NEP 2020 and Beyond: Environmental Education

Professor R. Baskar
School of Sciences, IGNOU
Higher education in India is a complex and diverse landscape.

Total enrolment in higher education ~ nearly 4.33 crore (43.3 million) (Population of Spain).

Gross Enrolment Ratio (GER) in higher education in India ~ 28.4 percent (as per 2011 population projections for 18-23 years age group). (NEP 2020 aims 50% by 2035).

GER in the United States: 86 percent
Japan: 59 percent; Germany: 30 percent
India’s GER at higher education level lower than global average of 38 percent.
All India Higher Education Survey (AIHES) & Status of Higher Education in India 2021-22 (Published Jan 2024)

Contributions to total enrolment:
Govt. Universities (58.6% of total): 73.7%
Private Universities: 26.3%

Total number of Universities/University level institutions registered: 1,168
Colleges: 45,473
Standalone Institutions: 12,002

Total faculty: 15.98 lakh
(56.6% male, 43.4% female)
Article 51-A (g), says that “It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.” (Article 51A(g) - 42nd Amendment Act in 1976).

Article 48 - A: “The state shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country”. (42nd Amendment Act of 1976, aligning with global movement towards environmental sustainability and responsibility).

The Environment (Protection) Act, 1986 (EPA) is a critical legal instrument for environmental protection in India. (UN Conference on Human Environment, 1972)

Public Interest Litigation (PIL) under Article 32 (Supreme Court) and 226 (High Court) of the constitution of India resulted in a wave of environmental litigation (early 1980).
Environment Education Policies by Supreme Court

Supreme Court (1991): “...through the medium of education, awareness about the environment and its problems related to pollution should be taught in all levels of education.”

Follow-up order (2003): EE made compulsory subject at all levels of education. Courses in “Environmental Sciences” introduced by HEIs across India. Introduced the idea of requiring a course on environmental education.

Undergraduate Level: The University Grants Commission (UGC) mandated a six-month module syllabus for undergraduate courses.

Compliance with the Supreme Court order is mandatory and applies to all states and union territories. The National Council of Educational Research and Training (NCERT) has worked with state governments to provide support for implementing EE in the formal education system.
National Policies on Education

- **1968**
  - NPE 1968 did not address environmental studies as separate subject.

- **1986 (POA 1992)**
  - NPE 1986 (modifications, 1992), included *environmental protection*.
  - *Teaching in schools and colleges should be guided by environmental consciousness.* (NPE, 1986 with modifications in 1992, section 8.15).

- **2020**
  - NEP 2020 provided guidelines, course contents, and credit requirements.
### NEP–2020:
Access, Equity, Quality, Affordability, Accountability

- **Multidisciplinary and Holistic**
  - Academic Bank of Credit, Credit transfer
  - Multiple Entry- Multiple Exit

Higher Education Commission of India – four verticals (NHERC, NAC, HEGC, GEC)
HEIs – Regulators

- The University Grants Commission (UGC) and 14 professional councils regulates higher education.
- NEP 2020 will introduce a **single regulator for higher education**, excluding legal and medical.

<table>
<thead>
<tr>
<th>HEI</th>
<th>Regulatory Body</th>
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<tbody>
<tr>
<td>University Grants Commission</td>
<td>All India Council of Technical Education (AICTE)</td>
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<tr>
<td>National Council for Teacher Education</td>
<td>National Council Of Educational Research And Training (NCERT)</td>
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<tr>
<td>(NCTE)</td>
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<tr>
<td>Medical Council of India (MCI)</td>
<td>Central Council for Indian Medicine (CCIM)</td>
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<td>Dental Council of India (DCI)</td>
<td>Indian Nursing Council (INC)</td>
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<td>RUSA – Rashtriya Uchchatar Shiksha Abhiyan</td>
<td>Pharmacy Council of India (PCI)</td>
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<tr>
<td>Council of Architecture</td>
<td>Distance Education Council (DEC)</td>
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<tr>
<td>Bar Council of India (BCI)</td>
<td>Central Council of Homeopathy (CCH)</td>
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Higher education as a policy instrument helps people become more self-sufficient, enhances economic growth by boosting skills, and improves lives.

