Smt. Gandhi, many letters were sent to the President and several letters were sent to the planning commission. None

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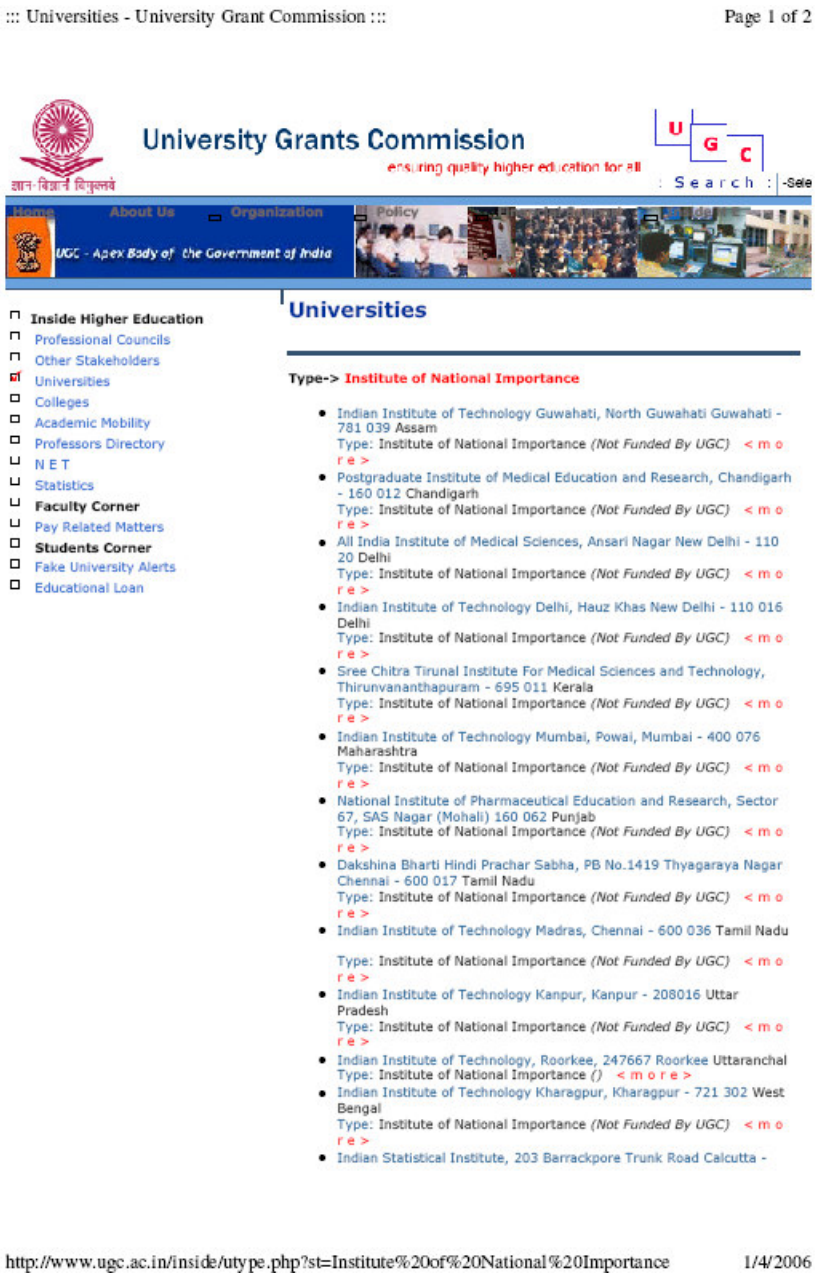
have been answered or even acknowledged. We often compare our country to the other big democracy, the United States. Letters sent to the President of US or to senators there are answered promptly. Thus we have a long way to go before our PM, President and planning commission start thinking themselves as for the people, by the people, and of the people rather than as rulers and fiefs.

A.5 List of Institutes of national Importance



::: Universities - University Grant Commission ::: Page 1 of 2

University Grants Commission

ज्ञान-विज्ञानं विमुक्तये

ensuring quality higher education for all

U G C

: Search : -Sele

Home | About Us | Organization | Policy

UGC - Apex Body of the Government of India

- Inside Higher Education
- Professional Councils
- Other Stakeholders
- Universities
- Colleges
- Academic Mobility
- Professors Directory
- NET
- Statistics
- Faculty Corner
- Pay Related Matters
- Students Corner
- Fake University Alerts
- Educational Loan

Universities

Type-> Institute of National Importance

- Indian Institute of Technology Guwahati, North Guwahati Guwahati - 781 039 Assam
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Postgraduate Institute of Medical Education and Research, Chandigarh - 160 012 Chandigarh
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- All India Institute of Medical Sciences, Ansari Nagar New Delhi - 110 20 Delhi
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Indian Institute of Technology Delhi, Hauz Khas New Delhi - 110 016 Delhi
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Sree Chitra Tirunal Institute For Medical Sciences and Technology, Thirunvananthapuram - 695 011 Kerala
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Indian Institute of Technology Mumbai, Powai, Mumbai - 400 076 Maharashtra
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- National Institute of Pharmaceutical Education and Research, Sector 67, SAS Nagar (Mohali) 160 062 Punjab
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Dakshina Bharti Hindi Prachar Sabha, PB No.1419 Thyagaraya Nagar Chennai - 600 017 Tamil Nadu
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Indian Institute of Technology Madras, Chennai - 600 036 Tamil Nadu
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Indian Institute of Technology Kanpur, Kanpur - 208016 Uttar Pradesh
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Indian Institute of Technology, Roorkee, 247667 Roorkee Uttaranchal
  Type: Institute of National Importance *()* < m o r e >
- Indian Institute of Technology Kharagpur, Kharagpur - 721 302 West Bengal
  Type: Institute of National Importance *(Not Funded By UGC)* < m o r e >
- Indian Statistical Institute, 203 Barrackpore Trunk Road Calcutta -

http://www.ugc.ac.in/inside/utype.php?st=Institute%20of%20National%20Importance 1/4/2006

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A.6 List of central universities

- Inside Higher Education
- Professional Councils
- Other Stakeholders
- Universities
- Colleges
- Academic Mobility
- Professors Directory
- NET
- Statistics
- Faculty Corner
- Pay Related Matters
- Students Corner
- Fake University Alerts
- Educational Loan

Universities

Type-> Central University

- University of Hyderabad, Central University P.O. Hyderabad - 500 046 Andhra Pradesh
  Type: Central University *(Funded By UGC)* < m o r e >
- Maulana Azad National Urdu University, Gochibowli Hyderabad - 500 032 Andhra Pradesh
  Type: Central University *(Funded By UGC)* < m o r e >
- Assam University, Silchar - 788 011 Assam
  Type: Central University *(Funded By UGC)* < m o r e >
- Tezpur University, Napaam, Tezpur - 784 028 Distt. Sonitpur Assam
  Type: Central University *(Funded By UGC)* < m o r e >
- University of Delhi, Delhi - 110 007 Delhi
  Type: Central University *(Funded By UGC)* < m o r e >
- Indira Gandhi National Open University, Maidan Garhi New Delhi - 110 068 Delhi
  Type: Central University *(Not Funded By UGC)* < m o r e >
- Jamia Millia Islamia, Jamia Nagar New Delhi - 110 025 Delhi
  Type: Central University *(Funded By UGC)* < m o r e >
- Jawaharlal Nehru University, New Mehrauli Road New Delhi - 110 067 Delhi
  Type: Central University *(Funded By UGC)* < m o r e >
- Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Post Box No.16, Panchtila, Umri Village, Arvi Road Wardha-442 001 Maharashtra
  Type: Central University *(Funded By UGC)* < m o r e >
- Central Agricultural University, Iroisemba Imphal - 795 001 Manipur
  Type: Central University *(Not Funded By UGC)* < m o r e >
- North Eastern Hill University, P.O. NEHU Campus Mawkynroh Umshing, Shillong - 793 022 Meghalaya
  Type: Central University *(Funded By UGC)* < m o r e >
- Mizoram University, Aizwal - 796 012 Post Box No.910 Mizoram
  Type: Central University *(Funded By UGC)* < m o r e >
- Nagaland University, P.B. 341, H.Q. Lumami Kohima - 797 001 Nagaland
  Type: Central University *(Funded By UGC)* < m o r e >
- Pondicherry University, R Venkataraman Nagar, Kalapet Pondicherry - 605 014 Pondicherry
  Type: Central University *(Funded By UGC)* < m o r e >
- Aligarh Muslim University, Aligarh - 202 002 Uttar Pradesh
  Type: Central University *(Funded By UGC)* < m o r e >
- Babasaheb Bhimrao Ambedkar University, Vidya Vihar Rae Bareli Road Lucknow - 226 025 Uttar Pradesh
  Type: Central University *(Funded By UGC)* < m o r e >
- Banaras Hindu University, Varanasi - 221 005 Uttar Pradesh
  Type: Central University *(Funded By UGC)* < m o r e >
- Visva Bharti, Santiniketan - 731 235 West Bengal
  Type: Central University *(Funded By UGC)* < m o r e >

