



## HIGHER EDUCATION INSTITUTES - PATRONIZING NEO INDUSTRIALIZATION AND SUSTAINABLE MANAGEMENT

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### ABSTRACT

“If a Child never learns, A Man doesn’t know”. Higher Education Institutes (HEI’s) carry vital role in every aspect of individual and economic phase of life by imparting quality education and hence play an essential role in sustainability. HEI’s are the catalysts and the basic element of them is to design and introduce courses which maintain the balance between ecology and economic system. HEI’s are the place where educated generation is created and future leaders are prepared. Creating a syllabus focusing on Neo-Industrialization further focusing on balancing the ecological and economic system, natural and industrial subsystems, methodology for consuming natural and intellectual resources, end of poverty in all forms, gender equality, healthy lives and wellbeing, fair work policies resulting in economic growth, climate change, peaceful societies, impartial and strong institutions., simultaneously incorporating projects based on these topics with valued credits. Incorporating ‘Sustainable Management’ where every single individual will be guided through the importance of using the resources in such a way that the resources will be equally available to the present generation and the future generation as well. Thriving to maintain balance can only be inculcated in an individual when he is budding and is at learning stage, an individual when enters in any HEI, has a goal to set the life using the qualification and knowledge of the subject learned during the life in HEI. Patronizing these concepts through incorporating sustainability principles HEI’s can maintain the balance in society, political environment and in the stakeholder interests.

**Keywords-** Higher Education, Sustainability, Sustainable Management, Neo Industrialization, Institutionalization

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### 1. Introduction:

We have no other place to go, Earth is the only place in the vast Universe where we find life, and there is no chance in coming thousands of years for us so see ourselves settling on another planet. The COVID 19 Pandemic situation has been the eye opener for every individual of the world. This has exhibited the deep-rooted problems in our society and the alarming conditions of the existing Public Health Systems, Health

Coverage, Individuals’ Social Protection & Awareness, etc. it has also pushed back the economies of the world for more than 10 years exposing the aggravated inequalities within and among the countries. The Global Community is at a critical moment in its pursuit of the Sustainable Development Goals (SDGs). More than a year into the global pandemic, millions of lives has been lost, the human and economic toll has been unprecedented, and recovery efforts so far



have been uneven, inequitable and insufficiently geared towards achieving sustainable development (SDG UN Report 2021). The report focuses on 17 Sustainable Development Goals decisively to be implemented, No Poverty (Goal 1), No Hunger (Goal 2), Good Health and well-being (Goal 3), Quality Education (Goal 4), Decent Work and Economic Growth (Goal 8), Sustainable Cities and Communities (Goal 11), Responsible Consumption and Production (Goal 12), Climate Action (Goal 13), Peace, Justice and Strong Institutions (Goal 16), Partnership for the Goals (Goal 17).

## **2. Scope and Significance of Study:**

Higher Education Institutes play an important role in sustainability and are the key representatives contributing to create future leaders which will lead the society to towards successful implementation of the SDGs. To achieve the agenda 2030 of SDG's, Education has to be considered as the body and heart to contribute more, and HEI's shall be considered as foundation to create sustainable societies. The Fourth Agenda of UN SDGs Report 2021 suggests to "Ensure Inclusive and Equitable Quality Education and Promote Life Long Learning Opportunities for All". Achieving this requires collaborative effort from all strata of the society. While it is generally agreed that teachers can shape student learning outcomes, there remains considerable debate on how National Policies and Training Programmes can best support teacher education to address sustainable development challenges. (Maria Gratelia Ianos, et al, 2019)

The report of All India Council of Technical Education, New Delhi on the present admission status in Engineering Institutes is that every year approximately 1.6

million students seek admissions in Engineering, Pharmaceuticals, Management Programs and only 0.85 million students complete their graduations and only 20% out of the graduates pursue their qualifications to bring outcome to the society, that means only 37% of total students contribute their skills to the society to grow. The remaining 67% dropouts are the biggest concern. Sustaining in Education and Market (from students' perspective) and Sustainability in Education (from SDGs perspective) and more specifically in Higher Education must be given a bearing of priesthood. The agenda of SDGs and the urgency clearly shows that SDGs must contemplate and shall be embedded in all levels of Education. The HEI is the place where the journey of education of the student ends and he takes his step out of education in the society to become an Entrepreneur, Industrialist, Businessmen, etc.,