**Common Aims:**
- Universalism in high-quality education
- Lifelong learning
- SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030. It also aspires to eliminate gender and economic imbalances.
NEP 2020

NEP 2020 highlights importance of **addressing environmental concerns**. Clear recognition of addressing global needs for energy, water, food, and sanitation.

**Emphasizes integration of environmental education** into curricula. Aims to promote understanding and sensitivity towards environmental conservation and sustainable development principles.

It aims to incorporate it **seamlessly into the Indian educational programs**.

Recommendation **extends beyond schools to include undergraduate levels**.
NEP 2020 and Environmental issues

NEP 2020 emphasizes societal issues -- clean water, education, healthcare, transportation, air quality, energy, and infrastructure.

Need to merge cutting-edge science and technology with social sciences, humanities, and the socio-cultural and environmental aspects.

Training professionals in emerging fields such as AI, 3-D machining, and machine learning. UG to integrate these applications in health, environment, and sustainable living to increase employability.

Specifies that disruptive technologies encompass clean energy, water conservation, sustainable farming, environmental preservation.
NEP 2020 recommends to integrate environmental education into school curricula: promoting awareness, conservation and sustainable development.

Objective of raising awareness about environment, importance of water, resource conservation, sanitation, and hygiene.

NCERT National Curriculum Frameworks will be based on input from Ministries / Departments, States, and UTs. CBSE and NCERT to organise several outreach activities to promote environmental awareness.
NCERT textbooks address environmental issues comprehensively. **Class VI–XII science textbooks have chapters on environmental issues.**

**Social science and language textbooks address environmental issues.**

NCERT created environment education-focused supplementary materials for students and instructors.

All B.Ed. programmes mandated to integrate environmental awareness and sensitivity towards its conservation and sustainable development.
Environment Education in HEI’s

NEP 2020 encourages holistic and multidisciplinary education through flexible and innovative curricula for all higher education institutions (HEI’s).

Policy recommends **HEI to offer credit-based courses and projects related to community engagement, service, environmental education.**
UGC Guidelines for Institutional Development Plan - key policy document
Includes promotion of energy efficiency, waste reduction, and minimizing environmental impact.

Green campus strategy for preserving ecosystem by safeguarding natural landscape, reducing carbon emissions, and conserving water resources. Awareness campaigns

UGC guidelines and curriculum framework for Environment Education

- **UGC guidelines** and curriculum framework for undergraduate Environment Education follows NEP 2020 recommendations.

- Guidelines are updated version of syllabus developed in 2017. UGC classified eight-module course as part of the Choice Based Credit System (CBCS), as an Ability Enhancement Compulsory Course (AECC).

- Courses designated as AECC have a specific focus on enriching knowledge through content. All disciplines required to adhere to these guidelines.
Contents, Evaluation

- UGC 2003 Syllabus (50 lectures, 4 credits, Fieldwork 25, Exam 75 marks)
- AICTE Syllabus (Non-credit, Mandatory)
- UGC 2017 letter-Ability Enhancement Compulsory Course, Syllabus (4 credits, I and II Sem @CBCS, CGPA)
- BSc Environmental Science (Hons) 2015
Qualifications of teachers / fellowships:

- To ensure the interdisciplinary spirit of proposed curriculum, teaching to be carried out by faculty trained at post-graduate (M.Sc./M.A.) and Ph.D. levels in ‘Environmental Studies or Environmental Sciences’.
- Proposed to increase the number of Fellowships.
- Interdisciplinary environmental programme at UG level will be successful only when independent departments of environment are established at undergraduate levels.
## Curriculum Framework Outline