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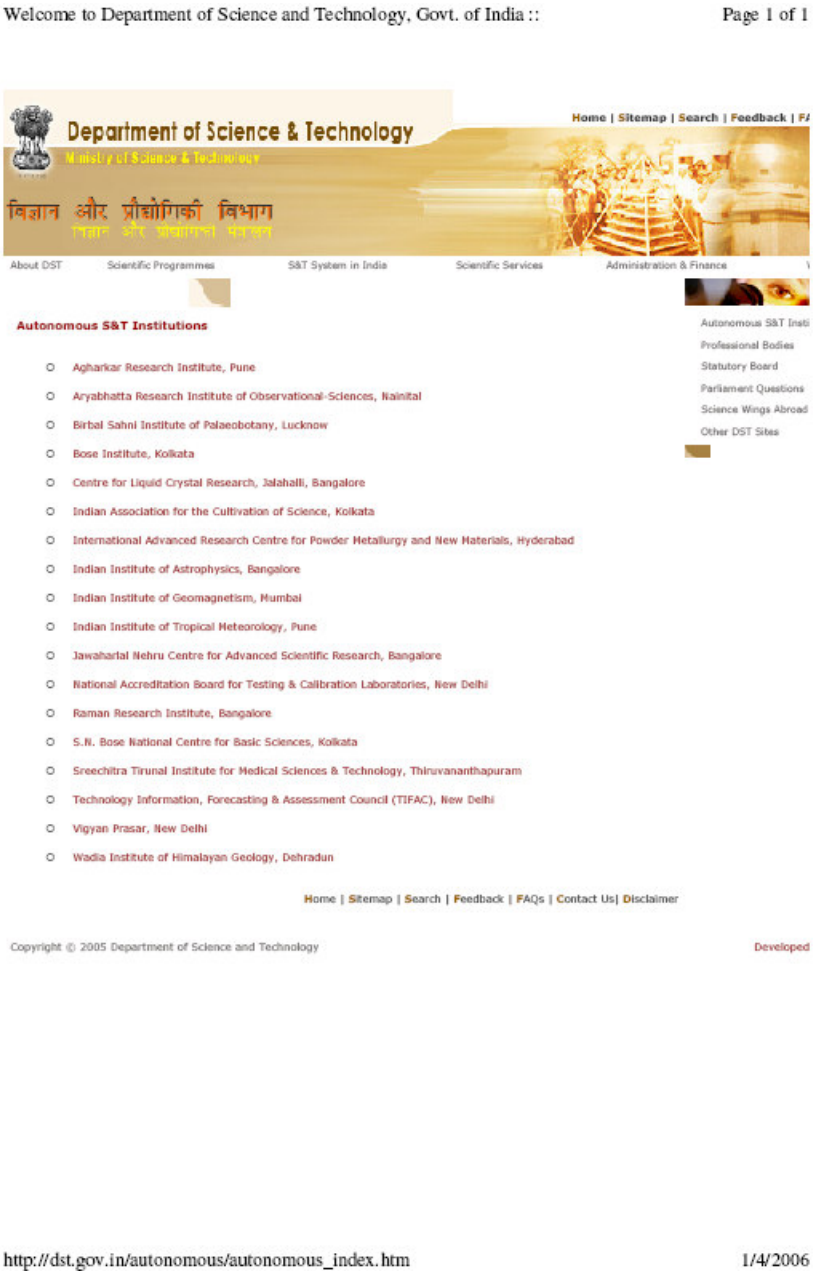
A.7 List of autonomous science and technology institutes



A.8 Contact address of the people and entities whose job is to report or correct the imbalances

A.8.1 The PM and Smt. Gandhi: See A.2

A.8.2 Eight members of the 10 member SAC-PM

Chair: Dr C N R Rao cnrrao@jncasr.ac.in, Bangalore

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Ashok Jhunjhunwala	ashok@tenet.res.in, Chennai
N. K. Ganguli	gangulynk@icmr.org.in, New Delhi
Dr. Syed Hasnain	director@cdfd.org.in, Hyderabad
Dr K VijayRaghavan	vijay@ncbs.res.in, Bangalore
Dr Swati A Piramal	spiramal@nicholaspiramal.co.in, Mumbai
Prof P Balram	diroff@admin.iisc.ernet.in, Bangalore
Professor S.G. Dhande,	sgd@iitk.ac.in, Kanpur

A.8.3 The Planning Commission

Dr. Manmohan Singh, New Delhi	manmohan@sansad.nic.in
Shri Montek Singh Ahluwalia, New Delhi	dch@yojana.nic.in
Shri M.V. Rajashekharan, Bangalore, Minister of State	mvraja@yojana.nic.in
Dr. Kirit Parikh, New Delhi	kirit.parikh@yojana.nic.in
Prof. Abhijit Sen, New Delhi	abhijit.sen@yojana.nic.in
Dr. V.L. Chopra, New Delhi	vl.chopra@yojana.nic.in
Dr. Bhalchandra Mungekar, Mumbai	b.mungekar@yojana.nic.in
Dr.(Ms.) Syeda Hameed, New Delhi	s.hameed@yojana.nic.in
Shri B.N. Yugandhar, Hyderabad	yugandhar.bn@nic.in
Shri Anwar-ul-Hoda, New Delhi	anwarul.hoda@yojana.nic.in

A.8.4 The national media

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NDTV: http://www.ndtv.com/feedback/default.asp
India-Today: http://www.indiatoday.com/itoday/index.html

A.9 The complete "Detailed Project Report" (DPR) document on the NISs.

STOP PRESS: As this goes to print an IISER near Chandigarh in Punjab has just been announced. This is good news as Punjab was one of the HRD ministry neglected states. We sincerely hope the above becomes a trend and the central government soon makes a similar announcement with respect to Orissa. Otherwise, since Punjab has a Congress led government, it would reinforce the theory that the current central government is rewarding states with governments of their own party or allied party and neglecting or punishing states like Orissa that have a government that is not allied to the central government.

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Compiled on behalf of Agamee Odisha by Prof. C. Baral with the help of D. Kar, Dr. M. Pradhan and Dr. D. Patra. Sponsors include OSA. Local copies of all documents mentioned in this article are available through http://iiser.blogspot.com.

Detailed Project Report

National Institutes of Sciences (NISc)

Allahabad, Bhuvaneshwar, Chennai & Pune

May 2004

University Grants Commission
Department of Secondary & Higher Education
Ministry of HRD, Government of India

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Executive Summary

In the emerging global scenario, the competitive advantage of a Nation is determined by its scientific capability and technological competence. While Science is universal and freely available, Technology is private, a preserve of one who develops it and has a price tag to it. Its transfer is becoming increasingly difficult and each Country has to make substantial investments to continue to reap its benefits.

India has one of the finest R & D infrastructures in the World. Our National Labs, Research Institutes and Science Agencies have weaved a number of success stories. India has inherent advantage in the R & D sector because of availability of trained manpower at low-costs. This makes the outlook for R & D services in India positive and provides the country new opportunities in this knowledge led sector. Yet there are weaknesses. The gap in research productivity, between India and the developed countries, is continuously widening as per an assessment of R & D capabilities across the nations published in Nature recently. Large number of scientists in our R & D institutions are retiring in the coming years. Their replacements are difficult to find. There is a wane in the interest of young people in science for their future careers. Therefore, we are not able to attract bright young people for science education. Although, India has potential to become a Global R & D Hub, but for that, we need to address the challenges that science education today faces, on a priority basis.

Science Education plays a crucial role in advancement of scientific R & D that is essential to move us further on the road to a Knowledge Society. Advantages of low-cost manpower in India, complements the large Talent Pool for the R & D Sector. However, our education system has to continue to feed to this talent pool to give us sustainable competitive advantage. There are several concerns in this regard. Standards of science education are continually declining. Our bright boys and girls are shying away from science after 10+2 stage. Though science and technology have come close to each other and all emerging technologies are all essentially science based, we do not provide composite science and technology education in our institutions. Our competitive advantage in the R & D sector may be lost unless we ensure that the country produces, on a continuing basis an adequate number of competent and motivated young boys and girls who would man and lead our National Labs / Science Agencies, Knowledge-based Industry and provide a composite model of science education that would attract bright students to science.

Task of improving overall science education is stupendous. A uniform approach is neither feasible nor desirable. Interventions required should therefore be contingent to the situation. An important intervention is to

selectively raise the standard of science education for a select group of bright students through a new model of science education that is both exciting and rewarding.

For this purpose, it is proposed that a number of new science Institutes need to be set-up at different places in the country to be the Centres of Excellence in Science Education. These Institutes would be designed to occupy, in the near future, prestigious position in the global setting for science education as IITs and IIMs presently occupy for engineering and management education. These Institutes would attract the brightest science students from all over the Country.

Realizing the importance of the above initiative, scheme for support for setting up of National Institutions for Sciences in the Country has been included in the UGC's 10th Plan Outlay. Initially four (4) National Institutes of Sciences shall be established in the proximity of the prestigious universities in the four regions of the Country. These institutes would be established at Allahabad near Allahabad University, at Chennai near Anna University, at Pune near Pune University and at Bhuvaneshwar near Utkal University. They would primarily offer integrated five-year basic and applied science education programme, leading to a Masters Degree and would have linkages with National research labs science agencies and industry right from their inception.

