Higher education has made a significant contribution to economic development, social progress and political democracy in independent India. But there is serious cause for concern at this juncture. The proportion of our population, in the relevant age group, that enters the world of higher education is about 7 per cent. The opportunities for higher education in terms of the number of places in universities are simply not adequate in relation to our needs. Large segments of our population just do not have access to higher education. What is more, the quality of higher education in most of our universities leaves much to be desired.

At the outset, we would also like to stress that foundations are critical. We believe that an emphasis on expansion and reform of our school system is necessary to ensure that every child has an equal opportunity to enter the world of higher education. We are engaged in consultations on school education. We will send our recommendations in this crucial area in due course. In this letter, we focus on higher education.

The NKC has engaged in formal and informal consultations on this subject with a wide range of people in the world of higher education. In addition, we consulted concerned people in parliament, government, civil society and industry. The concerns about the higher education system are widely shared. There was a clear, almost unanimous, view that higher education needs a systematic overhaul, so that we can educate much larger numbers without diluting academic standards. Indeed, this is essential because the transformation of economy and society in the twenty-first century would depend, in significant part, on the spread and the quality of education among our people, particularly in the sphere of higher education. And it is only an inclusive society that can provide the foundations for a knowledge society.

The objectives of reform and change in our higher education system, as you have often stressed, must be expansion, excellence and inclusion. We recognize that meaningful reform of the higher education system, with a long-term perspective, is both complex and difficult. Yet, it is imperative. Our analysis, diagnosis and prescriptions are set out in a detailed note on higher education which is attached. In this letter, we simply highlight our prescriptions.

A. EXPANSION

1. Create many more universities. The higher education system needs a massive expansion of opportunities, to around 1500 universities nationwide, that would enable India to attain a gross enrolment ratio of at least 15 per cent by 2015. The focus would

have to be on new universities, but some clusters of affiliated colleges could also become universities. Such expansion would require major changes in the structure of regulation.

2. Change the system of regulation for higher education. The present regulatory system in higher education is flawed in some important respects. The barriers to entry are too high. The system of authorising entry is cumbersome. There is a multiplicity of regulatory agencies where mandates are both confusing and overlapping. The system, as a whole, is over-regulated but under-governed. We believe that there is a clear need to establish an Independent Regulatory Authority for Higher Education (IRAHE). The IRAHE must be at an arm's-length from the government and independent of all stakeholders including the concerned Ministries of the Government, along the lines specified in our attached Note.

- The IRAHE would have to be established by an Act of Parliament, and would be responsible for setting the criteria and deciding on entry.
- It would be the only agency that would be authorized to accord degree granting power to higher education institutions.
- It would be responsible for monitoring standards and settling disputes.
- It would apply exactly the same norms to public and private institutions, just as it would apply the same norms to domestic and international institutions.
- It would be the authority for licensing accreditation agencies.
- The role of the UGC would be re-defined to focus on the disbursement of grants to, and maintenance of, public institutions in higher education. The entry regulatory functions of the AICTE, the MCI and the BCI would be performed by the IRAHE, so that their role would be limited to that of professional associations.

3. Increase public spending and diversify sources of financing. The expansion of our system of higher education is not possible without enhanced levels of financing. This must necessarily come from both public and private sources.

- Since government financing will remain the cornerstone, government support for higher education should increase to at least 1.5 per cent of GDP, out of a total of at least 6 per cent of GDP for education.
- Even this would not suffice for the massive expansion in higher education that is an imperative. It is essential to explore other possibilities that can complement the increase in public expenditure.
- Most public universities are sitting on a large reservoir of untapped resources in the form of land. It should be possible to draw up norms and parameters for universities to use their available land as a source of finance.
- It is for universities to decide the level of fees but, as a norm, fees should meet at least 20 per cent of the total expenditure in universities. This should be subject to two conditions: first, needy students should be provided with a fee waiver plus scholarships to meet their costs; second, universities should not be penalized by the UGC for the resources raised from higher fees through matching deductions from their grants-in-aid.

- We should nurture the tradition of philanthropic contributions through changes in incentives for universities and for donors. At present, there is an implicit disincentive in both tax laws and trust laws. These laws should be changed so that universities can invest in financial instruments of their choice and use the income from their endowments to build up a corpus.
- Universities should also seek to tap other sources such as alumni contributions and licensing fees. We need to create supportive institutional mechanisms that allow universities to engage professional firms for this purpose.
- It is essential to stimulate private investment in education as a means of extending educational opportunities. It may be possible to leverage public resources, especially in the form of land grants, to attract more (not-for-profit) private investment.

4. Establish 50 National Universities. We recommend the creation of 50 National Universities that can provide education of the highest standard. As exemplars for the rest of the nation, these universities shall train students in a variety of disciplines, including humanities, social sciences, basic sciences, commerce and professional subjects, at both the undergraduate and post-graduate levels. The number 50 is a long term objective. In the short run, it is important to begin with at least 10 such universities in the next 3 years. National Universities can be established in two ways, by the government, or by a private sponsoring body that sets up a Society, Charitable Trust or Section 25 Company.

Since public finance is an integral constituent of universities worldwide, most of the new universities shall need significant initial financial support from the government. Each university may be endowed with a substantial *allocation of public land*, in excess of its spatial requirements. The excess land can be a subsequent source of income generation. Exceptions need to be made in existing income tax laws to encourage large endowments. Further, there should be no restriction on the utilization of income in any given period or in the use of appropriate financial instruments. And these universities should have the autonomy to set student fee levels and tap other sources for generating funds.

The National Universities we propose shall admit students on an all-India basis. They shall adopt the principle of *needs-blind admissions*. This will require an extensive system of scholarships for needy students. Undergraduate degrees in the National Universities, in a three-year programme, should be granted on the basis of completing a requisite number of credits, obtained from different courses. The academic year shall therefore be semester-based and students shall be internally evaluated at the end of each course. Transfer of credits from one National University to another shall also be possible. An appropriate system of appointments and incentives is required to maximize the productivity of faculty in these National Universities. Strong linkages shall be forged between teaching and research, universities and industry, and universities and research laboratories. The National Universities shall be department-based and shall not have any affiliated colleges.

B. EXCELLENCE

5. Reform existing universities. Our endeavour to transform higher education must reform existing institutions, where some steps listed below, and explained in the attached note, are essential.

- Universities should be required to revise or restructure curricula at least once in three years.
- Annual examinations, which test memory rather than understanding, should be supplemented with continuous internal assessment which could begin with a weight of 25 per cent in the total to be raised to 50 per cent over a stipulated period.
- We propose a transition to a course credit system where degrees are granted on the basis of completing a requisite number of credits from different courses, which provides students with choices.
- Universities must become the hub of research once again to capture synergies between teaching and research that enrich each other. This requires not only policy measures but also changes in resource allocation, reward systems and mindsets.
- There must be a conscious effort to attract and retain talented faculty members through better working conditions combined with incentives for performance.
- The criteria for resource allocation to universities should seek to strike a much better balance between providing for salaries or pensions and providing for maintenance, development or investment. It should also recognize the importance of a critical minimum to ensure standards and strategic preferences to promote excellence.
- The elements of infrastructure that support the teaching-learning process, such as libraries, laboratories and connectivity, need to be monitored and upgraded on a regular basis.
- There is an acute need for reform in the structures of governance of universities that do not preserve autonomy and do not promote accountability. Much needs to be done, but two important points deserve mention. The appointments of Vice-Chancellors must be freed from direct or indirect interventions on the part of governments, for these should be based on search processes and peer judgment alone. The size and composition of University Courts, Academic Councils and Executive Councils, which slow down decision-making processes and sometimes constitute an impediment to change, need to be reconsidered on a priority basis.
- We need, and should strive to create, smaller universities which are responsive to change and easier to manage.