<table>
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<tr>
<th>Unit</th>
<th>Title</th>
<th>Teaching Hours</th>
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<tbody>
<tr>
<td>I</td>
<td>Humans and the Environment</td>
<td>4</td>
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<tr>
<td>II</td>
<td>Natural Resources and Sustainable Development</td>
<td>6</td>
</tr>
<tr>
<td>III</td>
<td>Environmental Issues: Local, Regional and Global</td>
<td>6</td>
</tr>
<tr>
<td>IV</td>
<td>Conservation of Biodiversity and Ecosystems</td>
<td>6</td>
</tr>
<tr>
<td>V</td>
<td>Environmental Pollution and Health</td>
<td>6</td>
</tr>
<tr>
<td>VI</td>
<td>Climate Change: Impacts, Adaptation and Mitigation</td>
<td>6</td>
</tr>
<tr>
<td>VII</td>
<td>Environmental Management</td>
<td>6</td>
</tr>
<tr>
<td>VIII</td>
<td>Environmental Treaties and Legislation</td>
<td>6</td>
</tr>
<tr>
<td>IX</td>
<td>Case studies and fieldwork</td>
<td>30</td>
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Total credits of the Course = 4*

*As per UGC Curriculum and Credit Framework for Undergraduate Programmes ([https://www.ugc.ac.in/e-book/FYUGP/mobile/index.html](https://www.ugc.ac.in/e-book/FYUGP/mobile/index.html)), a one credit of tutorial work means one-hour engagement per week. In a semester of 15 weeks duration, a one credit tutorial in a course is equivalent to 15 hours of engagement.

A one credit course in practicum or lab work, community engagement and services, and field work in a semester means two-hour engagement per week. In a semester of 15 weeks duration, a one credit practicum in a course is equivalent to 30 hours of engagement.

The proposed number of credits per course and the credit distribution are suggestive and the HEIs may decide on course credits and distribution over 6/8 semesters in a manner that will facilitate the students to meet the minimum credit requirements.
Change in content

- Multidisciplinary approach covering climate change, sustainable development, conservation and management of biological resources and biodiversity etc.
- Interdisciplinary approach to understanding these issues.
- Curriculum covers 8 interdisciplinary topics in 9 units; 1 unit dedicated to practical exposure and fieldwork training.

New themes:

- Climate change: Impacts, Adaptation and Mitigation
- Environmental Management
Unit II. Natural Resources and Sustainable Development

Learning Outcomes
After completion of this unit, students would be able to:

- Understand the concept of natural resources, identify types of natural resources, their distribution and use with special reference to India.
- Discuss the factors affecting the availability of natural resources, their conservation and management.
- Explain sustainable development, its goals, targets, challenges and global strategies for sustainable development.

Unit Outline
Overview of natural resources: Definition of resource; Classification of natural resources- biotic and abiotic, renewable and non-renewable.

Biotic resources: Major type of biotic resources- forests, grasslands, wetlands, wildlife, and aquatic (fresh water and marine); Microbes as a resource; Status and challenges.

Water resources: Types of water resources- fresh water and marine resources; Availability and use of water resources; Environmental impact of over-exploitation, issues and challenges; Water scarcity and stress; Conflicts over water.

Soil and mineral resources: Important minerals; Mineral exploitation; Environmental problems due to extraction of minerals and use; Soil as a resource and its degradation.

Energy resources: Sources of energy and their classification, renewable and non-renewable sources of energy; Conventional energy sources- coal, oil, natural gas, nuclear energy; Non-conventional energy sources- solar, wind, tidal, hydro, wave, ocean thermal, geothermal, biomass, hydrogen and fuel cells; Implications of energy use on the environment.

Introduction to sustainable development: Sustainable Development Goals (SDGs)- targets and indicators, challenges and strategies for SDGs.
Unit VI. Climate Change: Impacts, Adaptation and Mitigation

Learning Outcomes
After completing this unit, students would be able to:

- gain a comprehensive knowledge of climate change, its science and response measures
- have an overview of national and global efforts to address climate change adaptation and mitigation.

Unit Outline
Understanding climate change: Natural variations in climate; Structure of atmosphere; Anthropogenic climate change from greenhouse gas emissions—past, present and future; Projections of global climate change with special reference to temperature, rainfall, climate variability and extreme events; Importance of 1.5 °C and 2.0 °C limits to global warming; Climate change projections for the Indian sub-continent.

