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## Fostering sustainability through education, research and practice: a case study of TERI University



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## ABSTRACT

This paper reflects the philosophy of TERI University of intrinsically building the concept of sustainable development (SD) through higher education and research. This has been illustrated by taking up an example of its flagship postgraduate program in Environmental Studies and Resource Management. The program is built by seamless integration of sustainability concept that incorporates social, cultural, economic, scientific, technological, legal and policy perspectives to address issues related to environment and resource management by laying strong emphasis on experimental/empirical evidence. The pedagogy of the program is based on blended learning using face-to-face interactions, live case studies, field visits, conferences, seminars and active use of information and communication technology. The curriculum has been designed by seamlessly integrating the principles of SD in an interdisciplinary framework. This has resulted in creation of a cadre of motivated and trained students who have taken the initiative for achieving sustainability on the campus through an environmental management plan and policy that focuses on five key environmental aspects – energy, resources, waste (solid and hazardous), ambient/indoor air and landscaping.

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### 1. Introduction

Education is the most powerful instrument that can be used to change the world. It is perceived as an engine of economic growth, the repository and defender of culture, and an instrument for the realization of collective aspirations (Johnstone et al., 1998). Inclusion of higher education as one of the paths leading to sustainability in Agenda 21 of 1992 Rio Summit re-emphasized its ability to bring change. The United Nation's initiative on Education for Sustainable Development (ESD) recognizes the importance of appropriate education, training and public awareness in achieving sustainability in all sectors of society.

The TERI University (TU) in 2012 has signed the “Rio+20 Declaration of Higher Educational Institutions (HEIs)” and declared its sustainability project for the years 2012–2015. The HEIs play a vital role in the training of teachers and reorientation of the curricula in addition to the promotion of ESD in formal, non-formal and informal learning environment on a lifelong basis. Further, HEIs could play a more significant role by producing “rational-citizens”

and achieving ‘sensible’ future for the upcoming generations (Ravio, 2011; UNESCO, 1978). Sustainable Development (SD) for TU is “Development using principles of – equity (regional, temporal, gender, intergenerational, ecological and economic), efficiency (optimization, minimization and conservation through use and advancement of technology), feasibility (economic and social acceptability), interdependence and integration, durability (through change in lifestyle and innovation), and decentralization (for planning and implementation)”. The education at TU integrates the philosophies of “Learning for Sustainable Development” and “Learning as Sustainable Development” as proposed by Scott (2009). It has also been quoted:

“An exemplary example of combining traditional values of conservation and preservation of energy while building a state of the art campus.”

Former President of India, Smt. Pratibha Devisingh Patil

“The course curriculum design combined with work exposure in terms of major and minor projects in industry, NGO's and corporates have given us an edge in sphere of ESD”.

Romit Sen, Alumuni

Hence, TU follows both approaches by inculcating values of SD that facilitates to deal with the problems of present by bringing

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shift in students' behavior, incorporating green lifestyle (such as use of bicycle, optimal use of resources, use of public transport, energy efficient appliances) into their exhibit and change in habits (such as turning off lights in empty rooms, practice the 3 "R's" – Reduce, Reuse, Recycle). This will help students at TU to critically think about various problems and apply or test the knowledge of SD for developmental activities.

This paper aims to present an innovative higher education approach of TU, which aims at developing students as sustainability "change-agents". The holistic education approach employed in M.Sc. Environmental Studies and Resource Management (ESRM) program is elucidated through its education philosophy, curriculum design and pedagogy. The TU started its environmental education program by integrating sustainability issues throughout the curriculum, adopting sustainable operations, and building green facilities in the campus. The program displays a uniqueness as it integrates an interdisciplinary approach blended with theory, practical components using case based examples from live projects, research assignments, global classroom teaching, interactive sessions etc. The significance of developing, understanding of sustainability issues and ability to react to present and future problems through critical thinking and innovation among the students is also reflected.