6. Restructure undergraduate colleges. The system of affiliated colleges for undergraduate education, which may have been appropriate 50 years ago, is no longer adequate or appropriate and needs to be reformed. Indeed, there is an urgent need to restructure the system of undergraduate colleges affiliated to universities.

- The most obvious solution is to provide autonomy to colleges either as individual colleges or as clusters of colleges, on the basis of criteria that have been stipulated in our note. However, this would be able to provide a solution for a limited proportion, or number, of undergraduate colleges.
- Some of these affiliated colleges could be remodelled as community colleges, which could provide both vocational education and formal education.
- A Central Board of Undergraduate Education should be established, along with State Boards of Undergraduate Education, which would set curricula and conduct examinations for undergraduate colleges that choose to be affiliated with them. These Boards would separate the academic functions from the administrative functions and, at the same time, provide quality benchmarks.
- New undergraduate colleges could be established as community colleges, could be affiliated with the Central Board of Undergraduate Education or State Boards of Undergraduate Education, or could be affiliated with some of the new universities that are established.

7. Promote enhanced quality. The higher education system must provide for accountability to society and create accountability within. An expansion of higher education which provides students with choices and creates competition between institutions is going to be vital in enhancing accountability.

- There should be stringent information disclosure norms for all educational institutions such as their financial situation, physical assets, admissions criteria, faculty positions, academic curricula, as also their source and level of accreditation.
- Evaluation of courses and teachers by students as well as peer evaluation of teachers by teachers should be encouraged.
- There must be a focus on upgrading infrastructure, improving the training of teachers and continuous assessment of syllabi and examination systems.
- It is particularly important to enhance the ICT infrastructure. Websites and web-based services would improve transparency and accountability. A portal on higher education and research would increase interaction and accessibility. A knowledge network would connect all universities and colleges for online open resources.
- It may be necessary to rethink the issue of salary differentials within and between universities along with other means of attracting and retaining talented faculty members. Such salary differentials between and within universities could be effective without being large.
- It is necessary to formulate appropriate policies for the entry of foreign institutions into India and the promotion of Indian institutions abroad, while ensuring a level playing field for foreign and domestic institutions within the country.
- The system of higher education must recognize that there is bound to be diversity and pluralism in any system of higher education, and avoid a uniform one-size-fits-all approach. This sense of pluralism must recognise, rather than ignore or shy away from, such diversity and differentiation.

C. INCLUSION

8. Ensure access for all deserving students. Education is the fundamental mechanism for social inclusion through the creation of more opportunities. It is, therefore, essential to ensure that no student is denied the opportunity to participate in higher education due to financial constraints. We propose the following measures.

- Institutions of higher education should be encouraged to adopt a *needs blind admissions* policy. This would make it unlawful for educational institutions to take into account any financial factor while deciding whether or not to admit a student.
- There must be a well-funded and extensive National Scholarship Scheme targeting economically underprivileged students and students from historically socially disadvantaged groups.

9. Affirmative action. A major aim of the higher education system must be to ensure that access to education for economically and historically socially underprivileged students is enhanced in a substantially more effective manner.

- Reservations are essential but they are only a part, and one form, of affirmative action.
- Disparities in educational attainments are related to caste and social groups, but are also strongly related to other indicators such as income, gender, region and place of residence. Therefore, we need to develop a meaningful and comprehensive framework that would account for the multi-dimensionality of differences that still persist. For example, a deprivation index could be used to provide weighted scores to students and the cumulative score could be used to supplement a student's school examination score.

The recommendations set out in our letter require action at three different levels: reforms within existing systems, changes in policies, and amendments in, or the introduction of, new statutes or legislation. The suggested changes would also be implemented at three different levels: universities, state governments and the central government. As a next step, we would like to meet with you and concerned colleagues to work out the modalities of implementation.

In conclusion, it is important for us to recognize that there is a quiet crisis in higher education in India which runs deep. And the time has come to address this crisis in a systematic, forthright manner. Our recommendations in this letter constitute an important beginning. The changes suggested by us are essential and would make a real difference. Of course, the process of reform and change is continuous. And there is more to be done. We are writing to you, separately, about vocational education. We hope to send you separate recommendations in the sphere of professional education for medicine, engineering, law, management, architecture and design, as also open and distance education. We do recognise that a comprehensive reform of the school system is

necessary to ensure that every child has an equal opportunity to enter the world of higher education. And we are deliberating on this issue.

We will continue to think about the next steps in higher education. But we must emphasize the urgency of the situation, because our future depends on it. We are convinced that it is important to act here and now. At the same time, we believe that there is an opportunity in this crisis. Given the demographic reality of a young India, expansion, inclusion and excellence in higher education can drive economic development and social progress. Indeed, what we do in the sphere of higher education now can transform economy and society in India by 2025.

NATIONAL KNOWLEDGE COMMISSION
NOTE ON HIGHER EDUCATION

INTRODUCTION

The spread of education in society is at the foundation of success in countries that are latecomers to development. In the quest for development, primary education is absolutely essential because it creates the base. But higher education is just as important, for it provides the cutting edge. And universities are the life-blood of higher education. Islands of excellence in professional education, such as IITs and IIMs, are valuable complements but cannot be substitutes for universities which provide educational opportunities for people at large.

There can be no doubt that higher education has made a significant contribution to economic development, social progress and political democracy in independent India. It is a source of dynamism for the economy. It has created social opportunities for people. It has fostered the vibrant democracy in our polity. It has provided a beginning for the creation of a knowledge society. But it would be a mistake to focus on its strengths alone. It has weaknesses that are a cause for serious concern.

There is, in fact, a quiet crisis in higher education in India that runs deep. It is not yet discernible simply because there are pockets of excellence, an enormous reservoir of talented young people and an intense competition in the admissions process. And, in some important spheres, we continue to reap the benefits of what was sown in higher education 50 years ago by the founding fathers of the Republic. The reality is that we have miles to go. The proportion of our population, in the age group 18-24, that enters the world of higher education is around 7 per cent, which is only one-half the average for Asia. The opportunities for higher education, in terms of the number of places in universities, are simply not enough in relation to our needs. What is more, the quality of higher education in most of our universities requires substantial improvement.

It is clear that the system of higher education in India faces serious challenges. And it needs a systematic overhaul, so that we can educate much larger numbers without diluting academic standards. This is imperative because the transformation of economy and society in the twenty-first century would depend, in significant part, on the spread and the quality of education among our people, particularly in the sphere of higher education. It is only an inclusive society that can provide the foundations for a knowledge society.

The challenges that confront higher education in India are clear. It needs a massive expansion of opportunities for higher education, to 1500 universities nationwide, that would enable India to attain a gross enrolment ratio of at least 15 per cent by 2015. It is just as important to raise the average quality of higher education in every sphere. At the same time, it is essential to create institutions that are exemplars of excellence at par with the best in the world. In the pursuit of these objectives, providing people with access to higher education in a socially inclusive manner is imperative. The realization of these

objectives, combined with access, would not only develop the skills and capabilities we need for the economy but would also help transform India into a knowledge economy and society.

We recognize that a meaningful reform of the higher education system, with a long-term perspective is both complex and difficult. Yet, it is imperative. And we would suggest the following building blocks in this endeavour. First, it is essential to reform existing public universities and undergraduate colleges. Second, it is necessary to overhaul the entire regulatory structure governing higher education. Third, every possible source of financing investment in higher education needs to be explored. Fourth, it is important to think about pro-active strategies for enhancement of quality in higher education. Fifth, the time has come to create new institutions in the form of National Universities that would become role models as centres of academic excellence. Sixth, the higher education system must be so designed that it provides access to marginalized and excluded groups.