These institutions shall be fully autonomous and have flexible and responsive academic structures. The Institutes would offer a large menu of courses from which students can choose depending upon their liking and aptitude. The integration will be sought to be achieved in terms of time and discipline, undergraduate and post graduate education, education and exploration, learning and research, pure and applied sciences. Unique feature of the academic programme of these Institutes would be its internship programme in the last semester spilling over to the adjoining summer vacation.

The Institutes would attract the brightest science students from all over the country. Faculty positions shall also be filled up from amongst the brightest in the Country. Faculty would be either core (tenure) faculty, on joint appointments with R&D institutions in the neighborhood, Visiting Scientists both from India and abroad and Adjunct Faculty from the Industry. In addition, Science Agencies and Industry shall be encouraged to institute Chairs in frontier areas of science through endowments.

Total student population at any time will be around 1000 in various academic programmes with around 200 Research Fellows / Post Doctoral Students in each Institute. Core faculty will be around 100 for each Institute. In addition, at any given point of time there would be around

100 faculty members in the form of joint appointees, visiting and adjunct professors. Non-academic staff will be limited to the barest minimum. All necessary support services will be provided on contract basis through reputed agencies.

Campus of the Institute shall have lecture room complex, experimental laboratories, R & D laboratories, Information Resource Centre cum Library, Administrative and Residential facilities. Cost-estimates for buildings and services work to Rs. 3705 lakh per Institute over the next three years. Cost of equipment would be Rs. 2600 lakh for the first three years. Ultimately, equipment worth nearly Rs. 7000 lakh may be required. Possibility of getting additional support from the national laboratories, science agencies and industry for setting up labs shall also be explored. Recurring cost is estimated as Rs. 1100 lakh during the next three years. The science agencies of the Govt. and Industry are expected to assist by creating endowment chairs, equipping laboratories and by sponsoring research development projects.

Strategically, these Institutes would be driven by the national research laboratories, science agencies and Industry acting in concert. The Institutes will have full academic autonomy and flexibility and will be structured to quickly respond to changes while being stable, innovative and efficient. The management structure of the Institutes shall provide for autonomy, flexibility, quick decision-making and efficiency in its academic functioning and in the use of resources, with both internal and external accountability. These Institutes shall be set up as Autonomous Societies under the Society Registration Act. Initially, they will be autonomous institutes of the link universities with link universities granting educational and research degrees but the Institutes will be fully free to set up their own courses of studies, system of teaching and evaluation, etc.

Total investment in each Institute would be Rs. 74.5 crores during the Tenth Five Year Plan. Both recurring and nonrecurring expenditure would be supplemented by project funding, consultancy, etc. Eventually, these Institutes would be brought under the formula based funding arrangement with outcome focus. As per the operational plan, these Institutes would enroll the first batch of students from July 2005.

These Institutes would not only meet requirement of high quality well trained young boys and girls to man and lead our national laboratory system and mission oriented agencies but also help the Country to move up the value chain in the global R & D sector, where India is favorably positioned. In addition, these Institutes would provide a new model for composite science education that is both exciting and rewarding and help in restoring the interest of the young people in science education and opting for science as a career.

It is strongly believed that discovery itself is the greatest and the most effective form of teaching, and that teaching and learning are viewed as an adventure in discovery. These Institutes will thus lay stress on acquisition of knowledge and on the ability to use that knowledge to solve academic and societal problems. Therefore, these Institutes would not only provide exciting academic programmes, but also promote first-rate R & D in frontier areas of science under one roof. In order to foster a spirit of innovation, these institutes shall forge strong and productive interfaces with national research laboratories, science agencies and industry.

I. Role of Science and Technology in Development

1.1 Science and Technology have been increasingly playing a dominant role in shaping our lives on this planet. Over the last two centuries, science and technology have come to occupy centre-stage in the thinking and living of man. While science is an endless quest and unceasing exploration to understand Nature and a variety of natural phenomena, technology is the application of the knowledge gained through the pursuit of science to reach the benefits of science to the people and to the society. Historically, science and technology initially grew independent of each of other but today, technology has become totally science based. Science and technology have become inseparable and in fact not only are they complementary but each one also feeds into the other. Good science has thus become the most important precursor for innovation and technology development. It may therefore be recognized that unless India creates a culture for scientific excellence and captures, nurtures and nourishes scientific talent, it will be left behind in the race to a knowledge society, despite the advantage of rich human and material resources. It is now well recognized that science education has played and will continue to play, in increasing measure, crucial and pivotal role in advancement of scientific research and development, so very essential to move on the road to a knowledge society. Advances in science and technology are self-perpetuating. Each new scientific and technological innovation triggers further innovations and in a kind of chain reaction science grows exponentially and technology becomes increasingly sophisticated, fueling long-term economic growth. In technologically advanced economies, economic growth has continued for nearly two centuries without running out of dynamism or even slowing down.

1.2 With Indian economy opening up and integrating with the global economy, fierce competition is at our doorstep. This competition is throwing up new challenges that we had never grappled before. This also opens out new opportunities that we had never imagined. Technology transfer from outside to trigger economic growth was relatively easy (except in strategic areas) earlier.

However, the exponential growth in science and ever increasing sophistication in technology, resulting in continually shrinking of the time of obsolescence and ever decreasing time lag between a major scientific discovery and its technological exploitation, have seriously questioned the model of basing economic growth on the import of technology. Further, technology transfer has become increasingly difficult. Consequently, in order to become globally competitive and retain that capability, it has become necessary to depend more and more on our indigenous R & D capabilities, not only for our economic development but also for reverse transfer of technology from India to other countries.

1.3 It may be realized that R & D services can also be used to support industry abroad. This is more likely to happen in knowledge-based areas rather than in manufacturing sector, as Indians are traditionally recognized world over for their best analytical minds. This is useful because it creates wealth, provides job opportunities, and diffuses technology in the country. Recent trends of a large number of MNCs setting up their R & D Centres in India indicate that India has a potential to become the Global R & D Hub. However, we must keep at the back of our mind the possibility of the demand for our R & D services to be switched off either because other countries become more competitive in terms of cost and competence or for strategic considerations. It is therefore very important for us to move up the value chain. Moving up the value chain would imply – need for better skilled and more knowledgeable S & T Manpower and developing new and innovative products and processes based on our own R & D. For this, not only the Govt., the Govt. science agencies but also the Industry in the country must support R & D and S & T education for manpower development.

1.4 India has one of the finest R & D infrastructures in the World. Our National Labs, Research Institutes and Science Agencies have weaved a number of success stories. India has inherent advantage in the R & D sector because of

the availability of trained manpower at low-costs. This makes the outlook for R & D services in India positive and provides the country with new opportunities in this knowledge led sector. Yet there are weaknesses and these concerns need to be addressed urgently. The gap in research productivity between India and the developed countries is continuously widening as per an assessment of R & D capabilities across the nations published in Nature recently. Large numbers of scientists in our R & D institutions are retiring in the coming years. Their replacements are difficult to find. There is a wane in the interest of young people in science for their future careers. Therefore, we are not able to attract bright young people for science education. Although, India has potential to become a Global R & D Hub, but for that we need to address the challenges that science education today faces on a priority basis.

II. Status of Science Education In India

2.1 Since independence, there has been a phenomenal growth in the number of universities and colleges imparting science education and the number of students enrolling in the science stream. Despite impressive growth in the numbers, percentage of students opting for science after 10+2 has declined from 31% in fifties to around 20% during nineties. It is not the decline in the percentage that causes concern but the fact that in the fifties, the top 31% from amongst those passing 10+2 examination opted for science. However, today the lower middle level 20% students opt for science. There is an unmistakable growing trend of brighter boys and girls shying away from science. Even those who win International Olympiad Medals are reluctant to opt for career in science. This trend is further substantiated by a comparatively lower percentage of marks needed for admission to science stream in our colleges as compared to other professional streams.

2.2 A large number, nearly 90% of undergraduate students in sciences are educated in affiliated colleges. Most of these colleges are over crowded, under

equipped in laboratory and library facilities and are also poorly staffed. Undergraduate science education has now become entirely chalk-talk-rote routine without any emphasis on understanding of the basic concepts and the application of this understanding to innovate technology. Classroom demonstrations and open-ended experimentation have all but disappeared from the undergraduate science education programmes, despite the fact that science is truly experiment based and is an endless exploration. Examination system has contributed further to the deterioration of science education as it is solely based on the ability to memorize and the ability to vomit in the examination. There is presently nothing in the system that excites the curiosity of young minds, communicates a sense of excitement in doing science, nourishes and nurtures creativity and innovativeness, imparts necessary skills and generates self-confidence. All this results in not only an alarming rate of dropouts and fallouts, as high as 40%, but also in our young boys and girls emerging out of colleges devoid of curiosity, unexcited and unimaginative, lacking in creativity and self confidence and frightful of their future. There are of course, few institutes that still heroically seek to offer science education comparable to that available in advanced countries. However, they are confronted with outdated curricula and also rigidity of the institutional set up and of the universities to which they are affiliated, and are thus unable to make any significant impact on the general scene.