During the odyssey of Higher Education every aspirant shall be nourished intellectually in such a manner that during the tenure in the college or institution the student shall be brimmed with the ideas and logics of sustainability in the field of their knowledge and expertise. The Institutions providing technical education must inculcate among the students the neo-industrial paradigm of modern development. As per Sergey Zihronkin, et al... 2019, the human economic activities shall be done by keeping the conscience of nature first, the production and usages of goods and service shall take place in the framework of an appropriate exchange of materials used and energy consumed shall be in tune with the environment. The relationship with the nature and environment must be in the form a dynamic ecological-and-economic system, which will further create a combination



functioning subsystems which will purely reflect the balance between both - ecological and economical(Sergey Zihronkin et al, 2019).Technical education institutions have the major contribution towards the Neo-Industrialization. Maintaining the balance and the proportion of natural resources and the businesses in a way that balance between consumption and production be sustainably maintained so as the emission of hazardous chemical and toxic waste can be reduced and ecology will be saved.

The neo-industrialization thought can only be inculcated when the student is in the aspiring mode of learning new skills which is useful for building own life. The pathway of transferring the Neo-Industrialization paradigm and Knowledge of Sustainability from one generation to the future generations is – Higher Education Institutes. The understanding of the real concept of sustainable development (SD) shall occur through the transfer of knowledge and information which will raise the awareness of the need of balance between nature, environment, industry , market, economy, and society. Higher Education Institutions are the place where knowledge is shared and they can become the central players in the process which can transfer information and knowledge and act as a bridge of knowledge between scientific knowledge and common sense.(Guerra et al, 2018) The HEIs can patronage the concepts through making them the part of their Outcome Based Education (OBE) and develop the curricula in such a manner that every student will become the part of the society having idea of Sustainability.

Every Goal in the UN SDGs Report are completely interconnected and interdependent on each other, whereas, the Goal 4 - Quality Education and Goal 12-

Responsible Consumption and Production are more interconnected, given more heart in these two goals, the HEIs can lead the societies having awareness of sustainability through –

- Sustainable Campus Operations;
- Sustainable Research;
- Sustainable Public Outreach;
- Cluster of HEIs for support of Sustainability Visions;
- Sustainable Curricula and Reporting,

Cooperation in Green Campus Initiatives, Policies for Energy Efficiency Management, Promoting Innovations building Green Technologies (Davis Freidenfelds, et al, 2018) and promoting every individual for taking small yet constant steps towards sustainability to further build learned society which will help in developing the nation, eventually leading to make the world a better place.

The need for encouragement among students and staff at institute campus, to adopt the initiatives to achieve the objectives of sustainability, should be the act of primary importance. Staff and Students are the resources where they can be the ambassadors of the best practices favoring sustainability and neo industrialization and can introduce new policies which can further help the decision makers to upgrade their existing policies towards sustainability and neo industrialization(Davis Freidenfelds, et al, 2018).

### 3. Aligning Neo Industrialization with Higher Education

Identifying the Indicators mentioned in Goal 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities to all, Goal 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster

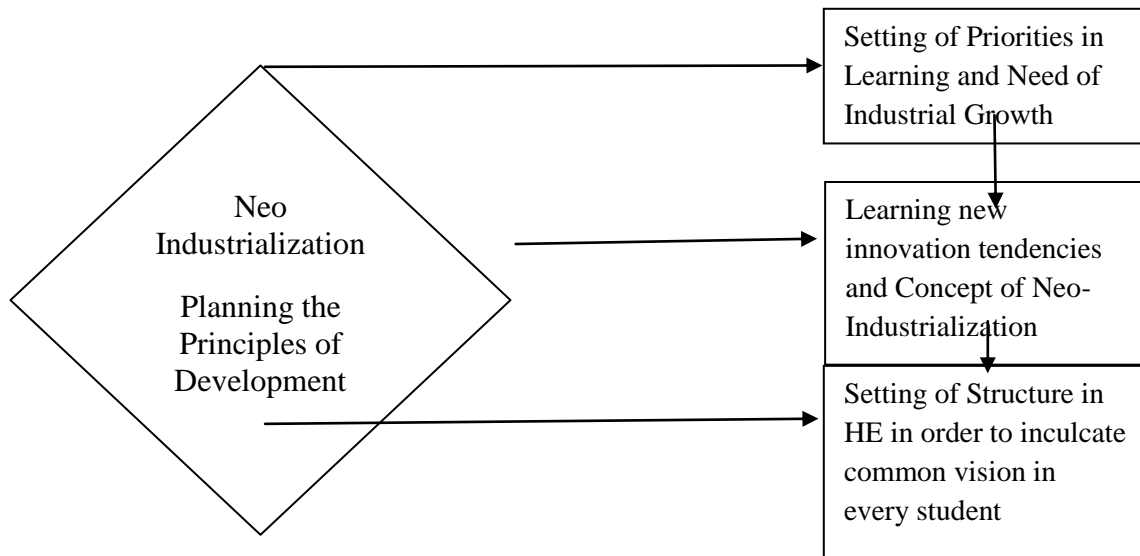


innovation, Goal 12 – Ensure sustainable consumption and production patterns, Goal 13- Take urgent action to combat climate change and its impacts<sup>(SDG UN Report 2021)</sup>.

“Education is not the amount of information that is put into your brain and runs riot there, undigested, all your life. We must have life-building, man-making, character-making assimilation of ideas” <sup>(Swami Vivekanand)</sup>. Developing structured plan to achieve the well-defined goals of Sustainable Development rests on the shoulders of

education and mostly on the shoulders of HEIs. Teach One, You Teach a Society, Teach All, You Educate the World. The world which is emerging now, is technology dominated, interconnected, and stressed for natural resources. The HEIs and Universities will have the burden of making sure that they will be able to introduce the design of Neo Industrialization in the curriculum, stretching it to the level of every possible program, course, and subject.

**Figure 1: Methodology Model**



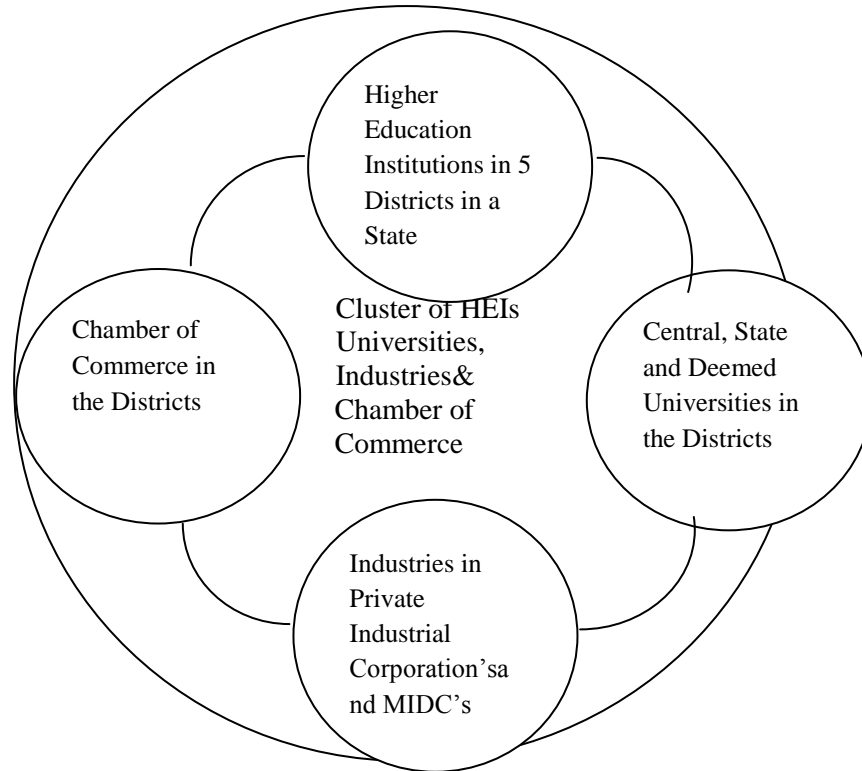
The present generation has to first understand how to align the need of every development – speed of consumption – utilization of resources, resulting in maintaining the ecological balance between present style of consumption resources (natural and intellectual) and securing the needs of future generations.