I. UNIVERSITIES

Universities perform a critical role in an economy and society. They create knowledge. They impart knowledge. And they disseminate knowledge. Universities must be flexible, innovative and creative. They must be able to attract the best talent whether teachers or students. They must have the ability to compete and the motivation to excel. We cannot even contemplate a transformation of our higher education system without reform in our existing universities.

There is, however, a serious cause for concern about universities in India. The number of places for students at universities is simply inadequate. The quality of education at most universities leaves much to be desired. The gap between our universities and those in the outside world has widened. And none of our universities rank among the best, say the top fifty, in the world. The symptoms are clearly visible, even if we do not wish to diagnose what ails our universities. Of course, every problem does not exist everywhere. And there are exceptions. But the following problems are common enough to be a cause for concern. First, curricula, which have remained almost unchanged for decades, have not kept pace with the times, let alone with the extending frontiers of knowledge. Second, learning and creativity are at a discount in a system of assessment that places a premium on memory rather than understanding. Third, the milieu is not conducive to anything beyond the class room, for it is caught in a 9.30 to 1.30 syndrome. Fourth, the academic calendar is no longer sacrosanct for classes or for examinations, as there are slippages in schedules so much so that, at several places, classes in the timetable are not held and results are often declared with a time-lag of 6 to 12 months. Fifth, the infrastructure is not only inadequate but also on the verge of collapse. Sixth, the boundaries between disciplines have become dividing walls that constitute barriers to entry for new disciplines or new courses, while knowledge is developing most rapidly at the intersection of disciplines. Seventh, the importance attached to research has eroded steadily over time. Eighth, the volume of research in terms of frequency of publication and the quality of research reflected in the frequency of

citation or the place of publication, on balance, is simply not what it used to be. Ninth, as in most public institutions, there is little accountability, because there are no rewards for performance and no penalties for non-performance. Tenth, structures of governance put in place fifty years ago are not responsive to changing times and circumstances but the system is readily subverted by vested interests.

It is difficult enough to provide a complete diagnosis of what ails our universities. It is even more difficult, if not impossible, to outline a set of prescriptions for our universities. Nevertheless, it is clear that a reform of existing institutions must be an integral part of our endeavour to transform higher education. We recognize that this is easier said than done. Even so, we believe that reforms in the following spheres, along the lines suggested by us, are not only possible but would also make a difference.

Number and Size: India has about 350 universities. This number is simply not enough with reference to our needs in higher education, or in comparison with China which has authorized the creation of 1250 new universities in the last three years. Yet, some of our universities are much too large, for ensuring academic standards and providing good governance. We need to create more appropriately scaled and more nimble universities. The moral of the story is not only that we need a much larger number of universities, say 1500 nationwide by 2015, but also that we need smaller universities which are responsive to change and easier to manage.

Curriculum: The syllabi of courses in universities, which remain unchanged for decades, need to be upgraded constantly and revised frequently. The laws of inertia reinforced by resistance to change must be overcome. Universities should be required to revise or restructure curricula at least once in three years. These revisions must be subjected to outside peer review before implementation. The process for such revisions should be streamlined and decentralized, with more autonomy for teachers, through a change in statutes wherever necessary. For existing systems often act as major impediments to a timely or speedy revision of curricula. There should be some mode of censure for departments or universities that do not upgrade their courses regularly. It needs to be recognised that it is very difficult to introduce new courses or innovative courses in universities because of departmental divides. Appropriate institutional mechanisms should be put in place to resolve this problem.

Assessment: The nature of annual examinations at universities in India often stifles the teaching-learning process because they reward selective and uncritical learning. There is an acute need to reform this examination system so that it tests understanding rather than memory. Analytical abilities and creative thinking should be at a premium. Learning by rote should be at a discount. Such reform would become more feasible with decentralized examination and smaller universities. But assessment cannot and should not be based on examinations alone. There is a clear need for continuous internal assessment which empowers teachers and students alike, just as it breathes life back into the teaching-learning process. Such internal assessment would also foster the analytical and creative abilities of students which are often a casualty in university-administered annual

examinations. To begin with, internal assessment could have a weight of 25 percent in the total but this should be raised to 50 percent over time.

Course Credits: The present system is characterised by too many rigidities and too few choices for students. Universities that are smaller, or run semester-based systems, are obviously more flexible. Even in large universities, however, it is necessary to introduce greater diversity and more flexibility in course structures. This would be the beginning of a transition to a course credit system, where degrees are granted on the basis of completing a requisite number of credits from different courses. Every student should be required to earn a minimum number of credits in his/ her chosen discipline but should have the freedom to earn the rest from courses in other disciplines. It is essential to provide students with choices instead of keeping them captive.

Research: We attempted to create stand-alone research institutions, pampered with resources, in the belief that research should be moved out of universities. In the process, we forgot an essential principle. There are synergies between teaching and research that enrich each other. And it is universities which are the natural home for research. What is more, for universities, research is essential in the pursuit of academic excellence. It is time to reverse what happened in the past and make universities the hub of research once again. This would need changes in resource-allocation, reward-systems and mindsets. Substantial grants should be allocated for research. The provisions of these grants should be competitive and the criteria for these grants should be different from the usual criteria for non-plan and plan grants.

Faculty: There must be a conscious effort to attract and retain talented faculty members. This is necessary because talented students who are potential faculty members have choices that are far more attractive in other professions in India or in the academic profession outside India. It is necessary to provide working conditions in the form of office space and research support combined with housing. But it may not be sufficient. This must be combined with some incentives and rewards for performance. There is, however, another dimension to the problem. Universities do not always choose the best in part because of native-son/daughter policies which leave them to select their own former students. This tends to lower quality and foster parochialisation in universities. Therefore, cross-pollination between universities should be encouraged. It may be worth introducing a ceiling, say one-half or even one-third, on the proportion of faculty members than can be hired from within the university. This would almost certainly engender greater competition and more transparency in faculty appointments.

Finances: There is a serious resource crunch in universities which leaves them with little financial flexibility. In general, about 75 per cent of maintenance expenditure is on salaries and pensions. Of the remaining 25 per cent, at least 15 per cent is absorbed by pre-emptive claims such as rents, electricity, telephones and examinations. The balance, less than 10 per cent, is not even enough for maintenance let alone development. Laboratories and libraries languish while buildings crumble. But that is not all. In most universities, plan (investment) expenditure is less than 5 per cent of non-plan (maintenance) expenditure. Such a small proportion of investment in total expenditure

can only mortgage the future. It is doing so. The time has come for some strategic thinking on the re-allocation of budgets for universities with some allocation for development grants and on needs other than salaries. The criteria for resource allocation should seek to strike a much better balance between providing for salaries/ pensions and providing for maintenance/ development/ investment. These criteria should recognise the importance of a critical minimum to ensure standards and strategic preferences to promote excellence.

Infrastructure: The elements of infrastructure that support the teaching-learning process, most directly, need to be monitored and upgraded on a regular basis. This means attention particular attention to libraries and laboratories, in addition to class rooms, sports facilities and auditoriums. It is imperative that universities provide broadband and connectivity to all students and teachers in campuses. In parallel, information technology systems should be used for admissions, administration and examinations along with other relevant web services for campus communities. And, as soon as possible, a digital infrastructure for networking universities should be put in place.