2.3 Poor undergraduate science education programmes have led to still poorer post-graduate science education programmes. This clearly presents two related problems. A large number of talented students simply do not opt for a career in science because they do not consider it as rewarding and satisfying. At the same time, a large number of unmotivated and uninterested students crowd in our science colleges. Thus the present system has neither the selectivity nor the atmosphere conducive to motivation, innovation and creativity. The consequences of all this are obvious and unmistakable. If this trend continues, even strategically important sectors such as space, atomic

energy, defense, biotechnology etc., will find it difficult to recruit young scientists of high caliber needed for these nationally important programmes. In fact, many of these institutions have already lowered their selection criterion. In addition, standards of teaching of science would further decline.

2.4 All this manifests itself in several ways. There is a decrease in research productivity in the country in most scientific disciplines. Science and technology output indicators such as publication of research papers and filling of patents are stagnant or decreasing compared to those of even South Korea, China etc. The centre of gravity of research and development in science and technology has therefore shifted from teaching and academic institutions to bureaucratic research institutions. This is not sustainable. It is only the face to face confrontation and critical dialogue between experienced professors and their bright inquisitive students, without the constraints and inhibitions that generally operate in the non-university type system that provides stimulus to original thinking and to the expansion of the horizons of human knowledge. The wisdom and the knowledge of one and the desire to surpass on part of the other provide the right combination in the universities for their mutual growth. It is the only recipe to build science. Science teaching /education and research must be inextricably linked. In the absence of clear perception and adequate realization of the mechanism of building self-generating, sustainable and enduring base for science, we have dried the source and resource that feeds into the system of research and technology development. With research only in research laboratories, in the absence of a steady flow of well talented and innovative young boys and girls, we are making our research laboratories unproductive. Indeed, National research institutions and agencies are facing an acute shortage of quality manpower. This problem would become very critical by 2010. Recently, the Hon'ble Prime Minister also observed that the Govt. of India should tackle the challenges of recruiting the best scientific talent into our research institutions and retaining them there. Also the Science and

Technology Policy of 2003 has laid great stress on basic research in educational institutions.

2.5 Addressing the problems of science education requires a multi-pronged approach. Issues relating to curricula, lack of experimental facilities, absence of research culture and atmosphere, non-availability of high quality teachers, lack of good library, workshop and other facilities will have to be addressed. Most important is the one concerning the serious shortage of high quality teachers in pure and applied sciences. This is both a cause and an effect of the problem facing science education. There is also a need for well planned institutionalized collaborative linkage between academic institutions on the one hand and , research and development laboratories, science agencies and industry on the other. As a matter of strategy, efforts are required to enhance ambience for science education in all the institutions across the country to bring it to a certain threshold level and also to promote excellence in a limited number of institutions to make them world class.

2.6 University Grants Commission (UGC) is seized of the problems of science education in the country. It has identified gaps in academic infrastructure for science education at the degree level i.e. laboratory and library facilities, curriculum, training of teachers, creating ambience which would promote innovation etc. It has taken a series of measures. These include enhanced support for institutions with potential for excellence and using innovative technologies to enhance and improve teaching –learning process. Access to high quality multimedia learning material and e-library for all is being ensured. Exclusive research council is being set up for more focused and better-targeted funding research in basic sciences. These steps, though in the right direction are not sufficient. These are required to be scaled up further for greater impact and more comprehensive coverage.

2.7 The concern regarding the state of science education is not unique to this country. It is a part of the global phenomenon. Basic sciences are no more attracting the brightest students at the graduate and the postgraduate levels. There is a fall in enrolments in basic sciences as compared to applied / professional programmes, particularly in developed countries. This decline is partly due to the perception of people in these countries that all the present ills of the world are due to science and technology. The evolving demographic picture in these developed countries seems to accentuate the situation in those countries. In fact, this could be seen as an opportunity for India. India has the potential to become global player for high-end science and technology sector. We can exploit the advantage of numbers and large gene pool that we have. We could also deploy appropriate strategy to selectively nurture excellence in science education that could meet the requirement of our national research system and also move up the value chain and as a destination for high end R and D services. We could truly become the *Research Laboratory* for the world.

III. Setting up National Institute(s) of Science

3.1 Task of improving overall pure and applied science education is stupendous. A uniform approach to improve the standards of pure and applied science education is neither feasible nor desirable. Interventions required to do so have therefore to be contingent on the situation. Accordingly a five-pronged strategy is recommended:

(a) to selectively nurture excellence by imparting quality education in pure and applied sciences in an environment of productive and innovative research and development;
(b) to identify, motivate, nurture and nourish the talented to pursue pure and applied science as a career;
(c) to provide avenues and opportunities for those engaged in science to refurbish and enlarge upon their knowledge and skill base on a continuing basis.

(d) to devise strategies to retain the best in active science;
(e) to involve national research laboratories, science agencies and the corporate sector in pure and applied science education.

3.2 Education in basic sciences is being imparted today by multi faculty colleges and universities and none of them even vaguely acquaint the students to the application to which science can be applied. There is no exclusive institute, excepting Indian Institute of Science at Bangalore for science education. Even IISc, Bangalore offers post B.Sc. programmes. As a result, meritorious students who take science at the 10+2 level tend to opt for professional programmes, at the first-degree level. In the sector of professional education such as in technology, management, medical sciences etc., there are high quality institutions on par with the global level that impart related quality education at the undergraduate level. It is now urgently necessary to selectively and preferentially raise the standards of pure and applied science education for a small section of the overall population of talented students wishing to opt for science. For this purpose, it is proposed to set up a number of new institutes exclusively devoted to imparting pure and applied science education in the ambience of creative research and development. These Institutes of Science should serve as Centres of Excellence for science education and occupy, in the near future, prestigious position in the global setting for science education as IITs and IIMs presently occupy for engineering and management education. These Institutes would be so designed as to attract the brightest science students from all over the Country. The selected candidates will be enrolled in an integrated five-year science education programme leading to Masters Degree.

3.3 Need for exclusive institutes for imparting education in pure and applied science beyond 10+2 level in the ambience of creative research and development has been felt for a long time. In this regard, Hon'ble Human Resource Minister has observed that, '*the undergraduate education in pure*

sciences is a matter of concern. We are going to face a shortage of good researchers in a few years time, particularly in our premier research institutes in the field of atomic energy, oil exploration, communication and so on. We have to catch them young for five year integrated programme with a possibility of exit after three years'.

3.4 Need for a new model of pure and applied science education in the ambience of creative and innovative research and development has been discussed and debated over the last decade. Search for this model had zeroed in, a few years ago, to the proposal for the establishment of Advanced Centre(s) for Science and Technology Education, on the pattern of IIT's to attract bright young boys and girls to science after the 10+2 level. The strategy was to provide a prestigious and a viable option to bright students for taking up careers in science. Such centres were supposed to be set up in collaboration with the National Science Agencies, such as DAE, CSIR, DBT, DRDO etc., and the leading industries who would be the beneficiaries of the products of these centres. This was approved in principle by the DST, MHRD, and the Planning Commission during the 9th Five Year Plan. However, only a token amount for preparing Detailed Project Report could be provided in the 9th plan. Realizing the importance and the urgent need for setting up such National Institutes of Sciences, this proposal has been approved as a part of the UGC's 10th Five Year Plan. Recently, it was recommended that such Centres could be more appropriately called as National Institutes of Sciences. To work out academic, administrative and financial details, a High Powered Committee was set up by the UGC in early 2003. Composition of the Committee is given at ***Appendix I***. The Commission also gave its in-principle approval to this proposal on April 9, 2004. In course of working out details, several stakeholders and eminent people were consulted. Their list is given at ***Appendix II***.

3.5 In view of the above, it has been decided to establish initially four National Institutes of Sciences in the proximity of the following four

universities, in the four regions of the country. These Institutes (NISc's) would be established at Pune, near the Pune University, at Allahabad near the Allahabad University, at Chennai near the Anna University and at Bhubaneshwar in close proximity of the Utkal University. In future, many more such institutions could be set up possibly at places such as Calcutta, Chandigarh etc. These Institutes shall be fully academically, administratively and financially autonomous and will have flexible academic programmes and supportive administrative structures. They would offer five year integrated programmes in pure and applied sciences, work in the ambience of productive and innovative Research and Development and would have close linkages with national research laboratories, science agencies and industry right from their inception.

3.6 These Institutions would be specialized and pace settling institutions offering a large menu of courses from which students can pick and choose according to their aptitude and liking, with a focus on basic sciences, integrating teaching and research, integrating education and exploration, imparting knowledge and skills and promoting the ability of students to solve societal problems. The unique feature of their academic programmes will be the internship in the last semester spilling over to the adjoining summer vacation. Products from these institutions would have career opportunities in the national laboratories, science agencies, educational institutions for higher science and industry. The R & D activities in these Institutes would essentially be sponsored by mission oriented agencies and industry and thus, supplement and complement R & D efforts of the national laboratories and science agencies. Faculty will be encouraged to evolve productive and strategies alliances with National Research laboratories, the industry and mission oriented Science agencies. The spirit of innovation, creativity and excellence should remain the guiding spirit of these institutes.

IV. Vision

4.1 These Institutes are envisioned as academic institutions of excellence imparting quality education in pure and applied sciences leading to post-graduate degree in the ambience of creative and innovative research and development and ensure an adequate supply of highly talented, highly skilled and highly motivated S and T manpower to lead R and D groups in our National Laboratories, Mission oriented agencies and in Industries. These Institutes will strive to be at the frontiers of science and at the cutting edge of technology.