- Upgrading the Knowledge of Human Capital
- Unification of Education and Industrial requirements
- Interweaving of Education and Economic Process
- Dissemination of New Technologies

Understanding the CONCEPTS of Neo Industrialization, in itself, is the bigger task and bringing them into implementation is much bigger than it seems.



**Figure 2. Cluster Model of HEIs for Neo Industrialization**



The surety in the implementation can be seen through formation of the clusters between HEIS' Universities, Industrial Corporations, understanding the Trade and Business through the demographic point of views, studying the needs of the demography, forming clusters of such clusters and bringing awareness and continuous upgrades in the syllabus through clusters and inculcating the industrial needs through the syllabus will bring a wholesomeness in understanding among the students which are the future of society. The private industry sector has better knowledge about the market and have their networks between all sectors, which will further help in opening the gates of international market of product developments around the world, the business sector is and has been always been the

frontiers of upgrades in the product and the future of the product. All this results into a rat race creating a psychology to use hazardous materials and compromise the lives of future generations.

They Industrial Sector has better knowledge about the future of the production and the markets. Mass production and over stocking create imbalance in every field and ecology of economics. The Industrialists or a businessman was a student once, and the student will become industrialist or businessman one day. The conceptual clarity of neo-industrialization among all the pursuant of education has become the matter of core necessity and unless HEIs do not take this into consideration the clarity among the



society is difficult to visualize an ecologically

#### 4. Aligning: Sustainability, Sustainable Development and Higher Education

Education is the main source of communication to develop the Sustainability Mindset. This concept includes “a systematic approach to understanding, one which goes beyond technical knowledge and even understanding the basics of healthy ecosystem and a thriving society”. (Inga Zaleniene, Paulo Pereira, 2021) In knowledge society Research Institutions / Universities have a unique and important position in dissemination of knowledge to other Teaching and Research Universities. They have an ability to characterize the global mission, research intensity, complexity in ecology and economies, global collaborations, etc., for example IIT’s NIT’s NID’s have the access to global platforms and the researches going on the global platforms. They have the access in all directions and moreover in all verticals of educations and all horizontals of the society.

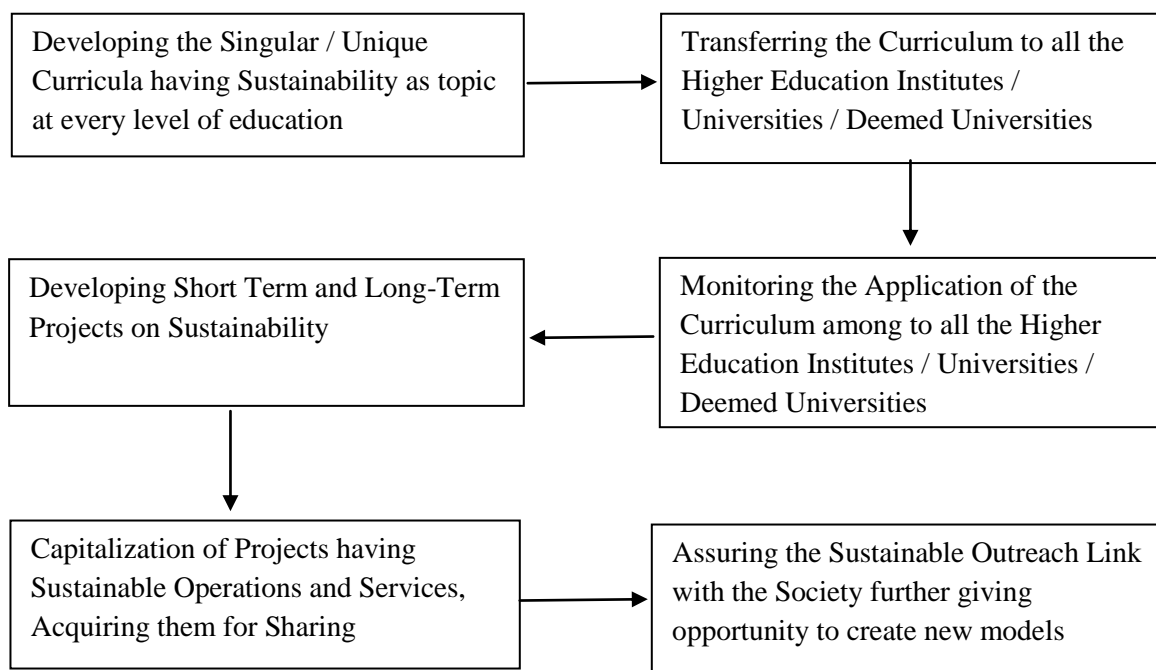
#### 5. Discussion and Analysis:

balanced market.

They have access to Government Funding Agencies and also, they have their own developed and sustainable self-financing strategies.

All India Council to Technical Education, New Delhi (AICTE) and University Grants Commission, New Delhi (UGC) have always provided special grants for research and have always been the true facilitators to all the HEIs, yet lacked in the governance and bringing the uniform structure for maintaining the universal standards in education. Even AICTE has launched the Clean, Green Smart Campus Award to recognize the Institutions doing good in terms of Cleanliness, Green Cover, Sustainability, Smart Campus, etc., to incorporate traditional practices, the actual implementation, and the importance of such a good initiative has not reached to the last institute out of all 45 thousand higher education institutes throughout India.

**Figure 3. Introducing Sustainability in Learning Model for HEIs**



When the student learns to develop and create the model of sustainability, the scope of future research gets transferred to the coming learning generation giving sustainability in education and life long learning. Relevant Teaching, Relevant Research and Link with Society are the primary goals of all HEIs. Sustainability can be inculcated in learning through making provision of extra weighted credits.

**Table 1. Credit for Sustainability in OBE (Outcome Based Education)**

Duration	Total Credits	Number of Courses	Current Credit Structure	Additional Credits on Sustainability
3Years (UG)	120	6 per year	40* 40* 40*	2 Credits 2 Credits -Mini Project 2 Credits - Final Year Project
4 Years (UG)	160	8 per year	40* 40* 40* 40*	2 Credits 2 Credits -Minor Project 2 Credits- Major Project 2 Credits - Research on Social Responsibility
2 Years (PG)	120	8 per year	60* 60*	4 Credits on Social Responsibility 4 Credits on Research in Elective Project

Developing a singular / unique curriculum as mentioned in Figure 3 can be best explained with an example:

**Illustration 1.** A Student studying in Engineering Institute having 4 years of UG in Mechanical Engineering he will complete his basics as per his syllabus in first year along with additional 2 credit course on basic knowledge on sustainability. When in 2<sup>nd</sup> year the student will be introduced to his core subjects such as Steam engine, Pneumatics, Hydraulics, etc. in each of the subjects there is scope of introducing sustainability by the subject teacher in the subject taught, adding credits in the 2<sup>nd</sup> year, and continuing the same formula giving the student scope of mini project in the 3<sup>rd</sup> year and adding the

weighted credit in the 4<sup>th</sup> year by providing the student with research project having the gist of social responsibility.

**Illustration 2.** A Student studying in Arts, Commerce or any other Humanities subject having 3 years of UG, such student will learn basics of sustainability in the 1<sup>st</sup> year and along with his subjects such as Economics, Accountancy, Business Ethics, Geography, etc. the student will be introduced with sustainability in his core areas and will be provided with a mini project in the last year of his course duration.