Governance: There is an acute need for reform in the structures of governance of universities. The present system is flawed. On the one hand, it does not preserve autonomy. On the other, it does not promote accountability. The autonomy of universities is eroded by interventions from governments and intrusions from political processes. This must be stopped. At the same time, there is not enough transparency and accountability in universities. This must be fostered. It is exceedingly difficult to provide generalized prescriptions. Some steps, which would constitute an important beginning, are clear. First, the appointments of Vice-Chancellors should be based on search processes and peer judgment alone. These must be freed from direct or indirect intervention on the part of governments. Once appointed, Vice Chancellors should have a tenure of six years, because the existing tenure of three years in most universities and five years in central universities is not long enough. Second, the size and composition of University Courts, Academic Councils, and Executive Councils slows down decision-making processes and sometimes constitutes an impediment to change. University Courts, with a size of 500 plus, which are more a ritual than substance, could be dispensed with. Large Academic Councils do not meet often. Even when they meet, decisions are slow to come. Thus, Standing Committees of Academic Councils, which are representative, should be created for frequent meetings and expeditious decisions. The Vice-Chancellor should, then, function as a Chief Executive Officer who has the authority and the flexibility to govern with the advice and consent of the Executive Council which would provide checks and balances to create accountability. Third, experience suggests that implicit politicisation has made governance of universities exceedingly difficult and much more susceptible to entirely non-academic interventions from outside. This problem needs to be recognised and addressed in a systematic manner not only within universities but also outside, particularly in governments, legislatures and political parties.

II. UNDERGRADUATE COLLEGES

Undergraduate education, which accounts for about 85 percent of the enrolled students, is the largest component of our higher education system. It is imparted through colleges where students enrol for first degrees in Arts, Science or Commerce. There are a total of about 17,700 undergraduate colleges. Of these, a mere 200 colleges are autonomous. The rest, as many as 17,500 colleges, are affiliated to, or constituent in, 131 universities. On average, each university has more than 100 affiliated colleges, but there are some universities each of which has more than 400 affiliated colleges.

This system of affiliated colleges for undergraduate education, which may have been appropriate fifty years ago, is neither adequate nor appropriate at this juncture, let alone for the future. It is cumbersome to manage. And it is difficult to ensure minimal academic standards across the board. The problem has at least three dimensions. First, it imposes an onerous burden on universities which have to regulate admissions, set curricula and conduct examinations for such a large number of undergraduate colleges. The problem is compounded by uneven standards and geographical dispersion. Second, the undergraduate colleges are constrained by their affiliated status, in terms of autonomy and space, which makes it difficult for them to adapt, to innovate and to evolve. The problem is particularly acute for undergraduate colleges that are good, for both teachers and students are subjected to the 'convoy problem' insofar as they are forced to move at the speed of the slowest. There is also a problem for undergraduate colleges that are not so good, or are poor, because universities cannot address their special needs or unique problems. Third, it is difficult to set curricula and assess performance for such a large number of students where there is such a large dispersion in performance at school before entering college. This reality tends to make courses less demanding and examinations less stringent across the board. In fact the design of courses and examinations needs to be flexible rather than exactly the same for large student communities.

There is an urgent need to restructure the system of undergraduate colleges affiliated to universities. In doing so, it is important to make a distinction between undergraduate colleges that already exist and undergraduate colleges that will be established in the future. It is also important to remember that undergraduate colleges are afflicted by problems which are very similar to those that afflict universities.

The most obvious solution is to provide autonomy to colleges, either as individual colleges or as clusters of colleges.

Individual colleges: Colleges with a proven record of academic excellence and efficient administrative functioning can be granted autonomy in terms of academic self-governance. Existing affiliated or constituent colleges should be granted autonomy in phases after due assessment by professional accreditation bodies. A review of performance of these colleges should be institutionalised and they may be granted university status on the fulfilment of stated criteria of academic and administrative performance. The college authorities should be given financial autonomy with regard to internal allocation of resources. However existing methods of financing should be

retained. In operational terms, then, the autonomy would be accorded in setting of curriculum and evaluation of students.

College Clusters: Autonomy can be provided to clusters of colleges, selected on the basis of criteria such as similar standards or geographical proximity. These colleges could then form a group, complementing each other, offering different courses between them. In time, these clusters could be upgraded to universities. The course-credit system can be implemented in these autonomous clusters, whereby different colleges offer semester-based courses on a credit system and credits can be transferred across colleges. A mechanism for the administration of courses across colleges and for the resolution of problems should be institutionalized with provision for representation in committees.

Such autonomous colleges, or clusters of colleges, would constitute a part of the 1500 universities we propose nationwide by 2015. It must be recognised, however, that this is, at best, a limited solution. There are two discernible problems.

The first problem with the model of autonomous colleges is the principal-agent problem of providing autonomy as an option. It becomes necessary to distinguish between the motivations and the capabilities of colleges. We need to make a distinction between colleges that wish to become autonomous but do not deserve to, and colleges that have the capabilities to be autonomous but do not wish to opt for autonomy. For colleges that wish to become autonomous but may not be suitable, clear cut criteria should be put in place as a filtering mechanism for colleges wishing to attain autonomous status: critical number of faculty and disciplines, governance, track record in terms of students, faculty and research, administrative competence measured by utilization of grants, regularity of audits, office resources and account maintenance, contribution to university processes, infrastructural facilities and ratings, if available, by accreditation agencies. For colleges that can be autonomous but do not wish to be, appropriate incentives have to be designed, especially for the teaching staff to encourage a move towards autonomy. Institutional incentives relating to funding and resource generation and professional incentives for staff including positions of professors, research grants and greater mobility should be provided.

The second problem with the model of autonomous colleges is that it would be able to provide a solution for a limited proportion, or number, of undergraduate colleges. There would be a significant number of undergraduate colleges that would remain because they may not have the capabilities to become autonomous or join an autonomous cluster. The obvious solution would be for this latter group to continue as affiliated colleges with their present universities. In that event, problems will persist not only for these undergraduate colleges but also for their affiliating universities. Nevertheless, a proportion of these undergraduate colleges will continue to be affiliated to their present universities on the basis of stipulated criteria. There are two other possibilities that could be explored.

The first possibility is that some of these affiliated colleges could be remodelled as community colleges. These colleges could provide both vocational education through

two-year courses and formal education through three-year courses. This would serve the needs of a particular segment of the student population better. They could focus on promoting job-oriented, work-related, skill-based and life-coping education. These community colleges could provide a unique opportunity to provide holistic education and eligibility for employment to the disadvantaged.

The second possibility is that we establish a Central Board of Undergraduate Education along with State Boards of Undergraduate Education which would set curricula and conduct examinations for undergraduate colleges that choose to be affiliated with them. These Boards would separate the academic functions from the administrative functions and at the same time provide quality benchmarks. Governance would become much simpler. It is possible that some of the existing undergraduate colleges, particularly those that are at some geographical distance from their parent university, may wish to affiliate themselves to these Boards.

New undergraduate colleges are bound to be an integral part of the expansion of opportunities in higher education. Where would these be located? It would be difficult for them to become autonomous colleges without a track record. It may be possible for some to join a cluster of autonomous colleges but this would be more the exception than the rule. It would not be possible for them to affiliate with existing universities which are already overloaded. Hence, there are three possible options for new undergraduate colleges to come. First, they could be established as community colleges. Second, they could be affiliated with the Central Board of Undergraduate Education or State Boards of Undergraduate Education. Third, they could be affiliated with new universities that are established.

There are, of course, issues related to governance, curricula, examinations, course credits and access which arise in the context of undergraduate colleges. These have been discussed in the context of universities in the preceding section of this note.