V. Mission

5.1 The Mission of these National Institutes of Sciences is to be Global Centres of Excellence for education in basic and applied sciences, research in pure and applied sciences and also cutting edge technology development in interdisciplinary areas of importance to the country.

5.2 The Charter of the Institutes is summarized below:

- To provide education and training in pure and applied sciences to persons of outstanding abilities who would provide leadership to Indian Science in globally competitive economic environment
- To carry out R & D activities in basic and applied sciences, both on its own and on sponsorship basis forging a strong interface between science education imparted in these institutions and R & D carried out in national laboratories, mission oriented science agencies and in close collaboration with Industry.
- To evolve a new model of science education by selectively nurturing excellence in science education and thus become pace setting institutions for science education in the country.

- To provide continuing education programmes for faculty/ scholars from other institutions and industry.
- To organize conferences, seminars, workshops and such other activities for the dissemination of knowledge.
- To take all steps to exploit the knowledge generated in the Institutes for the benefit of the society and the country.

VI. Strategy

6.1 The proposed institutes should serve as interdisciplinary institutions for education and research in the areas of Basic sciences, Electronics, Communication and Information sciences, Material science, Life sciences, Biotechnology etc. and / or such areas which are of interest to the region in which they are located or of interest to the industries located in the nearby regions of each of the four Institutes. These Institutes shall become pre-eminent national centres for creation and dissemination of knowledge and would catalyze the development of high technology and its use in science agencies and in industry. These institutes shall focus on the creation of a pool of highly talented and creative individuals with specialized knowledge. These Institutes would have National Character in terms of body of its students, faculty profile and also its mandate to work with national level institutions with a national mandate. This would be retained at all costs, nurtured and further strengthened.

6.2 Apart from in-house academic and research and development activities the Institutes shall engage in directly benefiting the National Research Laboratory system and the Indian Industry and other academic institutions to integrate this new body of knowledge and practices in pure and applied science education in their programmes of human resource development, pure and applied research and technology development. Accordingly, strong interface

and close cooperation with other academic institutions, research institutes and knowledge intensive industry shall be the key features of these Institutes.

VII. Interface with Research System and Industry

7.1 An important requirement for achieving the vision and mission of these Institutes is to build strong and enduring linkages and interfaces with partners and stake-holders, including other academic institutions in chosen areas, both in India and abroad, the national laboratory system, the mission oriented agencies, the industry, government and the public at large. This would include:

- Involvement of the Institute in projects of national importance,
- Involvement and participation of the national laboratory system and industry in the educational and research and development activities of the institute.
- Creation of a suitable structure for generating know-how and, exploiting and commercialization of technology through technology incubation, transfer and licensing.
- Collaborative research projects, student and faculty exchange, etc.

7.2 In the changed and dynamic scenario, the need for creating synergistic partnership between educational and research institutions, technology development establishments, mission oriented agencies and industry is an absolute necessity. Continuous up gradation of curricula to meet the demands of the emerging scenario, creation of an ambience of creativity and innovativeness, building interface with leading R & D institutions, sharing of human resource and research infrastructure, with national laboratories, research institutes and industry, etc. for mutual benefit, are some specific areas where partnership with national laboratory system, science agencies and industry would benefit these national Institutes of Sciences. Considering the above, the proposed 'National Institute of Sciences' are expected to be co-sponsored, funded, supported and driven by the science agencies of the Government, and the industry. These institutes will have the governance and

management structure designed specifically to provide for autonomy, flexibility, accountability and for building productive interfaces with national laboratories, science agencies and the industry.

VIII. Academic and Research Activities

8.1 Academic programmes define the philosophy of an educational institution. These institutes would primarily offer a five year integrated science educational programme leading to postgraduate degree in basic and applied sciences. The integration is sought to be accomplished in terms of time and discipline, education and exploration, teaching and research, acquisition of knowledge and the ability and the capacity to use that knowledge for exploring the laws of nature and solving societal problems. The assigned role of the proposed Institute is a result of the firm conviction that the most effective form of teaching comes from discussion with peers and happens when teaching and learning are viewed as an adventure in discovery. There is perhaps no greater stimulant for young minds than to see discoveries and inventions occurring in their midst and in their presence.

8.2 There will be an exit route at the end of the third year, for those who cannot cope with this exacting and exciting science education programme. Similarly, at the end of the third year, there will be an aptitude test to test the ability of the student to continue with basic or with applied sciences. Bright students who have done their B.Sc. or B.E. in other institutions could join these National Institutes as exceptional cases, these institutions for their postgraduate degree in pure and applied sciences.

8.3 These Institutes would offer a large menu of courses from which students could choose according to their liking and aptitude in consultation with faculty adviser(s). The choice of courses will not be restricted to any conventional stream, but will also be available across the streams and beyond. For exceptional students, who demonstrate special insight in any given

discipline, the formal structure, will not be imposed on them and they will be encouraged to pursue their discipline at their pace.

8.4 Some of the significant science and technology trends of the future are likely to be at the intersection of the basic science with information and communication sciences, Materials science, biosciences etc. Therefore, the educational and research programmes are not expected to be organized in watertight compartments. However, for administrative convenience, these institutes could be centered around 4 to 6 Schools. Each Institute could identify its own areas depending upon the strength of Link University, nearby research and development laboratories or of interest to the region in which these Institutes are located.

Integrated Masters Programme

8.5 The main educational programme offered by the Institutes shall be the five year Integrated programme leading to M.Sc. in pure and applied sciences, after the 10+2 standard examination. In this programme, there shall be a common curriculum for all in which students will be exposed to basic physical principles, mathematical tools and techniques, computer and computational techniques, basics of life sciences and the current excitement in life sciences. In the laboratory, students will be enabled to learn various skills and techniques and carry out open-ended investigations. At the end of the first year, there will be rigorous year-end examination to assess the student's ability to cope up with this exciting and exacting educational programme in subsequent years.

8.6 Each course shall have emphasis on acquisition of latest knowledge and information, cultivation of different kinds of skills and development of competence in related techniques, nurturing and nourishing creativity and innovativeness, and inculcation of desired attitudes and outlooks conducive to social commitment. Besides, the classroom work packed with demonstrations,

there shall be laboratory lectures conducted in research laboratories and tutorials with emphasis on learning of skills and techniques, open ended investigations and projects rather than stereotyped experiments with known end results.

8.7 There shall be total flexibility in programme design having a lot of options with a core of liberal sciences. There shall be credit based evaluation system with possibility of fast track completion of programme, possibility of advanced degree and exit option after third year. The first three years could mainly be designed to strengthen the fundamental aspects of the subject and the last two years on specialization. The themes for specialization could be in challenging fields like for example, detector systems and electronic devices which are relevant to science instrumentation development, modeling and simulation of complex phenomena of the atmosphere, space astronomy and cosmology, geo-sphere - biosphere interactive system, process science and experimental techniques etc. There could be similar set of themes related to other areas of specialization like alternative sources of energy, material science, biotechnology etc. The special themes could be suitably distributed between the four Institutes depending on the availability of teaching expertise and facilities in the region.

8.8 The specialization should also include practical aspects of project work in the last half a semester and hands-on experience in R&D projects. This would help the students to improve their skills not only in pursuing research work but also in other areas of development as career prospects. During the internship, students will carry out research or development project in any one of the laboratories of science agencies, such as, DAE, DBT, CSIR, DRDO etc.; or in an industry. In case of students pursuing basic or theoretical sciences, they will spend their internship programme with an eminent professor in their discipline in a reputed research institute such as IISc, Bangalore, TIFR, etc. In exceptional cases, students of exceptional merit having passed B.Sc or B.E.

degree examination form any other reputed institution may be admitted for the subsequent two-year post graduate educational programmes in basic or applied sciences.

8.9 In order that majority of students pursue the field of science after completing the M. Sc. degree, the amount of the fellowship should have parity with the starting salary amount offered by Government Science Departments / Organizations for such candidates. These students may either join NISc or other academic, research institutions in the country. So far as funding of research activities is concerned, many science agencies like ISRO has schemes such as RESPOND, Space Science Fellowships etc., which could be utilized by submitting necessary proposals.

Research Programmes

8.10 Apart from offering educational programmes leading to M.Sc. degree in pure and applied sciences, the Institutes shall not only offer doctoral programmes but will also serve as productive and innovative research and development laboratories. Teaching and research laboratories will be brought under the same roof and in close contiguity so that students, right from the day one, can participate in creative endevours in research laboratories and study in exciting and creative atmosphere. Creative research atmosphere is an essential part of a good educational institution as discovery itself is the greatest and the most effective form of teaching and teaching and learning are viewed as an adventure in discovery.