## 2. Methodology

The study uses exploratory approach for understanding the aim behind inception of the ESRM program and explanatory approach for understanding its benefits and unique selling proposition (Yin, 1993). In-depth review of TU's history, institutional relationship, program philosophies and structure were carried out to understand and delineate various aspects of the ESRM program. The information related to ESRM program was collected from the institutional documents including program brochures, course curriculum and annual reports (TERI, 2011). Further, face-to-face interviews and group discussions were carried out to capture the essence and impact of its implementation. For successful assimilation of SD principles as integral part of course curriculum, the involvement of top management is very important (Lozano et al., 2013). Hence, the target audience included senior management (Vice Chancellor and

Registrar), faculty members, current students and alumni. About 72 people were involved in this exercise, with 30% faculty members, 41% current students and 25% alumni. The information was analyzed to present uniqueness of the program for building the concept of SD through higher education and research.

## 3. ESRM Program: philosophy, objective and structure

The TU was set up in 1998 with a vision of disseminating the vast knowledge created in the realm of energy, environment and SD by The Energy and Resources Institute (TERI). In its 13 years of functioning, TU has achieved significant progress in creating an institution of higher learning with a strong foundation of research and innovation. It is registered with the University Grants Commission (UGC), India and operates at its 'green campus', located at Vasant Kunj, New Delhi. Currently, there are 11 masters' level programs, 2 post-graduate diploma programs and 4 doctoral programs in science, policy and management offered by TU (Fig. 1). There are about 125 Ph.D. students at TU and over 550 students at the masters' level.

The TU firmly believes that students should be given space to think-and-innovate as well as opportunities (annual festivals and field trips) to unwind and relax. For example, students at TU organize theme based programs (such as waste management, water conservation, plastic: boon or bane) involving students and professionals from other universities and colleges. As a result, students get a chance to work together with experts and test their acquired knowledge from ESRM through these interactive discussions. It trains the students such that they practice sustainability as they go along with the education and become global citizens: responsible to environment, to the nation and community.

The TU's ESRM program is an optimal blend of theory, practical components complete with an interdisciplinary approach. It has been designed with an emphasis on research and application to create a cadre of professionals who are equipped to deal with scientific, technological, legal, socio-economic and policy aspects related to environment and resource management (Table 1). The ESRM curriculum looks at the seamless integration of the sustainability concept in an inter-disciplinary framework, aiming to address the growing need for the best management practices and

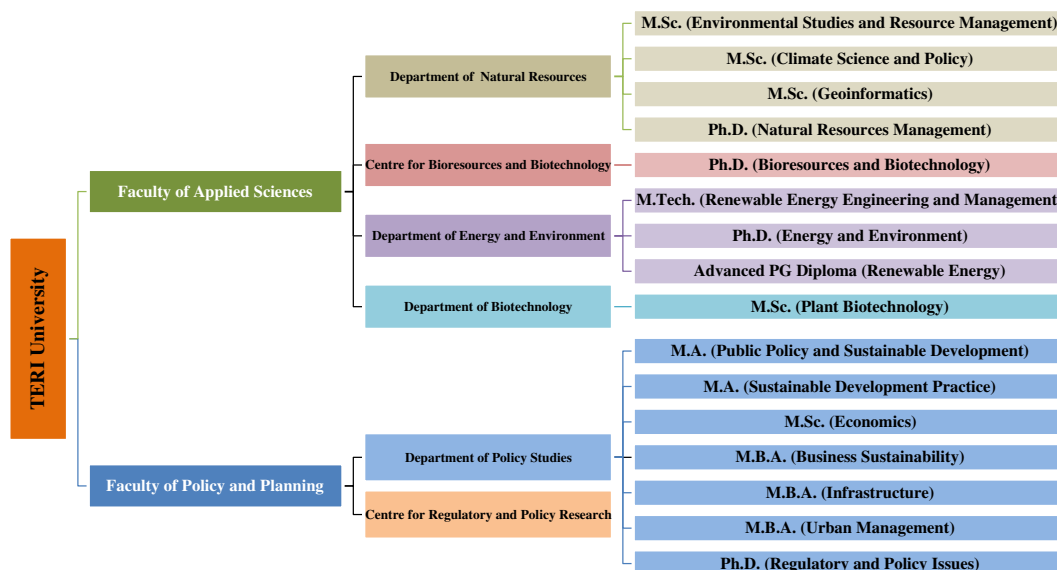


Fig. 1. Programs offered at TERI University.

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