III. REGULATION

There is a clear need to establish an Independent Regulatory Authority for Higher Education (IRAHE). Such a regulatory authority is both necessary and desirable.

It is necessary for two important reasons. First, in India, it requires an Act of Legislature of Parliament to set up a University. The deemed university route is much too difficult for new institutions. Entry through legislation alone, as at present, is a formidable barrier. The consequence is a steady increase in the average size of existing universities with a steady deterioration in their quality. The absence of competition only compounds problems. Second, as we seek to expand the higher education system, entry norms will be needed for private institutions and public-private partnerships. The institutional framework for this purpose must be put in place here and now.

It is desirable for four important reasons. First, it would minimise conflicts of interest as it would create an arm's-length distance from stakeholders. Second, it would

replace the present system which is over-regulated but under-governed, through more appropriate forms of intervention. Third, it would rationalize the existing system where mandates are both confusing and overlapping. Fourth, it would dispense with the multiplicity of regulatory agencies to provide a single-window clearance.

The present regulatory system in higher education is flawed in many respects. The barriers to entry are too high. The system of authorizing entry is cumbersome. And there are extensive rules after entry, as the UGC seeks to regulate almost every aspect of an institution from fees to curriculum. The system is also based on patently irrational principles. The UGC Act section 3.1.2(a) suggests that permission for receiving grants will be accorded only if the Commission is satisfied that the existing institutions in the state are not adequate to serve the needs of the state. The other regulators, say in the sphere of professional education, are often inconsistent in their adherence to principles. There are several instances where an engineering college or a business school is approved, promptly, in a small house of a metropolitan suburb without the requisite teachers, infrastructure or facilities, but established universities experience difficulties in obtaining similar approvals. Such examples can be multiplied. These would only confirm that the complexity, the multiplicity and the rigidity of the existing regulatory structure is not conducive to the expansion of higher education opportunities in India.

In sum, the existing regulatory framework constrains the supply of good institutions, excessively regulates existing institutions in the wrong places, and is not conducive to innovation or creativity in higher education. The challenge is therefore to design a regulatory system that increases the supply of good institutions and fosters accountability in those institutions. An independent regulator has to be the cornerstone of such a system.

The proposed IRAHE will rationalize the principles on which entry is regulated. There are two aspects to this rationalization: what is to be regulated and what are the principles used for regulation.

In higher education, regulators perform five functions: (1) Entry: licence to grant degrees. (2) Accreditation: quality benchmarking. (3) Disbursement of public funds. (4) Access: fees or affirmative action. (5) Licence: to practice profession.

India is perhaps the only country in the world where regulation in 4 of the 5 functions is carried out by one entity, that is, the UGC. The purpose of creating an IRAHE is to separate these functions. The proposed IRAHE shall be responsible for setting the criteria and deciding on entry. It would, in addition, license agencies to take care of accreditation. The role of the UGC will be limited to disbursing public funds. Issues of access will be governed by state legislation on reservations and other forms of affirmative action. And, professional associations may, in some institutions, set requirements to determine eligibility for conducting a profession. All other regulatory agencies such as the AICTE will need to be abolished while the MCI and the BCI will be limited to their role as professional associations. These professional associations could

conduct nationwide examinations to provide licences for those wishing to enter the profession.

The second aspect of regulation is the principle used to regulate. The IRAHE will determine eligibility for setting up a new institution based on transparent criteria rather than discretionary controls. Its main role would be to exercise due diligence at the point it approves a licence to grant degrees. In doing so, it would assess the academic credibility and the financial viability of the proposed institution on the basis of information submitted in accordance with the stipulated criteria. It will apply exactly the same norms to public and private institutions, just as it will apply the same norms to domestic and international institutions.

The IRAHE would be constituted as follows. It would have a Chairperson and six Members. The tenure of the Chairperson would be six years. The tenure of the Members would also be six years. One-third of the Members of the Authority will retire every two years. The Chairperson would be a distinguished academic from any discipline with experience of governance in higher education. The Members would be distinguished academics drawn from the following sets of disciplines: physical sciences, life sciences, social sciences, humanities and professional subjects such as engineering, medicine, law or management. The IRAHE could have some part-time members or standing committees drawn from academia to advise the Authority in each of the aforesaid sets of disciplines. The Chairperson and the Members of the IRAHE would be appointed by the Prime Minister based on the recommendations of a Search Committee.

The IRAHE would have to be established by an Act of Parliament. It would be the only agency that would be authorized to accord degree granting power to higher education institutions. It would also be responsible for monitoring standards and settling disputes. It should also be thought of as the authority for licensing accreditation agencies. The IRAHE must be at an arm's-length from the government and independent of all stakeholders including the concerned Ministries of the Government. The Acts of the UGC, AICTE, MCI and BCI would have to be amended. The role of the UGC would be re-defined to focus on the disbursement of grants to, and maintenance of, public institutions in higher education. The entry regulatory functions of the AICTE, the MCI and the BCI would be performed by the IRAHE, so that their role would be limited to that of professional associations. These professional associations could conduct nationwide examinations to provide licenses for those wishing to enter the profession.

IV. FINANCING

The expansion of our system of higher education, which is both necessary and desirable, is not possible without financing. For an increase in supply of quality education depends upon an increase in investment which, in turn, requires financial resources. There are several sources of such financing.

Government Support: There is no system of higher education in the world that is not based upon significant public outlays. And government financing will remain the

cornerstone of any strategy to improve our system of higher education. The present support for higher education, at 0.7 per cent of GDP, is simply not adequate. In fact, over the past decade, in real terms, there has been a significant decline in the resources allocated for higher education, in the aggregate as also per student. In an ideal world, government support for higher education should be at least 1.5 per cent, if not 2 per cent of GDP, from a total of 6 per cent of GDP for education. This is easier said than done. But the government should endeavour to reach these levels by 2012. Even this magnitude of state financing, however, would not suffice for the massive expansion in higher education that is an imperative. Therefore, it is essential to explore a wide range of possibilities which can be complements to the increase in public expenditure.

Better Asset Management: Most public universities are sitting on a large reservoir of untapped resources in the form of land. In effect, with some imagination, many of our universities can be converted into institutions that are similar to land grant universities. Each university should thus have an innovative asset management plan. Such plans should be in consonance with objectives of universities. At the moment, however, universities have no strategy in this sphere. And there is considerable room to think in strategic terms about the use of physical assets in the possession of universities. It should be possible to draw up norms and parameters for universities to use their land as a source of finance.

Rationalization of Fees: On an average, fees constitute less than 10 per cent of total expenditure in our universities. And, in most universities, fees have remained unchanged for decades. In theory, universities have the freedom to decide on fees. In practice, however, universities have not exercised this freedom in part because of some genuine concerns about access but in larger part because of the rhetoric and populism in the political process. The problem has been compounded by the UGC method of providing grants-in-aid to bridge the difference between income and expenditure. Consequently, there is no incentive for universities or colleges to raise income through higher fees as that sum would be deducted from their UGC (or State government) grants. The low fees in public universities, without any means test, have meant unquantifiable benefits for unintended beneficiaries. But private players and foreign institutions have not been restrained in charging fees that the market can bear. The time has come to rethink, as we have no choice but to rationalize fees. It is for universities to decide the level of fees but, as a norm, fees should meet at least 20 per cent of the total expenditure in universities. In addition, fees need to be adjusted every two years through price indexation. Such small, continuous, adjustments would be absorbed and accepted far more easily than large, discrete changes after a period of time. This rationalization of fees should be subject to two conditions: first, needy students should be provided with a fee waiver plus scholarships to meet their costs; second, universities should not be penalized by the UGC for the resources raised from higher fees through matching deductions from their grants-in-aid.

