CIRRICATION & CAD DEPARTMENT

Sir,

Sub:- I&CAD Department – Academic collaboration in Ph D programme with the TERI University – Nominations Called for – Reg.

Ref:- Special Chief Secretary, I&CAD Dept., Govt., of Telangana, Endorsement Dt.06-08-2016.

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While enclosing a copy of reference cited, all the Engineers-in-Chief/ Director General /Chief Engineers of the department are requested to nominate the officers/staff of the I&CAD Department, Govt., of Telangana, who are willing and meet the eligibility criteria for the Ph D programme with TERI University, in Integrated water resources Management.

The Scholarships would be offered to officers/staff of the I&CAD Department, Govt., of Telangana, who meet the eligibility criteria for the programme at the University and are selected for the programme, as well as to other selected candidates at the University who propose area of research which meet the focus areas and the research needs of the Department.

Some indicative areas of research could be:

- Use of water demand management techniques for establishing crop water footprint in the Krishna / Godavari River Basin.
- Stochastic modelling of root zone depth for determination of relationship between salinity and crop yield.
- Study of droughts through assimilated crop model, GIS and statistical methods.
- Socio-hydrological modelling for stakeholder engagement in water management.
- Development and evaluation of water performance index for integrated watershed management.
Selected officers/staff of the I&CAD Dept., Government of Telangana, would be granted study leave for the admissible period and would receive a scholarship to cover the doctoral studies fees at the TERI University for a maximum period of five years. Other selected applicants (who would be full-time students at the TERI University) will be granted a scholarship as per the norms of UGC/CSIR.

The short listing and selection process would be done jointly by the Department and the University. There will be two opportunities to apply every year - for the academic session commencing from January, applications will be received until 10th October, and for the session commencing from July, applications will be received until 10th May.

Encl:- As stated above.

Yours faithfully,
J.Vijaya Prakash
Engineer-in-Chief(AW)

Copy to the Deputy Executive Engineers(c), to place in website.
CALL FOR APPLICATIONS FOR DOCTORAL PROGRAMME AT THE TERI UNIVERSITY

The Irrigation and CAD Department, Government of Telangana, is pleased to announce opportunities to earn a PhD degree from the TERI University.

The doctoral research would be in the broad area of integrated water resources management, through scholarships offered by the Irrigation and CAD Department, Govt. of Telangana. The scholarships would be offered to officers/staff of the Department who meet the eligibility criteria for the programme at the University and are selected for the programme, as well as to other selected candidates at the University who propose areas of research which meet the focus areas and the research needs of the Department.

Some indicative areas of research could be:

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Selected officers / staff of the Government of Telangana would be granted study leave for the admissible period and would receive a scholarship to cover the doctoral studies fees at the TERI University for a maximum period of five years.

Other selected applicants (who would be full-time students at the TERI University) will be granted a scholarship as per the norms of UGC / CSIR.

The shortlisting and selection process would be done jointly by the Department and the University.

There will be two opportunities to apply every year – for the academic session commencing January, applications will be received until 10 October; and for the session commencing July, applications will be received until 10 May.

Applications are to be forwarded to ————.
Building Capacities in Integrated Water Resources Management:
A Proposal for Scholarships for the Doctoral Programme at the TERI University, New Delhi

Prepared for
Irrigation and CAD Department,
Government of Telangana
1. Background

India is today viewed as an emerging superpower, with high rates of economic growth and a huge demographic dividend. Yet, we are well aware that India is also a country with the largest number of poor, illiterates and unemployed in the world. India suffers from acute economic and social disparities. Socially backward sections have gained little from the new prosperity, which rewards, disproportionately, those with assets, skills and higher education. The current approach to development in the country has been to bring about inclusive economic growth, to prevent serious adverse implications for the Indian economy, society and politics.1

During the Eleventh Plan, significant progress was made in the areas of expansion, inclusion, quality improvement and increased private participation in the field of higher education. There has been expansion of higher education institutes to eliminate regional imbalances. Efforts have been made to make higher education accessible to all socio-economic strata of the society. Further, steps have been taken to improve quality of education by promoting research, quality assurance systems and faculty and infrastructure development.2

In the present scenario, given the current thrust on excellence and inclusion in higher education in the Twelfth Plan, one of the key aspects in the future of higher education is going to be merit-based student financing. Scholarships for deserving candidates who might find it difficult to study niche and emerging programmes of study, would play a key role in making higher education (where the private sector has emerged as a major contributor) accessible to them.