8.11 Doctoral programme will include some specialized course work along with original research carried out either in the four schools or in an industry or in a reputed research laboratory under the joint supervision of a faculty member of NISc and a guide from a laboratory or an industry. The thesis need to include necessarily published research work in refereed journals or patents taken or applied for. To a great extent, the reputation of and the atmosphere

in these Institutes for nurturing and nourishing creativity and innovativeness will crucially depend upon the quality of research work it produces. The areas round which theses institutes will function will offer rewarding academic challenges and tremendous technological or applicative opportunities. Research programmes in these areas would not only be comparable to the best anywhere but would also be such as to be a harbinger of a new and revolutionary development and a source of economic growth. Most of the research programmes will be sponsored by or worked in collaboration with national research laboratories, research institutes or industries. Faculty will be encouraged to evolve working and strategic alliances with the industry. This nexus between these institutes and the industry will be mutually beneficial since it will ensure smooth and fast transfer of technology developed in the institutes and in turn facilitate nurturing research effort in the NISc by the industry.

Admissions

8.12 Admissions to the Institutes will be strictly based on the merit determined through a well-designed national level identification process and discussion with the faculty to assess the aptitude of the students. A certain number of foreign students may also be admitted. Foreign students and Indian nationals living abroad will be admitted on the basis of their performance in SAT-II test. For admission to Ph.D. programme, eligible candidates will be selected for admission on the basis of a written test and/ or interview conducted by the Institute.

Continuing Education Programmes

8.13 The human resources required for meeting the challenges posed by global competitiveness have to constantly upgrade their competence. Continuing Education Programmes will be organized on a regular basis in the form of short-term courses primarily for knowledge up-gradation of scientists and researchers to bring to them the cutting-edge science and technology. The

duration of these courses may vary from one week to one month depending upon the level of course and the fee chargeable will depend on the duration of course and number of participants.

R & D Activities

8.14 Research and development activities of the Institutes will be primarily for generation and assimilation of new knowledge for developing problem solving tools and techniques. These will be mostly supported activities by National laboratories and mission oriented agencies and Industry. Small projects may be handled through undergraduate students in the form of summer projects or through regular course projects. Major projects will be assigned to postgraduate students with the support of project staff specially hired for the purpose.

8.15 Projects will be put in three categories namely (i) Institutes core projects, (ii) Sponsored research and development projects and (iii) Consultancy projects. Sponsored projects will be funded by national research laboratories, mission oriented science agencies, industry, international agencies etc. Sponsored research and development projects will generally be of longer duration with defined output requiring involvement of more than one faculty member. In many cases, faculty from other institutions, scientists from sponsoring agencies could work jointly on these projects. Consultancy projects, mainly problem solving type, will be of shorter duration. Alternately, Institute can be a permanent consultant to an industry on a retainer basis. Appropriate overheads will be chargeable to all such projects. Most of the postgraduate / doctoral and postdoctoral students will be supported by these projects through appropriate research fellowships.

Curriculum Design

8.16 Curriculum will be designed and prescribed by the committees for curricula. These would be approved by the Academic Council. The committee

for the curricula shall comprise of the concerned faculty in the Institute, the joint appointees, concerned visiting faculty and experts drawn from national research laboratories, mission oriented agencies and industry in respective areas. The process of curricula design and prescription shall be simple and quick so that curricula could be modified and updated without much delay and with ease. There are some important notions that may be followed for designing the curricula.

- The emphasis would be laid on basic concepts, how they were evolved, what they are and their implications. Indeed, greater emphasis will be laid on the applications of basic concepts and on provoking students on conceiving and developing many more applications.
- Teaching and learning should be considered as an adventure in discovery. Consequently, greater stress will be laid on self-learning rather than on teaching. In fact, learning which is deep occurs best when a student tries to apply his learning to unstructured designs situations.
- The whole education programme is based on three basic principles namely, learn how to learn, learn how to do and learn how to live.

8.17 Accordingly, flexibility in course scheduling and heavy emphasis on project work would form essential elements. To ensure holistic education, subjects like sociology, behavioral science, patent and business laws, intellectual property rights, history and philosophy of science, environmental and sustainable development issues, economics, art and music appreciation etc., would also be taught through weekly colloquia by experts in the related fields.

Learning Environment:

8.18 In theses institutes care would be taken that the best, the country can afford, shall teach. To ensure this the faculty in these Institutes would comprise of (a) core faculty very carefully chosen, (b) joint appointees holding

appointments in these Institutes and in prestigious national R and D laboratories in the neighborhood, (c) visiting faculty from all over the country and abroad. At any given point of time, 20 % of the faculty shall be the visiting faculty, out of which not less than 10 % shall be from reputed universities and research establishments abroad, and (d) adjunct faculty from successful technologically oriented industries. The ratio of the core faculty to the other faculty should be around 60:40. Indeed, it should be considered as an academic honour in the country to be invited to be the visiting faculty at these Institutes. Service conditions for the staff would be similar to those available in the IIT's.

8.19 Formal classroom lectures packed with demonstrations would be supplemented by tutorials. Tutorials will be conducted by the junior faculty supplemented by teaching assistants. This would be supplemented further by the use of multimedia educational packages and Internet services. This approach to learning will hopefully help in developing an ability of self-learning and an attitude for continuing education which has become essential in today's world of rapid change.

8.20 The library of the Institute will be essentially be a Digital Library supplemented by reference books and journals. This library would serve the needs of its educational, research and development programmes. A digital library system with appropriate networking will provide access to online world library and permit downloading of papers and abstracts, searching the classification of references, etc. from personal desktops. Accordingly, the Institute shall benefit both from UGC InfoNet and the Indian Digital Library in Engineering Science and Technology (INDEST) Consortium right from its inception. Library will have adequate reprographic facilities.

IX. Students, Faculty and Staff

9.1 Total number of students enrolled for the five year integrated programme would be 1000. In addition there would around 200 doctoral / post

doctoral and research fellows. Some seats could be kept for International students. Year-wise break-up of number of students is given in Table 1 below:

Table 1: Cumulative Number of Students: Year-wise

	1st Year	2nd Year	3rd Year	4th Year	5th Year
5-Year Integrated Programme Students	200	400	600	800	1000
Research & Post Doctoral Students	5	50	100	150	200
Total	205	450	700	850	1200

9.2 On the basis of student strength, teaching load and requirement for research and development activity, the faculty strength should be minimum of 100. This low student to teacher ratio (10:1) is very essential, for the Institutes that impart exciting and stimulating education at the frontiers of pure and applied sciences in the ambience of a highly creative and innovative R & D environment. Any further increase in the student to faculty ratio will only compromise the quality. The core faculty would be under a Flexible Cadre System as in IITs.

9.3 The Core Faculty shall be supplemented by (a) Joint Appointees holding appointments in the nearby reputed National R & D Institutes and the Link university, (b) Visiting Faculty drawn specifically from reputed research institutions in the country and abroad (c) Adjunct faculty drawn from Industry. Ratio of core faculty to the other faculty is likely to in the ratio of 60:40. This kind of faculty structure will ensure involvement of national laboratories, mission oriented science agencies and industry in the academic activities of the Institutes. Care would also be taken to ensure that at any given point of time, there is at least 15 to 20% visiting faculty out of which nearly 5% would be from

abroad. This will ensure the National Institutes to remain in line with the international trends.

9.4 The guiding principle in recruiting the academic staff will be that the very best the country shall teach and carry out research in the NISc. Consequently, extreme care will be exercised in the recruitment of core faculty and in inviting visiting faculty. It should become a matter of prestige to be invited to teach and work in these Institutes. For attracting quality, retaining them and ensuring their continued high performance, possibility of tenure track teaching cum research faculty, as in the higher education system in the US will be explored. Under tenure-track faculty system, a person is hired as an Assistant Professor on contract for a period of five years. After that period, his teaching work and research output is evaluated and the person is tenured (i.e. made permanent). The process of the grant of tenure position is taken very seriously. When tenure position is offered, the person is promoted as an Associate Professor. If the person is not given a tenure position, he would be asked to leave. In addition to the above process of faculty recruitment, eminent people with excellent track record for teaching and research would be offered Associate Professors or full Professors positions.

9.5 Pay scales and benefits for faculty shall be at the same level as in IITs. Provision of top up salaries or liberal increments at the time of first appointment, contractual appointments for star faculty from Industry or from o abroad, concept of top up salaries with necessary funding from industries and other sources could be explored in order to attract and retain quality faculty.

9.6 The Institutes would have skeleton administrative staff. Routine services like security, cleaning, maintenance, canteen etc., would be given out on contract. Administration will be made paperless using new technologies. Accounts will be computerized. However, adequate technical staff would be required for academic and research labs and library etc.

9.7 Numbers of Core Faculty, Technical Staff and Support Staff with year-wise break up are given in Table 2.

Table 2: Cumulative faculty / Staff Numbers – Year-wise

	Year 1	*Year2*	*Year3*	*Year4*	*Year5*
Core Faculty	20	40	60	80	100
Technical Staff	10	20	35	60	80
Administrative & Support Staff	15	25	40	50	60
Total	***45***	***85***	***135***	***190***	***240***

X. Location

10.1 Location of the four (4) Institutes has been decided upon through a consultative process. This is as under.

At Pune

Director, of the National Chemical Laboratory of CSIR has kindly agreed to make available for the National Institute of Sciences a plot of land admeasuring 50 acres. The land has an independent entry from the Baner road and is in proximity to the University of Pune and other National Laboratories in Pune.

At Chennai

Vice Chancellor of the Link University, Anna University, Chennai has assured UGC to provide the required land for the purpose and adequate administrative and logistic support, on the campus vide his letter dated 1st Aug 2003.