Philanthropic Contributions: It is clear that we have not exploited this potential. In fact, the proportion of such contributions in total expenditure on higher education has declined from more than 12 per cent in the 1950s to less than 3 per cent in the 1990s. It should be

possible to nurture this tradition of philanthropy through changes in incentives for universities and for donors. In the present system, there is an explicit disincentive. If universities mobilize resources from elsewhere, they are in effect penalized through a matching deduction in their grant-in-aid. What we need to do is exactly the opposite. Universities which mobilize resources through contributions should be rewarded with matching grants-in-aid. At present, there is also an implicit disincentive in both lax laws and trust laws. Endowments of universities can only be placed in specified securities where rates of return are low and barely keep up with rates of inflation. What is more, trusts must spend 85 per cent of the income stream from the endowment in the same year, so that only 15 per cent of the income stream can be used to build up the corpus in the endowment. These laws should be changed so that universities can invest in financial instruments of their choice and use the income from their endowments to build up a corpus.

Other Sources: Obviously, universities must not be driven by commercial considerations. But it would be both prudent and wise to tap other sources such as alumni contributions, licensing fees, or user charges (for facilities in universities used by people from outside). We need to create supportive institutional mechanisms that allow universities to engage professional firms for this purpose. Mobilizing resources, even from former students, is a task that cannot be performed by academics because it needs specialised talents and experience. Current UGC practice also penalises universities for any resources mobilised with a matching deduction from the grants-in-aid provided to the institution. Rather than penalizing universities for raising resources, the UGC should incentivise them. In addition, universities must have the autonomy and flexibility to mobilise resources from elsewhere by creating or using appropriate institutional mechanisms.

Private Investment: In three professions – engineering, medicine and management- there has been a *de facto* privatization of education so that two-thirds to three-fourths of the seats are in private institutions. But private investment in university education, where more than 70 per cent of our students study, is almost negligible. It is essential to stimulate private investment in higher education as a means of extending educational opportunities. We must recognise that, even with the best will in the world, government financing cannot be enough to support the massive expansion in opportunities for higher education on a scale that is now essential.

Public-Private Partnerships: It might be possible to leverage public funding, especially in the form of land grants, to attract more (not-for-profit) private investment. The present system of allotment of land, where political patronage is implicit, discourages genuine educational entrepreneurs and encourages real estate developers in disguise. In principle, it should be possible to set up new institutions in higher education, not just more IITs and IIMs but also more universities, as public-private partnerships where the government provides the land and the private sector provides the finances. Such public-private partnerships which promote university- industry interface would also strengthen teaching and research.

International Students: India is not an attractive destination for international students, not even as much as it used to be 30 years ago. It is time for us to make a conscious attempt to attract foreign students to India for higher education. This would enrich our academic milieu. This would enhance quality. This would be a significant source of finance. Even 50,000 foreign students charged fees at an average rate of US$ 10,000 per annum would yield US$ 0.5 billion: the equivalent of Rs. 2300 crores per annum in current prices at current exchange rates. The other side of the coin is perhaps even more important. Estimates suggest that there are about 160,000 students from India studying abroad. If their average expenditure on fees and maintenance is US$ 25,000 per student per year, Indian students overseas are spending US$ 4 billion: the equivalent of Rs. 18,400 crores per annum in current prices at current exchange rates. This has an enormous potential as a source of finance for higher education in India, if only we could crate more opportunities for students with increased places and enhanced quality in our system.

V. QUALITY

The introduction of an independent regulator in higher education, the reform of existing public universities and the creation of national universities, taken together, would contribute to enhancement of quality in higher education. But this needs to be supported with some pro-active steps that would foster quality in higher education.

Accountability: The quality of higher education depends on a wide range of factors. But accountability, at every level, is a critical determinant. The higher education system must, therefore, provide for accountability *vis-à-vis* the outside world and create accountability within the system. Accountability of universities must not be confused with control of the state. Institutional mechanisms, based on checks and balances, constitute the most effective system for this purpose. The essential objective of accountability to society must be to empower students to take decisions rather than simply increase the power of the state. Stipulated performance criteria or inspections are forms of control. We need to create systems that enable students, or their parents, to choose between and assess universities.

Competition: The supply constraint on higher education is an impediment to accountability. When students have relatively few choices, institutions have greater power over them. An expansion of higher education which provides students with choices and creates competition between institutions is going to be vital in enhancing accountability. Such competition between institutions within India is, of course, essential. But the significance of competition from outside India, more qualitative than quantitative, must not be underestimated. For this purpose, we must formulate appropriate policies for the entry of foreign institutions into India and the promotion of Indian institutions abroad. Such policies must ensure that there is an incentive for good institutions and a disincentive for sub-standard institutions to come to India. The present regime does the opposite: sub-standard players rush in while premier universities stay away as they care more about their autonomy and wish to set benchmarks for themselves. However, a level playing field should be ensured and all rules that apply to domestic institutions should also be applicable to foreign institutions. At the same time, policies must encourage

rather than discourage Indian institutions to create campuses abroad not as business opportunities but as competition opportunities in their quest for academic excellence. Of course, expansion abroad should not be at the cost of domestic provision, either at present or in the future.

Accreditation: So far, we have sought to create accountability by increasing the powers of government regulators. Yet, it has done little to improve the quality of higher education. Consider, for example, the National Accreditation and Assessment Council. This system has three characteristics which significantly erode its credibility. First, it grants one institution, the NAAC, monopoly power over accreditation. Second, NAAC itself does not have the capacity to rate all the institutions. It has rated just about 10 percent of the total number so far. Third, the methodology of NAAC is much too discretionary. Instead of vesting one institution created by the state with monopoly power, the IRAHE may be empowered to license a number of accreditation agencies, public and private, to do the ratings. In doing so, the regulator would set standards for them. This will need to be accompanied by stringent information disclosure norms for all educational institutions, including the source and level of their accreditation. The rapid growth in higher education, particularly in the private sector, has created a strong need for empowering students and parents with reliable information from a credible accreditation process. This system can be supplemented with the creation of self-regulatory bodies in the higher education system and the freedom to seek recognition from global accreditation systems.

Internal Systems: In most universities, the main stakeholders, students, are minimally part of any mechanism for accountability. Obviously, student evaluations need to be used with care. Even so, they can be part of a baseline set of accountability measures which could at least establish whether classes scheduled in the timetable are held. But that is not all. Evaluation of courses and teachers by students is also needed, just as much as we need peer evaluation of teachers by teachers. Such internal systems of evaluation would strengthen accountability in the teaching-learning process. These must be combined with institutional mechanisms for accountability in other dimensions of university systems.

Information: Almost everywhere, information in the public domain is an important source of accountability. Higher education should be no exception. There should be disclosure norms for universities and institutions imparting higher education. They should be required to place basic information relating to their financial situation, physical assets, accreditation ratings, admissions criteria, faculty positions, academic curricula, and so on, in the public domain. This would empower students and parents and enable them to make informed choices. Information, along with competition, fostered by increased supply, will close the accountability loop.