Considered as one of the main global challenges the world is facing today, there is an urgent need to address issues of integrated water resources management.3 Water is an integral part of the ecosystem, a natural resource, and a social and economic good, whose quality and

2 Ibid.
Why TERI University?

The TERI University focuses on education for sustainable development. It trains students in niche areas such as environmental studies, environmental & resource economics, climate change, which are significant areas of study in today’s scenario. Not only have these areas emerged out of TERI’s commitment to this field, but also out of the needs that exist in the society and market today. One key point raised in the Twelfth Plan is the employability of students. It has been observed that many graduates as well as post graduates do not get jobs in their respective fields even after spending many years in acquiring higher education. Despite high rates of unemployment, the market is facing a shortage of skilled professionals. Thus, there exists a gap between the quality of education given and the actual skills required.

The TERI University has designed its programmes and curricula keeping in mind the skills required in the market and the employability of students. The pedagogy links theory and practice by bringing in experts from various fields, as well as devoting one entire semester to working on projects at various organizations. The attempt is to provide students with the necessary industry / organization exposure, as well as give them a chance to hone their skills. Furthermore, the larger question that education for sustainable development addresses is to find solutions to the many challenges that our society today faces. The grave problems of poverty, population, disease, growing pressure on environment, food security, conflict and inequity are all interrelated, and can only be addressed if we have an integrated approach to problem solving. “These factors are probably more accurately regarded as symptoms rather than as causes as they themselves are the consequences of thinking, values and practices in social, economic and political affairs that have put the world on an ‘unsustainable’ path.”

It is, therefore, not only necessary to deal with these problems, but even more essential to get our thinking right: to see the interrelations among these problems and recognize the fundamental need to develop a new perspective rooted in the values of sustainability. It is this need which makes education the key to creating a sustainable future and it is this cause that TERI University is committed to.

3. About TERI and TERI University

A dynamic and flexible organisation with a global vision and a local focus, TERI was established in 1974. By 1982, TERI evolved and expanded its research activities in the fields of Energy, Environment and Sustainable Development. These activities provided environment friendly platform to a plethora of problems ranging from rural energy issues, to shaping the development of the Indian oil and gas sector, tackling global climate change

1 http://www.unesco.org/education/tlsf/mods/theme_a/popups/mod01t05s01.html
2 Ibid
quantity determine the nature of its utilisation. The TERI University has been researching in various areas of natural resource management since 2003, simultaneously building capacities to find solutions to the challenges. In 2014, a Department of Regional Water Studies was set up at the TERI University. The objective of the Department is to create water professionals who are equipped to examine water issues in an interdisciplinary, trans-boundary and cross-cultural framework. The programmes have been designed keeping in consideration an approach that views water issues holistically and looks at technical, social, economic, legal, traditional and political dimensions linked to water. The unique blend of taught courses, field trips and internships undertaken by the students as part of the program exposes them to real time work environment and equips them with practical skills.

2. Proposal

This is a proposal for creating capacities through doctoral research in integrated water resources management through scholarships offered by the Irrigation and CAD Department, Govt. of Telangana, for the PhD programme offered at the TERI University, New Delhi. The scholarships could be offered to officers/staff of the Department who meet the eligibility criteria for the programme at the University and are selected for the programme, or to other selected candidates at the University who propose areas of research which meet the focus areas and the research needs of the Department.