At Allahabad

Vice-Chancellor of the Link University – Allahabad University is in the process of acquiring a large piece of land in Jhansi area in exchange of their Beli Farm land situated within the city belonging to the university. This area is close to the Harish Chandra Institute, the G.B.Pant social science Institute and the

Geomagnetic Centre. Vice-Chancellor has agreed to provide the necessary land for the National Institute of Sciences, vide his letter dated September 10, 2003.

At Bhubaneshwar

A Team of Senior Officials of the State Government has identified a land measuring 75 acre for the purpose in the proximity of Bhubaneshwar Municipal Area and the State Government of Orissa has agreed to provide this land free of cost.

XI. Infrastructure and Equipment

11.1 Each of the Institutes will be provided with about 50 acre of land to start with. There shall be zoning of land for academic and research activities such as for lecture room complex, laboratory buildings for teaching and research work and residential facilities like - faculty housing, guest house, students hostels etc. Site development will involve landscaping, plantation, lawns and gardens, boundary wall, road lightings, optical fibre network for communication, water supply, sewage disposal, etc. The major services to be provided would include electric substation, central air conditioning, tube wells, telephone exchange, etc.

11.2 Total built up area is estimated to be around 55032 sq. meters. Civil construction and infrastructure development will be carried out over a period of eight to ten years. It may also be stressed that the pace of development of all the four Institutions would not be the same and consequently available financial resources would be deployed as and when necessary. The suggested civil construction during remaining period of the 10th five-year plan will be as under.

Table 3: Space Requirement *(in sqm)*

Details	***Plinth area***
Academic Complex	
Academic cum Administrative Building	3,000
Lecture Hall Complex	3,000
Research and Teaching Laboratories	10,000
Computer Centre	1,000
Auditorium	2,000
Workshops	1,000
Activities Centre / Cafeteria	1,000
Sub Total	21,000
Residential Complex	
Student Hostels with Common facilities (600 seats)	10,000
Housing Units (50 Nos.)	5,000
Transit Hostels for Faculty (50 units)	3,000
Guest House (60 seats)	3,000
Community Centre	1,000
Gymnasium	1,000
Sub Total	23,000

11.3 The economic and functional specifications for various buildings will be made to optimize on costs. The cost estimates for buildings and bulk services work out as under:

Table 4: Cost Estimate for Buildings and Bulk Services

S. No.	***Items***	***Amount***
1.	Academic Complex (21000 sqm @ Rs. 7000 per sqm)	1470
2.	Residential Complex (23000 sqm at Rs. 7000 per sqm)	1610
3.	Internal Roads / water drainage, landscaping horticulture etc.	140

4.	Electric supply, Gen sets, External lighting	160
5.	Water supply, water treatment, sewerage etc.	120
6.	Boundary wall	50
7.	Air-conditioning	200
	Total	***3750***

Equipment

11.4 Both teaching and research and development activities would need equipment and supporting infrastructure. In these Institutes, teaching and research laboratories would be integrated so that the students do their open-ended experiments and projects in the creative atmosphere of research laboratories. Secondly, although the schools would need specialized, state of the art equipment pertaining to their fields of specialization, there would also be common facilities that would be used by all the four schools.

11.5 Efforts will be made to update equipment and infrastructure continually. However, in the remaining part of the 10th five year plan, greater emphasis will laid on establishing laboratory equipment for teaching and on core research facilities. The research facilities will grow over the years and will also be augmented through sponsored projects by the national research laboratory system, science mission agencies and the industries. However, to attract the sponsored research funding, these Institutes will need to have core equipment. in the Institutes. The suggested provision for equipment and supporting infrastructure is shown in Table 5

Table 5: Equipment Requirement *(Rs. In Lakh)*

Sr. No.	***Details***	***Amount***
1.	Teaching Laboratories	850
2.	Research Laboratories	1000
3.	Computers, software, etc.	150
4.	Accessories, spares and additional auxiliary equipment	200
	Audio –visual aids	50
5.	Library books and Journals	50
6.	Optical fibre networking	50
7.	Classroom/ library furniture	100
8.	Miscellaneous	50
	Total	***2600***

XII. Governance and Management

12.1 From strategy flows the structure. Strategically, if the Institutes are to cater to the needs of the National laboratories and mission oriented agencies and the knowledge intensive industrial sector, the Institutes, should have the capability to adapt quickly to changes while being stable, innovative and efficient. The *Management Structure* of the Institutes has to take into consideration rapid advances in the areas of science and technology. It is now realized that professionally trained skilled manpower can make a significant impact on competitiveness of the existing and location of new economic activities. In addition, the Institutes are also expected to act as resource centres for creation and dissemination of knowledge.

12.2 The governance structure should

- Be capable of fostering a partnership with research labs and industry such that they play a role beyond that of employer of the graduates. It

implies that the research labs and industry are involved in keeping the institute dynamic and innovative.
- Be capable of nurturing innovation, creativity and excellence in academics.
- Have efficient decision making processes capable of responding quickly to the fast pace of changes taking place all around.
- Provide accountability to all its stakeholders.
- Be capable of providing an environment conducive to the development of aptitude, attitudes and skills in young students so that they become globally competitive and are responsible citizens.

12.3 To meet these, a structure with the following characteristics is required:

- Autonomy in its operations including academic planning, recruitment and management of staff, and financial management.
- Flexibility to develop partnership with other academic institutions, research labs and industry to build on synergies and suit the specific requirements.
- Transparent, responsive, cooperative and decentralized so as to ensure the system to function harmoniously and efficiently.
- Decision processes which results in quick and timely decisions to keep pace with changing nature of activities.
- Efficiency in utilization of its resources.
- Internal accountability of all faculty and staff through an effective performance appraisal system.
- External accountability to its stakeholders through identified mechanisms.

12.4 Accordingly, the Institutes would be set-up through the UGC as Registered Societies. Initially, these Institutes would be, for academic purposes, autonomous institutions of the Link Universities with full academic, administrative and financial autonomy. Although the link university will award

educational and research degrees to the scholars and students of this Institute in the initial phase, these Institutes will have complete and total freedom to lay down their courses, frame suitable course structure, method of teaching and evaluation. These Institutes will have total autonomy to frame statutes and regulation in this regard. This organic link with the Link universities would be very crucial in the initial phases. Established Universities would help to nurture the Institute till they mature to be on their own. Possibility of associating reputed universities from abroad right from inception shall also be explored. Depending on experience further autonomy may be given to the Institutes to enable them to plan their own programmes based on the needs of the society, and keep the programme constantly updated and to attract good faculty, who would expect academic freedom.

12.5 The Management structure will consist of the following:

(a) The Governing Council
(b) The Governing Board
(c) The President of the Governing Council
(d) The Chairperson of the Governing Board
(e) The Director
(f) The Academic Council
(g) The Registrar
(h) Such other authorities and officers as may be constituted/ appointed by the Governing Body.

National Co-ordination Committee

12.6 There shall be a National Co-ordination Committee for the National Institutes of Sciences for overall coordination between the NIScs and between NIScs and various Government science agencies. This Committee shall be chaired by the Minister for Human Resources Development, Govt. of India. Chairman (UGC) shall be its Vice Chairman. Suggestive composition of this Committee is given at Annexure II.

The Governing Council

12.7 The Governing Council shall be a body, which will serve as the society for the purposes of the Society Registration Act. The Governing Council shall be chaired by the Chairman, UGC.

The Governing Board

12.8 The affairs of the Institute shall be managed, administered, directed and controlled, subject to Rules and Regulations and Byelaws by the Governing Board of the Institute. The Governing Board shall be chaired by the chairperson of the Governing Board. The Chairperson of the Governing Board shall be an eminent scientist / technologist / industrialist from amongst a panel of three proposed by the outgoing Governing Board, to be appointed by the Chairman, UGC. The first chairman shall be appointed by the Chairman, UGC through a search cum selection process. The Governing Board will be assisted by the various committees dealing with specific and well-identified activity or functions of the Institute. For the purpose of performance audit and ensure accountability, the Governing Board could also appoint an Academic Advisory and Review Committee under Chairmanship of an eminent scientist from outside.

Director

12.9 The Director of the Institute will be the principal academic and administrative head and will provide academic leadership to the faculty and ensure smooth functioning of the Institute. He shall be responsible for proper administration and for funds of the Institute. By his academic eminence, enlightened vision, compassion and understanding, he will ensure that **NISc** is not only a first rate educational institute and a flourishing research establishment operating at the frontiers of science and at the cutting edge of technology but also make the Institute a non-feudal, internally democratic,

academically autonomous and internationally exciting institution dedicated to creativity, innovativeness and entrepreneurship.

12.10 The Director will be appointed by the President of the Governing Council, on the recommendations of the Search Committee constituted for the purpose by the Governing Board comprising of not less than three and not more than five eminent scientists/ technologists/ industrialists. The Chairman of the Governing Board shall be the Chairman of the Search Committee. The Committee shall meet the faculty members of NISc, solicit their views, as also receive suggestions from eminent scientists/ technologists in the country, before submitting a panel of names to the Chairperson of the Governing Board. The term of appointment of the Director will be for five years and the term can be renewed for further period of five years at a time, or till he attains the age of sixty five years whichever is earlier.