Incentives: Even if we cannot introduce penalties for non-performance, it is necessary to introduce rewards for performance. We must, of course, recognise that universities are different from the hierarchical worlds in governments and corporate structures. The web of incentives is far more subtle. Even so, the time has come to think of salary differentials within and between Universities as a means of attracting and retaining talented faculty members. The salary differentiation among teachers within the same university needs to

reflect the opportunity costs for teachers in some departments. This will help retain talent in some disciplines where remuneration in the market is much higher than in other subjects. Salary differentiation may enable some universities to develop centres of excellence in some disciplines. At the same time, it is important to ensure that disciplines which are essential for a good liberal education such as social sciences and humanities, as well as basic sciences which are not necessarily rewarded by the market, are given appropriate incentives to attract both teachers and students. Such salary differentials between and within universities could be effective without being large. Indeed, there is a good reason to stipulate a maximum ratio for differences in salaries between faculty members so as not to threaten the identity of the professoriate. Obviously, universities cannot compete with salaries elsewhere, but they should endeavour to provide a comfortable minimum for all, with some premium for those who perform. It is also important to think of other incentives, such as housing, good facilities for teaching and research and some flexibility for non-teaching professional activities so long as these do not impinge on the primary responsibilities to the institution.

Differentiation: We have to recognize that there is bound to be diversity and pluralism in any system of higher education. Therefore, in a country as large as India, we cannot afford to adopt the principle that one-size-fits-all. We must allow diversity to blossom. This could have many dimensions: curriculum, specialization, institutional architecture, students' composition, and so on. Similarly, differentiation is inevitable if not natural. Even if we do not wish to recognize it, such differentiation is a reality. Students and parents have clear preferences, possibly implicit rankings, based on their perceptions derived from available information. Our sense of pluralism must recognise, rather than ignore or shy away from, such diversity and differentiation. It is characteristic of every higher education system in the world. For higher education is about a quest for excellence. It is, at least in part, about distinction and not always about levelling. The institutions which excel are the important peaks that raise the average. They are also role models others seek to emulate. And institutions that become such role models could mentor and guide other selected institutions.

VI. NATIONAL UNIVERSITIES

We need to create substantial additional capacity in higher education for achieving a quantum jump in the gross enrolment ratio for a rapidly expanding population of young people. It would be expeditious to do so by simply expanding on our existing educational infrastructure. A fundamental paradigm shift in our understanding of quality and standards in higher education, however, requires creating completely new institutions that operate unconstrained by the current institutional and regulatory framework. We recommend the creation of up to 50 National Universities that can provide education of the highest standard. As exemplars for the rest of the nation, these universities shall train students in a variety of disciplines, including humanities, social sciences, basic sciences, commerce and professional subjects, at both the undergraduate and post-graduate levels. The number 50 is a long term objective. In the short run, it is important to begin with at least 10 such universities in the next 3 years. It is worth noting that the National Universities need not all be new universities. Some of the existing

universities could also be converted into National Universities, on the basis of rigorous selection criteria, to act as exemplars. We recognise that there could be a human resource constraint if faculty members are not available in adequate numbers to establish these universities. But, for such centres of academic excellence, it should be possible to attract talent from among those who choose other professions in India or the academic profession outside India.

National Universities can be established in two ways, by the government, or by a private sponsoring body that sets up a Society, Charitable Trust or Section 25 Company. Since public finance is an integral constituent of universities worldwide, most of the new universities shall need significant initial financial support from the government. This could be in several forms. Each university may be endowed with a substantial *allocation of public land*, in excess of its spatial requirements. The excess land can be a subsequent source of income generation, its value rising over time due to the growing stature of the university. In the case of privately executed Charitable Trusts, exceptions need to be made in existing Income Tax laws to encourage large *endowments*. In particular, there should be no restriction on the utilization of income in any given time period, the Trusts should be allowed to invest their funds in financial instruments of their choice, and all proceeds from the sale of capital assets should be exempt from capital gains tax. These universities shall have the autonomy to invest in financial instruments of their choice, by employing private fund managers if required. Appropriate mechanisms also need to be put in place for the optimal *management of physical assets*, like laboratories, libraries, classrooms and other facilities. Finally, these universities shall have the autonomy to set *student fee levels* and tap other sources for generating funds such as industry collaborations, overseas operations, as also commercial use of university facilities and alumni networks.

The National Universities we propose shall admit students on an all-India basis. They shall adopt the principle of *needs-blind admissions*, thereby ensuring that an applicant's ability or inability to pay shall not influence the admission decision made by a university. Further, once admitted, the university should ensure that no student has to forego his/her place due to financial constraints. This will require a host of scholarships, freeships, bursaries and awards for economically disadvantaged students. At the undergraduate level, a nationwide test that objectively measures the verbal, quantitative and analytical abilities of applicants shall be administered by an independent testing body. Admissions shall be based on a combination of Class XII results, scores from the nationwide test, application materials including written work and personal statements, as also interviews. At the postgraduate level, admissions shall be based on a combination of the applicant's academic record, application materials, interviews and academic or professional references that indicate his/her aptitude for further studies in the relevant discipline.

Undergraduate degrees in the National Universities shall have a duration of three years so that these are in conformity with the duration of undergraduate courses elsewhere in India. In the first year, students shall have the opportunity to study foundation, analytical and tools courses before choosing a specific discipline in the

second year. They shall also have the option, at the end of the second year, of completing an integrated five-year master's degree. Degrees should be granted on the basis of completing a requisite number of credits, obtained from different courses. Each student shall be required to earn a minimum number of credits in his/her chosen discipline, and shall have the freedom to earn the rest from courses in other disciplines. The academic year shall therefore be semester-based and students shall be internally evaluated at the end of each course. Transfer of credits from one National University to another shall also be possible. A wide variety of courses shall be offered, in traditional academic disciplines, employment-oriented specific areas and cross-cutting competencies. Syllabi shall be revised every year to keep up with changes and current developments in various disciplines. Departments that do not update their syllabus for two consecutive years shall be asked to provide justification. Students shall have the option of taking up internships in private companies or research institutions in lieu of a certain number of credits.

An appropriate system of appointments and incentives is required to maximize the productivity of faculty in the National Universities. There shall be scope for salary differentials between National Universities and also between disciplines. Faculty training will be contingent on periodical reviews of research output and student evaluation. The most accomplished faculty members shall be encouraged to teach undergraduate courses. There shall be no career advancement schemes and appointments at every level shall be through open competition. The total number of faculty positions may be specified, but there should be complete flexibility in choosing the level at which faculty appointments are made, so that, for talented faculty members, career paths are not constrained by the number of vacancies. In order to maintain the quality of the National Universities, mechanisms should be in place to monitor and evaluate the performance and progress of teachers including peer reviews. The procedures and results of these evaluations will be open and transparent.

The research outputs of these universities shall be vital contributors to India's socio-economic development and progress in science and technology. Strong linkages shall be forged between teaching and research, universities and industry, and universities and research laboratories.

The National Universities shall be department-based and shall not have any affiliated colleges. Each department will administer undergraduate and post-graduate courses. Non-teaching functions should be outsourced wherever possible, and a maximum ratio of 2:1 should be maintained between non-teaching and teaching staff. Each university should appoint an internal ombudsman for the redressal of faculty, staff, student and public grievances. Administrative processes, wherever possible, should be streamlined and made transparent and accountable by the use of information and communications technology.

VII. ACCESS

Education is an essential mechanism for inclusion through the creation of social opportunities. It is, therefore, essential that in addition to ensuring that no student is

denied the opportunity to participate in higher education due to financial constraints, access to education for economically and historically socially underprivileged students is enhanced in a substantially more effective manner.