**Illustration 3.** The PG Student, as, the student has been previously introduced to sustainability during his UG period, the HEIs



can easily introduce 4 credits for sustainability in the 1<sup>st</sup> year on Projects based on Sustainability and Social Responsibility and providing Research project in the last year of his post graduate program.

The learning model will bring the importance of sustainability throughout the learning period, resulting into transferring the knowledge, creating sense of social responsibility throughout the education,

preparing the students for research and further making the student community more and more responsible for securing the goal of Neo-Industrialization.

The HEIs can introduce sustainability in their subjects merely by following the indicators mentioned in the SDGs report:

**Table 2. Sustainability Indicators**

Category	Indicators
Energy	Production and Consumption of Energy
Water	Total Consumption and wastage and recycle
Transport	Vehicles used – personal vehicles, public transport or environment friendly vehicles
Waste	Amount of Waste generated, recycled and type of waste – hazardous or degradable
Zero Hunger	Food Produced, Food Consumed and Food Wasted

Along with all these indicators and categories the HEIs can develop the mindset among the students by-

- Enhancing Access and Equity
- Promoting Effective Pedagogies and Assessment Practices
- Continuous Professional Development of Faculties
- Creating Technology-enabled Learning Ecosystems
- Developing Future Skills
- Learning from International Models

All the mentioned attributes are to be considered by the HEIs for aligning sustainability and sustainable development through education.

**6. Conclusion:**

Sustainability - the idea in itself has to be brought into education right from the primary level, Japan has set the standards of sustainability in their education models- the children clean their classrooms and washrooms on their own every day before engaging into classroom learning, sanitation, renewable energy and many more examples can be given from this one country. The higher education system in India is largely decentralized and every institute or university has its own standard of setting of syllabus. Very few institutes maintain the linkages with industries and set the curriculum in context with the market and industrial requirements. And while developing any syllabus or curriculum, following is the list





which is least considered or taken into consideration while designing the syllabus / curricula-

- Developing models for sustainable development of national industries in the context of economical-ecological systems.
- Syllabus having deep study on mechanism of ethical knowledge of industrial and environment management systems.
- Effective and application-based knowledge of managing industrial and consumer waste.
- Effective use of secondary resources in the industry.
- Provision of renewable resources – inexhaustible resources.
- Stabilizing the use of natural resources in terms with the actual need of individual and shall not base on the market inflations.
- Strict monitoring of emission of harmful substances for the growth of product.
- Creating knowledge of optimization of e-waste management systems.

How a student will know what is the meaning of Sustainability, if the topic has never been introduced in the syllabus and was never a weighted credit subject. The students of HEIs in India are seen to more inclined towards getting more marks / grades, and are more ambitious towards getting a good placement in a Multi-National Company. Very few know about sustainability and very few know about neo-industrialization. Forming a cluster of colleges and making themselves multi-disciplinary will help HEIs to develop the students in the philosophy of Sustainability and Neo Industrialization. Making the student

understand about Engineering, Law, Commerce, Education, Fine Arts and Science through cluster will bring overall development of students in different disciplines which in itself, is sustainability of education.

The National Education Policy 2020 aims to bridge gap between current learning outcomes and what is required through undertaking major reforms that brings highest quality, equity, and integrity into the systems. The NEP 2020 envisages to promote multidisciplinary education system and increase the GER (Gross Enrollment Ratio) from 32% to 50% by 2030, and make India a knowledge super power in the world. It also aims to provide academic autonomy to all the HEIs allowing them to set their own academic standards, assessment and examination systems. This will provide a golden opportunity to the HEIs to develop their own syllabus having Sustainability and Neo Industrialization.

The Examination Reforms, Academic Reforms and various initiatives and schemes introduced by AICTE and mentioned in Approval Process Handbook 2022-23 under Institutional Development Cell (IDC), Faculty Development Cell (FDC), Skill Development Cell (SDC), Induction Programme Cell (IPC), Student Development Cell, Swayam Cell and Research & Innovation Development Schemes the HEIs can promote the education and develop their students in sustainability and further developing them in creating the industrial sector in neo industrialization. The HEIs have enormous potential to patronize these concepts and develop their students further developing the society and the nation at large.



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