Academic Council

12.11 There shall be the Academic Council of the Institute, which shall serve as an apex academic authority regarding all matters concerning (a) academic programmes, (b) academic calendar, (c) admission rules and procedures, admission of students for degrees and research activities, (d) registration of candidates for various degrees, (e) approval of courses (f) statutes and regulations regarding teaching and evaluation, (g) teaching, research, technology development and evaluation, (h) research and technology development projects, thesis evaluation, etc. subject to the overall control of the Governing Board. Academic Council may constitute its own committees for (a) courses and curricula (b) research and technology development (c) for framing extension, consultation and technology transfer policy. (d) Academic Policy, (e) Academic Programmes, (f) Student Governance to advice it on all matters falling within its purview. Suggestive composition of the Academic Council of National Institute of Science, Pune is given at Annexure IV.

Registrar

12.12 Each Institute shall have a Registrar who will assist the Director and the faculty of the Institute in administrative and financial matters. They will be appointed by the Director on recommendations of the selection committee constituted for the purpose.

Systems

12.13 Systems comprising of appropriate processes that cater to the need for flexibility and quick response time are essential for an adaptive organization of the future. Effective and efficient functioning of the Institution would critically depend on its support systems. Lack of such systems can significantly hamper the realization of goals no matter how good the human and other resources are. Therefore thrust would be on creation of support systems that will offer reliable and quick services. Information Technology would be exploited to enhance efficiency and effectiveness of support services. Processes shall be kept simple and transparent. Convenient and efficient workflows would be part of the development of this system. Implementation should be time bound. Many problems faced by the faculty, students and staff will get addressed and solved when such a system is put in place.

XIII. Financial Implications

13.1 Details of total investment year-wise per Institute are given in Table 6. It may be emphasized that all Institutes would not develop and grow at the same pace. The following indicates the limits for investment per Institute.

Table 6: Capital Investment Year-wise (in Rs. Lakh)

	2004-2005	***2005-2006***	***2006-2007***	***Total***
Buildings & Bulk Services	500	1500	1750	3750
Equipment	300	1200	1100	2600
Total	***800***	***2700***	***2850***	***6350***

13.2 Details of recurring cost year-wise are given in Table 7. Three percent of the capital cost has been kept for real estate maintenance and five percent of the cost for equipment maintenance. All the staff will be under CPF scheme and covered by the Group Medical Insurance. Security services, water supply, sewage disposal, sanitation, horticulture, catering services, hospitality management, transport telecommunications, civil maintenance, electrical maintenance, air conditioning maintenance, and stand-by power shall be outsourced. Some of this may be covered in maintenance budget; however, major part of it may not be covered. Therefore, a separate maintenance budget head has been kept for which funds would be provided, as required. If the maintenance budget for buildings, equipment, etc. is not fully utilized, a depreciation fund may be created by the Institutes for special maintenance of the buildings and replacement of the equipment.

Table 7: Recurring Costs -Year-wise (Amount in Rs. Lakh)

	2004-2005	*2005-2006*	*2007-2008*	*10th Plan*
Pay and allowances (inclg. Joint Appointees / Visiting faculty)	50	150	350	550
Outsourcing Expenses	50	50	50	150
Real Estate Maintenance	0	5	5	10
Equipment Maintenance	0	5	10	15
Departmental Expenses (including cost of consumables, chemicals etc.)	40	85	140	265
Administrative Expenses	16	24	30	70
Water/Electricity/Phone & Service Charges	8	12	20	40
Total	***164***	***331***	***605***	***1100***

13.3 Total investment in each Institute would be Rs. 7450 lakh during the Tenth five-year plan. This investment will enable the Institutes to attract funding from mission oriented science agencies, national laboratories and industries. Full development of these Institutes is expected by the end of the 11th five-year plan though first batches will come out of these Institutes by 2010. All the four Institutes will not grow at the same pace.

Table 8: Total Investment – Year-wise (Amount in Rs. lakh)

	2004-2005	*2005-2006*	*2007-2008*	*Total*
Non-recurring	800	2700	2850	6350
Recurring	164	331	605	1100
Total	***964***	***3031***	***3455***	***7450***

13.4 Tuition fee of Rs. 25000 per annum for the five-year integrated educational programme will be charged. Several students will be given Rs. 10000 p.a. for a research fellowship. For meritorious students there will be tuition fee waivers. Students may also opt for interest free deferred payment arrangement, so that bright students are not deprived of education in these Institutes for want of their ability to pay the tuition fee. Deferred payment shall become due on employment. This arrangement transfers the risk of unemployment from the student to the Government. International students could be charged higher fee levels. Boarding and lodging expenses will have to be paid by the students on the actual basis. Details of the expected year-wise revenue from tuition fees are given in table 8.

Table 8 : Fee Revenue – Year-wise (in Rs. lakh)

	2004-2005	*2005-2006*	*2006-2007*	*Total*
Fee Revenue	53	106	159	318

13.5 The Institutes are expected to generate additional funds from national laboratories, mission oriented science agencies and the industries. These agencies can endow chairs, equip teaching or research laboratories and sponsor research. In addition, industries will finance these Institutes by paying for testing, consultancy and technical know-how generated by these Institutes. This source of funding will start generating resources for the Institutes after these Institutes have established basic core facilities for carrying out research and development and this is expected by the end of the 10th five year plan. Possibility of these Institutes getting additional support from the charitable

trusts, philanthropic individuals will also be explored. However all this will start happening only after core facilities are established and the Institutes are fully functional.

13.6 Eventually, these Institutes would be brought under the Formula based funding arrangements, with output as focus as has been decided by the IITs recently. Under this funding arrangement, support is linked directly to the output in terms of number of students, research output, etc. These Institutes would continually strive to be world class educational Institutes and creative and Innovative research and development establishments working at the frontiers of science and at the cutting edge of technology with accountability to the stake holders and beneficiaries. There shall be a framework of national goals and standards against which performance of these Institutes would be monitored and assessed. UGC will continue to provide bulk funding for the Institutes and shall serve as Principal provider. UGC funding will be supplemented by increased contributions from other sources.

XIV. Operational Plan

14.1 Planning Committee(s) shall be set up for detailed planning of the Institutes. Officer on Special Duty will be appointed for each Institute as soon as Government approval is received. The operation plan for establishing the Institutes will require various steps. These are summarized below -

- Approval of the proposal by the Government. (3 months)
- Identification of National Labs, Industry partners etc. for each Institute (2months)
- Registration as a 'Registered Societies'. (1 month)
- Selection of the Chairman, Governing Board. (1 month)
- Constituting the Governing Board (1 month)
- Appointment of the Director of the Institute. (3 months)
- Transfer of land for the Institute. (1 month)
- Transfer of funds by UGC etc. (4 months)

- Identification of Architect for developing the Institute campus. (2 months)
- Site preparation and construction of boundary wall. (6 months)
- Establishing the admission procedure, fee structure, etc. (3 months)
- Preparation of details of academic programmes giving details of semester-wise courses, course contents, lecture-wise break-up, recommended books, etc. (3 months)
- Approval of building plan. (2 months)
- Tendering and identification of contractors. (2 months)
- Construction of buildings for classrooms, laboratories, hostels, etc. for accommodating first and second year students. (9 months)
- Recruitment of faculty and staff members. (6 to 18 months)
- Development of library, laboratories, design studios and computing facilities. (6 months)
- Notification for admission. (1 months)
- Starting of first year classes: July 2005.
- Construction of buildings and facilities for accommodation of subsequent batches, recruitment of faculty and staff, development of laboratories, etc. to continue.

15.2 Many of these activities can be taken up in parallel and therefore target date may not be the sum of periods referred to above. It would be fair to say that Institutes can take the first batch of students from July 2005 if the time schedule proposed is adhered to.

XV. Conclusions

15.1 The proposal to set up National Institute(s) of Science is a response to an in depth analysis of the present state of science education and research in the country. Science education suffers from several defects and deficiencies. The proposal addresses these concerns. This would help in blurring the unwanted divide between pure and applied sciences. A distinguishing feature of these Institutes is close and intimate relationship with its beneficiaries namely the

various science agencies and the industry. They are being associated right from conceptualization stage.

15.2 Setting up of the National Institutes of Sciences would be landmark in the science education system in the country. These Institutes would not only help the Country to meet the requirement of high quality people in science to man and lead our national lab system and mission oriented science agencies, but also to move up the value chain in global R & D services, where India is favorably positioned. These Institutes provide for a new model for science education in the country characterized by flexibility and a holistic approach to science education. Adaptive management structure provides these Institutes the ability to respond to challenges of the future in the R & D sector. This would provide sustainable competitive advantage to Indian R & D system in the increasingly globalized economic environment.

15.3 The concept of these Institutes, its structure and functioning both academic and administrative, is a result of collective wisdom of a large number of eminent practicing scientists, science educators, who are not only intimately aware of the ills of the present system but also of the exacting needs of the emerging scenario. This model is expected to create a new ethos in the field of science education. Hopefully, this model, in course of time, will be duplicated at several places in the country and will seep into our present university system so that it can transform once again into creative and innovative temples of learning.