Economic barriers to higher education can be addressed by ensuring financial viability for all students wanting to enter the world of higher education. This can be done through two strategies. One is to adopt a *needs blind admissions* policy. This would make it unlawful for educational institutions to take into account any financial factor while deciding whether or not to admit a student. Every institution will be free to use a variety of instruments to achieve this aim: scholarships or cross-subsidies. In addition, academic institutions would be able to set a fee of their own choice subject to the provision that there are at least two banks that are willing to finance the entire cost of education at that institution, without any collateral other than the fact of admission. The cost of education includes not just fees but also reasonable living expenses including costs such as hostel and mess fees and any other expenses associated with the course of study. Since commercial banks may be wary of funding economically deprived students, especially in non-professional courses, we need a well-funded and extensive National Scholarship Scheme targeting economically underprivileged students and students from historically socially disadvantaged groups, particularly students from rural and backward areas. The success of this proposal depends on generous government support. For instance, the government should endeavour to make available about 100,000 scholarships for such students. These scholarships should be set at a level where students are empowered to go to any institution of their choice.

We also need to undertake more proactive forms of affirmative action to ensure inclusion of marginal and excluded groups. Reservations are essential but they are a part, and one form of, affirmative action. Disparities in educational attainments are related to caste and social groups, but are also strongly related to other indicators such as income, gender, region and place of residence. Access to quality higher education is further limited for students from certain types of schools. Therefore deprivation of educational opportunities is a multi-dimensional problem and attention needs to be paid to different salient levels of deprivation faced by students. A meaningful and comprehensive framework would account for the multidimensionality of differences that still persist. Such a deprivation index could provide weighted scores to students and the cumulative score could be used to supplement a student's school examination score. After adding the score from the deprivation index, all students could compete for admissions.

The indicators need to be easily identifiable and verifiable for the system to work effectively. They should cover the different types of disadvantages that a student could face at the school level, and while applying for admissions to higher education. This system serves the dual purpose of considering various disadvantages and ensuring that a reserved category student who has otherwise enjoyed other benefits does not get great preference at the time of admissions.

Illustrative indicators of backwardness that need to be measured by such an index could include *social background* covering caste (keeping in view regional variations),

religion and gender, *family education history*; *family income, type of school* distinguishing between government and private schools and between schools from different locations, the medium of instruction, *place of residence* distinguishing between urban and rural areas and accounting for regional deprivation by sorting districts along an index of infrastructure or access to social benefits and *physical disability*.

National Science and Social Science Foundation

November 28, 2006

Indian scientists made significant contributions to the advancement of science and technology in the 1950s and 60s. This was possible because of the support successive governments extended to science education and research. Numerous research and development institutions were established across the country. However, over the years, in spite of continuing government support, both the quality and quantity of the research output from India has been on the decline. It is necessary to examine the reasons for this decline and implement remedial measures.

One widening realization of the last few decades has been that knowledge is a continuum and the boundaries between disciplines are increasingly becoming blurred, tenuous and indefinable.

The following major causes for the current crisis in Indian research deserve attention:

- **Lack of interaction:** There is very rigid compartmentalization of natural and social sciences; as a result, there is little or no interaction between researchers in natural sciences and social sciences.
- **Lack of long-term vision:** Research topics of long term relevance and importance are not taken up as support tends to be for the duration of three to five years because of our planning process.
- **Lack of differential remuneration:** The principle of differential remuneration based on performance and output is not followed to reward those who perform well and chastise those who do not.
- **Lack of scientific methods:** Current teaching methodologies at school, college and university levels do not inculcate a scientific temper in the students.

NKC is aware that the Science Advisory Council has recently suggested the establishment of a National Science Foundation to address some of these and other issues confronting research. It supports this suggestion, with some modifications that will make the solution more comprehensive and practicable.

NKC feels that in view of the disappearing boundaries between various disciplines of knowledge and knowledge emerging as a continuum, India should set up a National Science and Social Science Foundation (NSSSF) which will look at all knowledge as one seamless entity. We will be the first country to set up such an avant garde organization – and rightfully so, given our 5,000-year-old tradition of broad-based knowledge.

The objectives of the proposed NSSSF will be to:

a) Suggest policy initiatives to make India a leader in the creation and use of new knowledge in all areas of natural, physical, agricultural, health, and social sciences, with emphasis on those areas which cut across traditional disciplines;
b) Ensure that science and technology are maximally used for betterment of the lives of our people;
c) Develop a scientific temper

The Governing Board of the Foundation should have a Chairman, a Vice-Chairman and 8-10 members. The Chairmanship and Vice-Chairmanship of the NSSSF should rotate between the sciences and the social sciences, ensuring that if the Chairperson is a scientist, the Vice-Chairperson should be a social scientist, and vice-versa.

The Chairman, Vice-Chairman and members of the Governing Board should be appointed by the Prime Minister and should satisfy the following criteria:

- High level of professional competence.
- High national and international reputation.

- Professional and personal integrity and honesty that are beyond reproach.
- Evidence of absence of any bias or prejudice.
- A strong social commitment, loyalty to the country, and concern for others.
- Commitment to social, professional and financial accountability.
- Someone who combines erudition with articulation.
- Courage of convictions.
- Ability to listen to other people's views and modify one's own if reason demands that

The budget of the NSSSF should be Rs 1,250 crores a year; which will allow it to fund between 200 and 400 outstanding, long-term (5-10 years), extremely carefully selected projects that have the potential of making India a leader. We should expect at least a 20 per cent success rate. The NSSSF should work towards having at least three to four Indian scientists and/or social scientists produce work in six years which should be worthy of a Nobel Prize. The NSSSF will set up a world-wide review system involving some of the best-known scholars around the world for approval of the projects that it supports. The project-funding activity will, however, be only one (though a major one) of the activities of the NSSSF

Some of the major activities and responsibilities of the NSSSF will be to:

- Identify major unsolved problems in various areas of science and social sciences and individuals, groups and/or institutions who can work on them to provide India leadership.
- Identify and set up studies on (a) relationships of science with other areas of human concern such as economics, sociology, politics, art and literature, and vice versa, and (b) social, economic, political, legal, moral and ethical implications of advances in science and technology.
- Identify and set up studies on futuristic interdisciplinary areas in real time.
- Recommend steps that would help inculcate a scientific temper amongst the people of the country as envisioned in the constitution.
- Help the Government to set up systems that would remove bureaucratic hurdles, increase professional, social and financial accountability; and recognize that creativity in science and social sciences like in all creative endeavors is non-hierarchical.
- Identify and set up studies to find solutions to the problems of the poor and the underprivileged by translating the advances in science and technology.
- Recommend strategies (scientific, technological and social) that would provide additional employment in the rural sector and help set up mechanisms for their implementation with the cooperation of Government, industry and NGOs.
- Recommend steps for optimizing the use of our natural resources (including marine resources).
- Help set up systems for documentation, standardization where necessary, validation and use of our traditional knowledge. Ensure that the custodians and providers of such knowledge and wisdom are identified, are involved in the process, and share benefits accruing from the use of such knowledge.
- Set up policies for international cooperation in science and social sciences.
- Serve as a platform for the coming together of various departments, organizations and agencies of the Government that are concerned with scientific and social science research and related developmental work, to optimally utilize their collective knowledge and capabilities.
- Set up a mechanism for close interaction between state-funded scientific and social science organizations, private sector and responsible and effective NGOs.
- Set up a system that would ensure that appropriate credit comes to India, the Indian institutions and the Indian scientists and social scientists for their work, and that their work is duly publicized in and outside India (e.g. through our embassies and missions).
- Formulate ethical guidelines for administration of science, doing science, communicating science, and using science; and a system of punishment when those guidelines are compromised. Set up similar guidelines for social sciences.

- Recommend setting up of new organizations or institutions that would help advance these objectives and close down existing institutions which have outlived their utility or are not functioning satisfactorily.

- Prepare and present to the Government of India, periodic reports on the state of science and social sciences in India in the global context, and suggest steps that may be taken to improve it.