Some possible areas of research could be:

- Use of water demand management techniques for establishing crop water footprint in the Krishna/Godavari River Basin
- Stochastic modelling of root zone depth for determination of relationship between salinity and crop yield.
- Study of droughts through assimilated crop model, GIS and statistical methods
- Socio-hydrological modelling for stakeholder engagement in water management.
- Development and evaluation of water performance index for integrated watershed management.

Of course, a lot of the research which could happen through the proposed scholarships could be of specific interest to the state of Telangana, but would have policy feeds to other states and the central government.

across the continents, enhancing forest conservation efforts among local communities, advancing solutions to growing urban transport and air pollution problems and promoting energy efficiency in the Indian industry.

TERI has come a long way and is now a dynamic organization with a staff strength of over 1200, drawn from multidisciplinary and highly specialized fields. Its offices and regional centers, equipped with state-of-the-art facilities, are used in a diverse range of activities. TERI is the largest developing country institution working to move human society towards a sustainable future that lays great emphasis on training, capacity building and education.

Thus by working on all the aspects of natural resource protection and management, TERI has created a vast reservoir of knowledge. The TERI School of Advanced Studies (now TERI University) was established to disseminate this knowledge in the society, promote capacity building and further research activities.

The University was established and constituted on August 19, 1998 and was granted “Deemed to be University” status by the University Grants Commission and notified vide Ministry of Human Resources Development, Department of Education, Government of India, notification no. F-9/19/95-U-3 dated October 5, 1999. The University offers Master’s and Doctoral level programmes.

The University’s inception from the research and training activities of TERI has propelled and influenced the evolution of its academic units. The University and TERI function jointly in collaborative research and programmes, undertake joint studies and offer mutual support for seminars, symposia, and conferences. TERI has also provided an initial corpus to financially support the University’s establishment. Additionally, TERI’s existing infrastructure – state-of-the-art laboratories, well-equipped field stations, and highly professional manpower – is available for the University to tap into and gain from.

Mission

The TERI University aspires to contribute globally by serving society as a centre of advanced studies and to promote learning through teaching and through creation of new knowledge. The University commits itself to academic excellence and an environment which would encourage personal and intellectual growth.

TERI University provides world-class facilities and resources so that students and faculty are stimulated to delve in innovative and multidisciplinary research.
Administration

The University has a Board of Management, which is responsible for its overall administration and control. The Academic Council decides the academic policy of the University. The Council approves curriculum, courses and examination results. It appoints committees to look into specific academic matters arising from time to time. The Finance Committee renders financial advice to the University. Dr Leena Srivastava is the Vice-Chancellor, and Dr Rajiv Seth is the Pro Vice Chancellor.

Structure of the University

As mentioned above, the University has evolved an organisational structure drawing on the research activities of TERI. The University has the following Departments and Centres.

- Department of Natural Resources
- Department of Biotechnology
- Department of Energy and Environment
- Department of Policy Studies
- Department of Business Sustainability
- Department of Regional Water Studies
- Centre for Bioresources and Biotechnology
- Centre for Regulatory and Policy Research
- Centre for Post-graduate Legal Studies

Besides its own faculty members, the University also draws on about 30 research staff of TERI who are qualified with Ph.D.s and rich experience of working on projects related to regulatory studies, policy research, bioresources, biotechnology, energy and environment. The faculty comprises core, adjunct and visiting professors, as shown in Figure 1 below.

![TERI University faculty strength March 2016](image)

**Figure 1: Faculty strength**
The student strength in the academic year 2015-2016 is as indicated on the pie-chart in Figure 2 below.

![Pie chart showing student distribution](image)

**Figure 2: Distribution of students across programmes**

Students at the TERI University are exposed to a variety of subjects, tools and methodologies in the interdisciplinary mode. Very typically, they converge upon an area of focus based upon their interest, having been exposed to a new way of thinking that looks at problems not from the lens of a subject specialist, but from the perspective of one who recognizes the complex linkages between man and his environment.