Impacts, vulnerability and adaptation to climate change: Observed impacts of climate change on ocean and land systems; Sea level rise, changes in marine and coastal ecosystems; Impacts on forests and natural ecosystems; Impacts on animal species, agriculture, health, urban infrastructure; the concept of vulnerability and its assessment; Adaptation vs. resilience; Climate-resilient development; Indigenous knowledge for adaptation to climate change.

Mitigation of climate change: Synergies between adaptation and mitigation measures; Green House Gas (GHG) reduction vs. sink enhancement; Concept of carbon intensity, energy intensity and carbon neutrality; National and international policy instruments for mitigation, decarbonizing pathways and net zero targets for the future; Energy efficiency measures; Renewable energy sources; Carbon capture and storage, National climate action plan and Intended Nationally Determined Contributions (INDCs); Climate justice.
UNIT VII. Environmental Management

Learning Outcomes
After completion of this unit, students would be able to:

• Develop a critical understanding of the complexity of environmental management.
• Understand broad aspects of environmental management systems.
• Understand different methods of assessing environmental quality and associated risks.

Unit Outline
Introduction to environmental laws and regulation: Constitutional provisions- Article 48A, Article 51A (g) and other derived environmental rights; Introduction to environmental legislations on the forest, wildlife and pollution control.

Environmental management system: ISO 14001

Concept of Circular Economy, Life cycle analysis; Cost-benefit analysis

Environmental audit and impact assessment; Environmental risk assessment Pollution control and management; Waste Management- Concept of 3R (Reduce, Recycle and Reuse) and sustainability; Ecolabeling /Ecomark scheme
Unit IX. Case Studies and Field Work

The students are expected to be engaged in some of the following or similar identified activities:

- Discussion on one national and one international case study related to the environment and sustainable development.

- Field visits to identify local/regional environmental issues, make observations including data collection and prepare a brief report.

- Participation in plantation drive and nature camps.

- Documentation of campus biodiversity.

- Campus environmental management activities such as solid waste disposal, water management and sanitation, and sewage treatment.
Starting from 2023 to 2024, UGC has made it mandatory for all university students to study environmental education. The course will address obligation to attain the United Nations Sustainable Development Goals.

Under the Ministry of Education guidelines, UGC has directed universities and colleges to incorporate a compulsory core subject on environmental studies across undergraduate programs, including general engineering, medical, architecture, pharmacy, management, and other fields.
UGC 2023 Guidelines

- Environmental education to become a main subject -- not elective or optional.
- 4-credit course
- Community engagement, service, and a practical knowledge and real-life experiences to be focused on, along with theory
- Students can achieve credits within a time frame of six to eight semesters.
Numerous universities offer certificate, diploma, and degree programs in Environmental Studies and related disciplines.

Education Ministry's e-learning portal 'SWAYAM' provides teaching materials, videos etc. and is open to everyone.

Guidelines cater to students from “diverse disciplinary backgrounds and also include topics to sensitise students about the nation's commitment towards achieving sustainable development goal.”
Significance of the policy

Environmental education -- **not just a curriculum** -- encourages comprehension and responsible attitudes towards environment.

Inspires people to become aware and take steps to address environmental issues.

Integration of EE into education system is crucial and transformative. Community outreach & public awareness campaigns to be initiated.

Connection between environmental issues, economy, and future survival to be recognised. Inclusive growth hinges on sustainability.
Mission LiFE: India-led global mass movement to nudge individual and community action to protect and preserve the environment.

2020 UNDP report ‘The Next Frontier: Human Development and the Anthropocene’ says “Humans wield more power over the planet than ever before. In the wake of COVID-19... use that power to redefine what we mean by progress, where our carbon and consumption footprints are no longer hidden.”

Focus on inculcating long-term environment-friendly habits. As per UNEP, “if one billion people out of the global population of eight billion adopt environment-friendly behaviours in their daily lives, global carbon emissions could drop by approximately 20 per cent.”
References:

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- NPE, 1968.
- NPE, 1986, modified 1992
- NEP 2020
- CBCS, AECC, 2015
- B.Sc CBCS, UGC, 2017
- Court order, 1991, 2002
- UGC Syllabus 2003
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- AICTE Syllabus