Apart from doctoral research, the TERI University runs masters programmes in Environmental Studies and Resource Management; Environmental and Resource Economics; Geoinformatics; Climate Science and Policy; Renewable Energy Engineering and Management; Urban Development and Management; Public Policy and Sustainable Development; Sustainable Development Practice; and Plant Biotechnology. The University also offers MBA programmes in Infrastructure, and Business Sustainability. This year (2016-17) it has commenced an LLM programme.

The University uses modern pedagogical tools, richly supplemented by field visits, live industry projects, and hands-on applications. The University provides the very best in laboratories, equipment and instruments, including state-of-the art computer hardware and software, video-conferencing facilities, and access to electronic and print resources in its library.
Accredited with an ‘A’ grade by the National Assessment and Accreditation Council of India (NAAC), the University has received accolades for incorporating new and innovative elements in education.

In keeping with its global outlook, the TERI University has academic collaborations with select foreign universities, which provide for joint research and curriculum development as well as faculty and student exchanges. Top performers in the masters programmes get an opportunity to carry out their major project abroad. The University attracts students from all over the country and a fair number of international students.

4. Costs of the Scholarships

A). Indian Nationals (Other than Officers / Staff of the Govt. of Telangana)

Present scholarship going by UGC and CSIR norms for a doctoral student: Rs 36400 per month (including HRA)

Per annum cost of scholarship = 36400 x 12 = Rs 436800
Overheads at 10% = Rs 43680
In addition there is a contingency grant of Rs 25000 per annum
So total is = Rs 5,05,480 per annum

Building-in an increase of 20%, which is likely to come in because of the Pay Commission, and taking 5 years as an average period for a student to complete his pre-PhD and doctoral work, the cost of scholarship in year 1 = Rs 6,06,576 (rounded off to Rs 6 Lakhs)

For 5 years this would be = Rs 30 Lakhs per doctoral student

If we were to consider two scholarships every year, this would be a commitment of Rs 60 Lakhs per year.

B). Selected Officers / Staff of the Govt. of Telangana (who would be on study leave)

Per annum cost of doctoral studies fees = 33610 x 2 = Rs 67220
Overheads at 10% = Rs 6722
In addition there is a contingency grant of Rs 25000 per annum
So total is = Rs 98,942 per annum
Taking 5 years as an average period for a student to complete his pre-PhD and doctoral work, the cost of scholarship in year 1 = Rs 98,942 (rounded off to Rs 1 Lakh)

For 5 years this would be = Rs 5 Lakhs per doctoral student

If we were to consider two scholarships every year, this would be a commitment of Rs 10 Lakhs per year.

Summary

The proposal for two doctoral level scholarships would therefore sum up to a maximum of Rs 60 lakhs per year (if both scholarships are awarded to candidates who are not employees of the Govt. of Telangana) to a minimum of Rs 10 lakhs per year (if both selected candidates are employees of the Govt. on study leave)

5. Prospects for a meaningful long-term relationship

Scholarships for some students would be a step forward. However, it is felt that far-reaching effects of the association between the Govt. of Telangana and the TERI University would be realised if in-house capacity can be created at the University for studies and research on issues most relevant to the Irrigation and CAD Department of the Govt. of Telangana. Given the development focus in the various programmes at the TERI University, this research would feed into its post-graduate programmes.

This could come about through the creation of an Academic Chair on IWRM, which could be set-up with a focused objective of developing capacity in academic programmes across the country to recognise, assess and deal with responsive, cost-effective, efficient and reliable solutions to issues related to water.

The proposed Chair would be occupied by a person of repute, who would not only research and complement the academic programmes at the TERI University, but could also aim to be a focal point for policy relevant discussions on water management issues.

In addition to the scholarships for students, which are proposed above, the Irrigation and CAD Department may wish to recommend and forward a proposal to establish a Govt. of Telangana Chair on Integrated Water Resources Management at the TERI University.